Morro Bay General Plan and LCP Update

Draft Environmental Impact Report

SCH#2017111026

prepared by

City of Morro Bay
955 Shasta Avenue
Morro Bay, California 93442
Contact: Scot Graham, Community Development Director

prepared with the assistance of

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1530 Monterey Street, Suite D
San Luis Obispo, California 93401

October 2020

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Environmental Scientists | Planners | Engineers
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Executive Summary

This document is an Environmental Impact Report (EIR) analyzing the environmental effects of the proposed City of Morro Bay General Plan and Local Coastal Program (LCP) Update, also known as *Plan Morro Bay*. This section summarizes the characteristics of, alternatives to, and the environmental impacts and mitigation measures associated with the proposed General Plan and LCP Update.

Project Synopsis

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Project Description

This EIR has been prepared to examine the potential environmental effects of the General Plan and LCP Update. The following is a summary of the full project description, which can be found in Section 2.0, *Project Description*.

Project Characteristics

The project analyzed in this EIR is the proposed City of Morro Bay General Plan and Local Coastal Program (LCP) Update, also known as *Plan Morro Bay*. The City of Morro Bay is the project proponent and the lead agency for the proposed General Plan and LCP Update. The General Plan and LCP Update is a comprehensive update of the City's 1988 General Plan and 1984 LCP. The land use classifications included in the General Plan and LCP define the basic categories of land use allowed in the city and are the basis for the zoning districts established in the City Municipal Code, which contain more specific regulations and standards governing development on individual properties.

Table 1 identifies the development capacity associated with the planned distribution of land uses described in the Land Use Element and summarizes the resulting residential and nonresidential levels of development that can be expected from implementation of land use policies established by the General Plan and LCP Update.

Table ES-1 General Plan and LCP Update Maximum Development Capacity

Land Use Designation	Acres (Approximate)	Total Estimated Dwelling Units (2040)	Total Estimated Households	Population (2040)	Nonresidential Square Feet (2040)
Within city limits					
Residential	753.4	6,573	—	10,870	—
Commercial	307.6	565	—	934	8,819,081
Industrial	41.5	—	—	—	893,006
Waterfront Commercial/ Industrial	6.3	—	—	—	220,869
Mixed Use	17.6	141	—	233	607,984
Open Space & Agriculture	1,674.1	—	—	—	—
Public/Institutional	336.9	—	—	—	371,651
Outside of city, but in Future SOI and planning area					
Open Space & Agriculture	6,079.9	15	—	25	—
Public/Institutional	56.6	—	—	—	—
Total (2040)	**9,273.9***	**7,295**	**5,792**	**12,062**	**10,912,591****
Existing (2016) Totals	9,273.9*	6,414	5,063	10,714	2,613,654**
Change (2016-2040)	**—**	**881**	**729**	**1,348**	**8,298,937**

* Totals may not add up due to rounding
** Does not include square footage of campgrounds
Source: Plan Morro Bay, City of Morro Bay 2018

Zoning Code and Coastal Implementation Plan Amendments

To maintain consistency with the General Plan and LCP Update, the project also includes a comprehensive Zoning Code Update which includes the Coastal Implementation Plan. Amendments included as part of the project include:

- Updating the allowed uses in all zones as necessary for consistency with the General Plan Land Use Designations.
- Establishing new zoning district(s) as necessary to implement the General Plan and LCP Update.
- Updating other development standards as necessary to implement the General Plan and LCP Update. This will include maximum height, setbacks, design standards and other standards.
- Updating administration and permitting to integrate coastal permit processes.

Required Discretionary Approvals

Following recommendations from the Planning Commission, the Morro Bay City Council will need to take the following discretionary actions in conjunction with the project:

- Certify the Final EIR
- Adopt the proposed General Plan and LCP Update
- Adopt the Zoning Code Update and Coastal Implementation Plan

The California Coastal Commission will also need to take the following discretionary actions in conjunction with the project:

- Certify the General Plan and LCP Update
- Certify the Zoning Code Update and Coastal Implementation Plan

Project Objectives

The General Plan and LCP Update is intended to function as a policy document to guide land use decisions within the city planning area through the year 2040. The vision for the city over the next 20 to 30 years was developed with extensive community input. Based on this community input and in recognition of the state's planning priorities, a vision and values supporting the vision for the community were developed and are included in full in Section 2, *Project Description*.

Alternatives

As required by Section 15126.6 of the *CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed General Plan and LCP Update that could feasibly achieve similar objectives but would avoid or substantially lessen significant adverse impacts associated with the General Plan and LCP Update.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project/Continue using 1988 General Plan and 1984 LCP. This alternative is comprised of a land use pattern that reflects the land use identified in the existing 1988 General Plan. Under this alternative, the proposed General Plan and LCP Update would not be adopted and the existing General Plan and LCP, including the land use map and all of the General Plan and LCP goals and policies, would remain in place through the horizon year of 2040.
- Alternative 2: Proposed General Plan and LCP Update without Morro Bay Power Plant/WWTP Redevelopment. This alternative would remove Policy LU-5.4 and Policy LU-5.5 from the General Plan and LCP Update, and would revise the land use plan to include the former Morro Bay Power Plant and City WWTP sites in Open Space/Recreation, preserving natural areas and resources, and providing future recreational opportunities, consistent with other goals of the General Plan and LCP Update.
- Alternative 3: Reduced Commercial Floor Area Ratio. Under this alternative, approximately 7.5 million square feet of new commercial development could be constructed in the planning area. This would be 1.3 million fewer square feet of new commercial square footage than could be constructed under the General Plan and LCP Update. Additionally, approximately 103 fewer residential units could be constructed within the planning area, as a result of the FAR reduction within the planned mixed-use overlay areas.

Section 15126.6(e)(2) of the CEQA Guidelines requires that an analysis of project alternatives identify an environmentally superior alternative among the alternatives evaluated in the EIR.

The No Project Alternative (Alternative 1) would be environmentally superior in comparison to the General Plan and LCP Update because it would continue implementation of the existing 1988 General Plan, which would accommodate less development and growth then the General Plan and LCP Update, Alternatives 2, or Alternative 3. In accordance with CEQA Guidelines Section 15126.6(e)(2), if the No Project Alternative is identified as the Environmentally Superior Alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives. Based on the information presented in the EIR, Alternative 2 would be the

environmentally superior alternative when considering overall environmental impacts relative to the performance metrics.

Refer to Section 7.0, *Alternatives*, for the complete alternatives analysis.

Areas of Known Controversy

The City received seven responses to the NOP including three responses from State, local and non-profit agencies and four responses from public commenters. The responses, included in Appendix A, raise environmental topics including vehicle circulation, pedestrian circulation, Environmentally Sensitive Habitat Area (ESHA), open space, agricultural lands, new housing, the character of Morro Bay, and potential alternatives to the project. These topics are addressed in the analysis contained in the various subsections of Section 4.0, *Environmental Impact Analysis*.

Summary of Impacts and Mitigation Measures

Table 2 summarizes the identified environmental impacts for each issue area studied in the EIR, required mitigation measures (if any), and the level of significance after mitigation. Class I impacts are defined as significant and unavoidable adverse impacts, which require a statement of overriding considerations to be made per Section 15093 of the State CEQA Guidelines if the project is approved. Class II impacts are significant, adverse impacts that can be feasibly mitigated to a less than significant level, and which require findings to be made under Section 15091 of the State CEQA Guidelines. Class III impacts are considered less than significant impacts. Potential impacts are listed below in summary form.

Based on comments received during the public hearing and NOP comment period, the City of Morro Bay determined that there was no substantial evidence that the project would cause or otherwise result in significant environmental effects in the resource areas of agricultural resources and mineral resources. The substantiation for determining that these issues would result in no impact or a less-than-significant impact is described in Section 6, Effects Found to be Less than Significant, and in further detail in the NOP in Appendix A.

Class I – Significant and Unavoidable Impacts

- Clean Air Plan consistency
- Cumulative air quality impacts
- Vehicle miles traveled
- Cumulative transportation impacts

Class II – Significant Impacts that Can Be Mitigated to Less than Significant Levels

- Construction air quality emissions
- Special status species
- Wildlife movement
- Cumulative impacts to biological resources
- Archaeological resources
- Cumulative cultural resource impacts

- Groundborne vibration
- Cumulative noise impacts
- Pedestrian and bicycle travel
- Tribal cultural resources
- Cumulative tribal cultural resource impacts

Class III – Less than Significant Impacts

- Scenic vistas and scenic resources
- Visual character
- Light and glare
- Cumulative aesthetic impacts
- Exposure of sensitive receptors to air pollutants emissions
- Odor emissions
- Wetlands and other sensitive natural communities
- Conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan
- Disturbance of human remains
- Seismic impacts
- Soil erosion
- Expansive soils
- Septic tanks or alternative wastewater systems impacts to soils
- Paleontological resources
- Cumulative impacts to geologic hazards
- Consistency with GHG reduction plans and regulations
- Cumulative GHG emissions
- Hazardous materials exposure
- Hazardous emissions or handling of hazardous materials, substances, or waste
- Development on listed contaminated sites
- Airport hazards
- Implementation of emergency response/evacuation plans
- Wildland fire hazards
- Cumulative impacts related to hazards and hazardous materials
- Construction impacts to water quality
- Alteration of existing drainage patterns

- Flood hazards and pollution as a result of flooding
- Flooding as a result of levee or dam failure, or inundation by mudflow, tsunami, or seiche
- Cumulative impacts to hydrology and water quality
- Physically dividing an established community
- Consistency with applicable land use plans, policies, and regulations
- Cumulative land use impacts
- Construction noise
- Long-term traffic noise
- Operational noise
- Airport noise
- Population growth inducement
- Displacement of people or housing
- Cumulative impacts to population and housing
- Fire protection, police protection, school, and emergency medical services and facilities
- Parks and recreational facilities
- Cumulative impacts to public services
- Traffic safety hazards
- Emergency access
- Water supply
- Wastewater treatment facilities and capacity
- Solid waste services and facilities
- Cumulative impacts to utilities and service systems
- Consumption of energy resources
- Conflict with state or local plan for renewable energy or energy efficiency
- Cumulative energy impacts

Table ES-2 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

Impact	Mitigation Measure (s)	Residual Impact
Class I Impacts (Significant and Unavoidable)		
Air Quality		
AQ-1. The General Plan and LCP Update would result in an increase in VMT that would exceed the projected rate of population growth in Morro Bay, which would be inconsistent with the SLOAPCD Clean Air Plan. This would be a significant and unavoidable impact.	The General Plan and LCP Update would comply with applicable General Plan and LCP Update goals and policies that would reduce VMT to the extent feasible. In addition, individual development projects in the planning area would require project-level environmental review, including evaluation of future projects for consistency with the applicable air quality plan in accordance with the SLOAPCD CEQA Air Quality Handbook, which could result in the implementation of project-specific mitigation measures to reduce VMT. However, no additional policy-oriented mitigation is available that would reduce projected VMT.	Additional policy-oriented mitigation is not available that would reduce the projected VMT increase such that it would not exceed population growth in the region. Therefore, the General Plan and LCP Update would be inconsistent with the 2001 CAP, and this impact would remain significant and unavoidable.
Cumulative. Because the General Plan and LCP Update would be inconsistent with the CAP, the General Plan and LCP Update's contribution to cumulative regional air quality impacts would be significant and unavoidable.	No additional policy-oriented mitigation is available that would reduce projected VMT.	Additional policy-oriented mitigation is not available that would reduce the projected VMT increase such that it would not exceed population growth in the region. Therefore, the General Plan and LCP Update would be inconsistent with the 2001 CAP, and this impact would remain significant and unavoidable.
Transportation		
T-2. The General Plan and LCP Update anticipates land use growth that would result in a long-term increase in vehicle miles traveled (VMT) within the City's Sphere of Influence (SOI). The General Plan and LCP Update Circulation Element includes goals and policies that reduce reliance on passenger vehicles, facilitate pedestrian and bicycle transportation, and establish local targets for VMT reduction. However, future development in Morro Bay would result in increased per service population VMT, and no feasible mitigation is available that would fully address the anticipated increase in VMT. This impact would be significant and unavoidable.	Future development in Morro Bay would result in increased long-term VMT, even with implementation of identified goals and policies that would reduce VMT to an extent. No additional feasible mitigation is available that would fully address the anticipated increase in VMT resulting from the General Plan and LCP Update.	Implementation of the goals and policies in the General Plan and LCP Update would contribute to reducing VMT in Morro Bay. However, no additional feasible mitigation is available that would fully address the anticipated increase in VMT. Therefore, impacts associated with increased VMT in the Morro Bay SOI and in San Luis Obispo County would remain significant and unavoidable after implementation of all applicable policies in the General Plan and LCP Update.
Cumulative. Cumulative land use growth evaluated	Consistent with Policy CIR-3.2 and CIR-3.3, individual	Implementation of the goals and policies in the

Impact	Mitigation Measure (s)	Residual Impact
under Buildout Plus Project conditions would result in an increase in daily VMT and daily per service population VMT. The individual potential impacts of future development in Morro Bay are speculative; however, the cumulative impact of the increase in VMT in the Morro Bay SOI and in San Luis Obispo County identified for the General Plan and LCP Update would be significant and unavoidable.	development projects in Morro Bay would require focused, project-level environmental review, and would require mitigation to reduce VMT where potential environmental impacts are identified.	General Plan and LCP Update would contribute to reducing VMT in Morro Bay, but no additional feasible mitigation is available that would fully address the anticipated increase in VMT resulting from the General Plan and LCP Update. Therefore, cumulative transportation impacts would remain significant and unavoidable.
Class II Impacts (Significant but Mitigable)		
Air Quality		
AQ-2. Buildout of the General Plan and LCP Update would result in short-term emissions of criteria pollutants. Construction emissions from future project in the planning area would be quantified once project details are known and evaluated for potential impacts in accordance with SLOAPCD guidance. This impact would be less than significant with mitigation.	**AQ-2. Standard Mitigation for Construction Equipment.** Proponents of individual land use projects, or other projects requiring grading or building permits, shall require construction contractors to incorporate the following standard mitigation measures, as applicable, to reduce ROG, NO_X, and DPM emissions from construction equipment. Mitigation measures shall be listed on project construction plans and the project proponent shall perform periodic site inspections during construction to ensure that mitigation measures are being implemented. ▪ Maintain all construction equipment in proper condition according to manufacturer's specifications ▪ Fuel all off-road and portable diesel powered equipment with ARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road) ▪ Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State Off-Road Regulation ▪ Use on-road heavy-duty trucks that meet ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation ▪ Construction or trucking companies with fleets that that do not have engines in their fleet that meet the engine standards identified in the above two measures	Mitigation Measure AQ-2 would reduce short-term NO_X, ROG, and DPM emissions generated by construction activities associated with future buildout of the project. This impact would be less than significant with mitigation.

Impact	Mitigation Measure (s)	Residual Impact
	(e.g. captive or NO_X exempt area fleets) may be eligible by proving alternative compliance ▪ All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit ▪ Diesel idling within 1,000 feet of sensitive receptors is not permitted ▪ Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors ▪ Electrify equipment when feasible ▪ Substitute gasoline-powered in place of diesel-powered equipment, where feasible Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.	
Biological Resources		
BIO-1. New development facilitated by the General Plan and LCP Update could impact listed and other individual special status species and foraging and breeding habitat for special status wildlife and habitat for special status plants. This impact would be less than significant with incorporation of mitigation.	**BIO-1(a) Avoidance and Minimization during Development.** Policy C-1.3 shall be updated to read: **Policy C-1.3.** Biological Site Assessments. A biological assessment shall be required for any development proposed on sites that include or are within 100 feet of mapped ESHA in Figure C-2, and all other sites with natural vegetation regardless of whether ESHA has been mapped in Figure C-2, and for all other projects for which evidence indicates that ESHA may be present either on or adjacent to the site. The best available information about the location of ESHA in the City shall be used. Such assessment shall be prepared at the owner's expense by a qualified biologist approved by the City and shall, at minimum: a. Identify and confirm the extent of the ESHA, b. Document any site constraints and the presence of sensitive plant or animal species, c. Recommend buffers and development setbacks and	Impacts to special status species would be less than significant with implementation of Measures BIO-1(a) and BIO-1(b), which would update policies in the General Plan and LCP Update to protect listed species and provide direction on resource protection in any future SOI.

Impact	Mitigation Measure (s)	Residual Impact
	standards to protect the ESHA, d. ~~Recommend mitigation measures to address any allowable impacts~~ If listed species are present, specify avoidance and minimization measures, including compensatory mitigation, to be implemented to avoid or minimize take of individuals and loss of occupied habitat, and specify the necessary consultation pathway(s) with USFWS, NMFS, and/or CDFW to obtain incidental take coverage, where necessary, and e. Include any other information and analyses necessary to understand potential ESHA impacts as well as measures necessary to protect the resource as required by the Local Coastal Program. If the site contains the potential for monarch overwintering or rookeries due to the presence of appropriately sized trees and groves, a seasonally timed survey appropriate for detecting the target species must also be included in the study. **BIO-1(b) External Impacts.** Policy OS-7 shall be updated to read: **Policy OS-7.1.** Account for External Impacts. If any portion of the area outside the city limits is included in the City's sphere of influence in the future, prepare and adopt a plan for the affected parcels that includes infrastructure and services provided by the City of Morro Bay. The plan shall also identify policies for the protection of natural resources in the affected areas.	
BIO-3. New development facilitated by the General Plan and LCP Update may remove trees, encroach on rookeries and breeding sites, impede movement of terrestrial and aquatic wildlife, and otherwise interfere with the movement of wildlife. Impacts to wildlife corridors, rookeries, and nest sites would be less than significant with incorporation of mitigation.	**BIO-3. Wildlife Movement Corridors Protection.** The following policy shall be added to the Conservation Element. **Policy C-1.17.** Project Design for Wildlife Connectivity. Design new stream crossing structures and extensions or modifications of existing structures to accommodate wildlife movement. At a minimum, structures within steelhead streams must be designed in consultation with a fisheries biologist and shall not impede	Impacts to wildlife movement corridors would be less than significant with implementation of Measure BIO-3 to add a General Plan and LCP Update policy to preserve wildlife movement corridors.

Impact	Mitigation Measure (s)	Residual Impact
	movement. New projects with long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing or other project components shall not block wildlife movement through riparian or other natural habitat. Where fencing or other project components that may disrupt wildlife movement is required for public safety concerns, they shall be designed to permit wildlife movement. This policy shall be supported by adding the following implementation action to Goal-1 of the Conservation Element: Wildlife movement features shall be included when designing new or modified stream crossing structures to allow wildlife movement including for aquatic and terrestrial species. Fencing or other components shall be designed to allow movement.	
Cumulative. Implementation of the land use development patterns under the General Plan and LCP Update could result in impacts on special-status species, riparian, wetland, or other sensitive natural communities, as well as wildlife movement in the planning area, and contribute to cumulative impacts to these resources within the greater cumulative impact area (adjacent communities, including San Luis Obispo county). As a result, cumulative impacts to sensitive biological resources would be potentially significant.	Mitigation Measures BIO-1(a), BIO-1(b), and BIO-3 would require additional policy language in the General Plan and LCP Update to protect biological resources that have potential to be impacted by development facilitated by the General Plan and LCP Update.	The contribution of the proposed General Plan and LCP Update to cumulative impacts would not be cumulatively considerable with implementation of applicable General Plan and LCP Update goals and policies and required mitigation.
Cultural Resources		
CR-1. Development facilitated by the General Plan and LCP Update has the potential to impact historical and unique archaeological resources. Implementation of applicable General Plan and LCP Update goals and policies would minimize or avoid potential adverse impacts to historical and archaeological resources. This impact would be less than significant with incorporation of mitigation.	**CR-1(a). Avoidance or Minimization of Historic, Cultural, and Archaeological Resources Impacts.** Policy C-2.3 of the General Plan and LCP Update shall be revised to read: **Policy C-2.3.** Protection of Cultural Resources. Ensure the protection of historic, cultural, and archeological resources during development, construction, and other similar activities. Development shall avoid, to the maximum extent feasible, adversely impacting historic,	Impacts to cultural and historic resources would be less than significant with implementation of Measures CR-1(a) and CR-1(b).

Impact	Mitigation Measure (s)	Residual Impact
	cultural, and/or archaeological resources, and shall include adequate BMPs to address any such resources that may be identified during construction, including avoidance, minimization, and mitigation measures sufficient to allow documentation, preservation, and other forms of mitigation. If the resource(s) in question are of Native American origin, develop avoidance or minimization measures in consultation with appropriate Native American tribe(s). **CR-1(b). Cultural Resources Study Implementation Action.** The following implementation action for Goal C-2 shall be added to the General Plan and LCP Update: Require all discretionary proposals within the cultural resources overlay to consider the potential to disturb cultural resources. If preliminary reconnaissance suggests that cultural resources may exist, a Phase I cultural resources study shall be performed by a qualified professional meeting the Secretary of the Interior's (SOI) Professional Qualification Standard (PQS) for archaeology and/or architectural history, as appropriate (NPS 1983). A Phase I cultural resources study shall include a pedestrian survey of the project site and sufficient background research and field sampling to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a records search at the Central Coast Information Center (CCIC) and a Sacred Lands File (SLF) search with the Native American Heritage Commission (NAHC). Where identified or potential resources are of Native American origin, the appropriate Native American tribe(s) will participate with the qualified professional. The technical report documenting the study shall include recommendations to avoid or, if avoidance is not feasible, reduce impacts to cultural resources.	
Cumulative. The increase in growth in previously undisturbed areas would contribute to regional	Implementation of Measures CR-1(a) and CR-1(b) would be required to update the General Plan and LCP Update to	Implementation of Mitigation Measures CR-1(a) and CR-1(b) would ensure that potential impacts to

Impact	Mitigation Measure (s)	Residual Impact
impacts on existing and previously undisturbed and undiscovered historical and archaeological resources. Compliance with applicable regulations and implementation of General Plan and LCP Update goals and policies would minimize cumulative impacts to cultural resources. Therefore, the General Plan and LCP Update would contribute to potentially significant impacts to cultural resources.	include implementation actions to address potential impacts to cultural resources on a project-by-project basis.	cultural resources would not be cumulatively considerable, and cumulative impacts to such resources would be reduced to a less than significant level.
Noise		
N-2. Construction of individual projects facilitated by the General Plan and LCP Update could temporarily generate groundborne vibration, potentially affecting adjacent sensitive land uses. Although the Morro Bay Municipal Code's timing restrictions on construction activity would limit vibration disturbance, high vibration levels during working construction hours could potentially disturb people or damage fragile buildings. This impact would be less than significant with mitigation.	**N-2. Construction Vibration Control Measures and Notification.** The following new policies shall be added to the Noise Element under Goal NOI-3: **Policy NOI-3.5.** Vibration Control. Control construction vibration by avoiding the use of vibratory rollers near vibration-sensitive receptors and scheduling construction activities with the highest potential to produce vibration to hours with the least potential to affect sensitive land uses. **Policy NOI-3.6.** Construction Vibration Notification. Developers shall notify neighbors of scheduled construction activities that would generate vibration.	The avoidance of vibratory rollers in close proximity to vibration-sensitive receptors would prevent potential structural damage from vibration. In addition, the appropriate scheduling of construction activities and notification of neighbors would minimize disturbance of people from vibration-generating equipment. Compliance with the vibration control and notification measures in Mitigation Measure N-2 would reduce temporary vibration impacts to a less than significant level.
Cumulative. Site-specific cumulative impacts related to exposure of existing and planned future receptors to construction and stationary noise sources would be similar to General Plan and LCP Update impacts and less than significant with the incorporation of mitigation. implementation of General Plan and LCP Update policies for transportation-related noise would reduce noise and avoid generation of excessive noise from the local highways and city streets, which would minimize the exposure of sensitive receptors to traffic noise. Therefore, the overall contribution of the General Plan and LCP Update to cumulative traffic noise would not be cumulatively considerable.	Mitigation Measure N-2 would be required.	Cumulative noise impacts would be less than significant with the incorporation of mitigation.

Impact	Mitigation Measure (s)	Residual Impact
Transportation		
T-1. Implementation of the General Plan and LCP Update would increase vehicle traffic volumes, which have the potential to interfere with pedestrian and bicycle travel on or along roadways. The General Plan and LCP Update includes goals and policies to improve safety, access, and performance of public transit, bicycle, and pedestrian transportation modes. Implementing specific pedestrian circulation improvement measures at affected facilities would further improve the performance of pedestrian transportation modes. Therefore, impacts to pedestrian operations would be reduced to a less than significant level with mitigation.	**T-1. Pedestrian Facility Improvements.** The following pedestrian facility improvements shall be added to the list of "Planned Circulation Improvements" in the General Plan and LCP Update Circulation Element. ▪ Embarcadero North of Beach Street: Provide sidewalks and a vehicular connection shifting traffic away from Beach Street for the redeveloped Morro Bay Power Plant site. ▪ Morro Bay Boulevard: Provide a landscaped buffer at least two feet wide between the sidewalk and travel lanes. ▪ Main Street south of Radcliffe Drive: Provide continuous sidewalks to provide acceptable pedestrian operations. ▪ SR 41 east of Main Street: Provide sidewalks with a landscaped buffer when adjacent properties are redeveloped. In addition, Policy CIR-1.8 shall be revised as follows: **Policy CIR-1.8.** Capital Improvement Program. Use the City's Capital Improvement Program (CIP) process to prioritize, fund, and build roadway, ~~and~~ bikeway, and pedestrian improvements, and to address phasing and construction of traffic infrastructure throughout the city.	Mitigation Measures T-1 and T-2 and applicable policies in the General Plan and LCP Update would improve pedestrian operations at affected roadway segments. Therefore, impacts to pedestrian operations would be reduced to a less than significant level after implementation of Mitigation Measures T-1 and T-2 and all applicable policies in the General Plan and LCP Update.
Tribal Cultural Resources		
TC-1. Development facilitated by the General Plan and LCP Update has the potential to impact tribal cultural resources. Implementation of the goals and policies of the General Plan and LCP Update would minimize the potential for impacts to previously unidentified tribal cultural resources. This impact would be less than significant with incorporation of mitigation.	Mitigation Measures CR-1(a) and CR-1(b) are required to address potential impacts to tribal cultural resources. As individual development projects are proposed, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce impacts to tribal cultural resources.	Impacts to tribal cultural resources would be less than significant with implementation of Mitigation Measures CR-1(a) and CR-1(b).
Cumulative. Development in the city would increase under buildout of the General Plan and LCP Update by	Implementation of the goals and policies listed under Impact TC-1, as well as implementation of Mitigation	Cumulative impacts to tribal cultural resources would be less than significant with implementation of

Impact	Mitigation Measure (s)	Residual Impact
increasing mobility and growth. The increase in growth in previously undisturbed areas would contribute to regional impacts on tribal cultural resources. The potential for cumulative impacts related to tribal cultural resources is potentially significant.	Measures CR-1(a) and CR-1(b) would minimize potential impacts to tribal cultural resources as a result of development facilitated by the General Plan and LCP Update.	Mitigation Measures CR-1(a) and CR-1(b).
Class III Impacts (Less than Significant)		
Aesthetics		
AES-1. Compliance with the General Plan and Local Coastal Program Update policies, Title 17 of the Morro Bay Municipal Code, and the City's Residential Design Guidelines would protect visual and aesthetic resources in the planning area from potential impacts resulting from development facilitated by the General Plan and LCP Update. This impact would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
AES-2. Compliance with existing standards and General Plan and LCP Update goals and policies would ensure that redevelopment or new development complements the existing visual character and quality of Morro Bay. Therefore, the project would have a less than significant impact on visual character and quality.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
AES-3. New development facilitated by the General Plan and LCP Update would be subject to existing regulations in the City's Zoning Code, and General Plan and LCP Update policies, to protect skyward nighttime views and to lessen or prevent glare. Therefore, the project would result in a less than significant impact associated with new sources of light and glare.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
Cumulative. The General Plan and LCP Update's contribution to cumulative impacts associated with night sky lighting and changes in the visual environment would not be cumulatively considerable.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a

Impact	Mitigation Measure (s)	Residual Impact
Air Quality		
AQ-3. The General Plan and LCP Update would allow for development of new residences and other sensitive receptors in proximity to industrial uses, which could result in exposure of sensitive receptors to elevated concentrations of TACs. The General Plan and LCP Update would not generate levels of traffic that would expose sensitive receptors to substantial pollutant concentrations, or result in new development that would expose sensitive receptors to hazards associated with naturally occurring asbestos. This impact would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
AQ-4. Implementation of the General Plan and LCP Update would not create objectionable odors that would impact a substantial number of people, and future projects would be required to comply with SLOAPCD regulations prohibiting nuisance emissions (including odors). This would be a less than significant impact.	No additional policy-oriented mitigation would be required. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce potential odor conflicts.	n/a
Biological Resources		
BIO-2. The General Plan and LCP Update would not facilitate development that would directly impact riparian and wetland habits and other sensitive natural communities. However, future development may have adverse indirect impacts on wetlands and areas under the jurisdiction of the CDFW, RWQCB and/or USACE, as well as for both within and outside the City's Coastal Zone. Compliance with existing regulations and implementation of applicable General Plan and LCP Update policies would avoid or minimize, potential impacts to riparian and wetland habits and other sensitive natural communities. This impact would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific measures.	n/a
BIO-4. Development facilitated by the General Plan and LCP Update would not conflict with applicable local policies protecting biological resources or an	projects are proposed, focused, project-level environmental review may be required, including evaluation of individual development projects for	n/a

Impact	Mitigation Measure (s)	Residual Impact
approved local, regional, or state habitat conservation plan. This impact would be less than significant.	consistency with applicable local policies protecting biological resources, which could result in the implementation of project-specific mitigation measures.	
Cultural Resources		
CR-2. Development facilitated by the General Plan and LCP Update has the potential to adversely affect previously unknown human burials but would be required to adhere to existing regulations regarding the treatment of human remains. This impact would be less than significant.	No mitigation measures are required.	n/a
Geology and Soils		
GEO-1. Construction and occupancy of new buildings under the General Plan and LCP Update could result in exacerbated hazards associated with geologic hazards. adherence to requirements of the California Building Code and Implementation of the goals and policies of the General Plan and LCP Update would minimize the potential for loss, injury, or death following a seismic event, landslide, liquefaction, or other geologic hazards. This impact would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
GEO-2. Construction of new development under the General Plan and LCP Update would include ground disturbance that would result in loose or exposed soil that could be eroded by wind or during a storm event, resulting in the loss of topsoil. Compliance with applicable regulations, including the Clean Water Act, and implementation of the goals and policies of the General Plan and LCP Update would minimize the potential for erosion and loss of topsoil and would ensure this impact would remain less than significant.	No additional policy-oriented mitigation would be required to reduce this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
GEO-3. Development facilitated by the General Plan and LCP Update could result in construction of structures on expansive soils. Compliance with the requirements of the California Building Code, as well as applicable Municipal Code requirements and General Plan and LCP Update goals and policies, would	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a

Impact	Mitigation Measure (s)	Residual Impact
ensure that potential impacts associated with expansive soils would remain less than significant.		
GEO-4. New development facilitated by the General Plan and LCP Update would occur where existing sewer systems are in place, minimizing the need for development of new wastewater disposal systems. The Municipal Code prohibits dumping or discharging from septic tanks. Therefore, the project would not result in a significant impact to soils that are incapable of supporting septic tanks or alternative wastewater disposal systems.	No mitigation measures are required.	n/a
GEO-5. Development facilitated by the General Plan and LCP Update has the potential to impact paleontological resources. Fossil-bearing sediments in the Morro Bay area are predominantly located on State parks land and offshore. Implementation of applicable General Plan and LCP Update goals and policies would minimize or avoid potential adverse impacts to paleontological resources. This impact would be less than significant.	No mitigation measures are required.	n/a
Cumulative. Existing regulations, such as the CBC, specify mandatory actions that must occur during project development, which minimize effects from construction and operation of new structures related to geology, soils, and seismicity as discussed above. Therefore, the General Plan and LCP Update would not make a cumulatively considerable contribution to cumulative geology, soils, or seismicity impacts.	No mitigation measures are required.	n/a
Greenhouse Gas Emissions		
GHG-1. Buildout of the General Plan and LCP Update under business as usual conditions would result in new GHG emissions that may exceed applicable GHG thresholds on a project-by-project basis. The General Plan and LCP Update establishes policies to reduce GHG emissions, including setting reduction targets consistent with Statewide GHG reduction goals, and	No mitigation would be required. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce GHG emissions.	n/a

Impact	Mitigation Measure (s)	Residual Impact
updating the Climate Action Plan to ensure future development is consistent with Statewide targets. This impact would be less than significant.		
Cumulative. The General Plan and LCP Update would establish GHG reduction goals consistent with the State's 2030 and 2050 greenhouse gas emissions reduction goals, and would be consistent with regional and State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. Therefore, the project's contribution to cumulative GHG and climate change impacts would be less than significant.	No mitigation would be required.	n/a
Hazards and Hazardous Materials		
HAZ-1. Implementation of the General Plan and LCP Update could result in an incremental increase in the overall routine transport, use, storage, and disposal of hazardous materials in the planning area, and increase the risk of release of hazardous materials. Compliance with applicable regulations related to the handling, Transport, disposal, and storage of hazardous materials and adherence to proposed General Plan and LCP Update policies would minimize the risk of spills and the public's potential exposure to these substances and reduce the risk of adverse impacts of hazardous materials. This impact would be less than significant.	No mitigation would be required.	n/a
HAZ-2. New development of residential, industrial, and commercial uses facilitated by the General Plan and LCP Update could result in increased use and storage of hazardous materials within one quarter mile of existing or proposed schools. Compliance with regulatory requirements of the San Luis Obispo County EHS and existing applicable State and federal regulations would ensure that risks from hazardous emissions or handling of hazardous materials, substances, or waste near existing or proposed schools would remain less than significant.	No mitigation would be required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
HAZ-3. Implementation of the General Plan and LCP Update could result in development of sites contaminated with hazardous materials. However, compliance with applicable regulations relating to site cleanup and adherence to the General Plan and LCP policies would minimize impacts related to development on listed contaminated sites. This impact would be less than significant.	No mitigation would be required.	n/a
HAZ-4. The planning area is outside of the airport land use planning area and associated safety zones for the San Luis Obispo county airport and Paso Robles Municipal Airport and is not located near any other airports. There would be no impacts associated with airport-related hazards.	No mitigation would be required.	n/a
HAZ-5. Population growth and increased development in coastal areas could impact evacuation routes and increase the number of residents susceptible to coastal hazards in the planning area as a result of the General Plan and LCP Update. Proposed policies and mapped evacuation routes in the General Plan and LCP Update would ensure effective emergency response following a natural or human-caused disaster. Therefore, the General Plan and LCP Update would not result in interference with an adopted emergency response plan or emergency evacuation plan. This impact would be less than significant.	No mitigation would be required.	n/a
HAZ-6. The General Plan and LCP Update planning area includes a designated very high fire hazard area. However, land use designations would limit new development within designated very high fire hazard areas to recreational uses. Additionally, goals and policies included in the General Plan and LCP Update would minimize exposure of people or structures to risk of loss, injury, or death involving wildland fires. This impact would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce impacts associated with wildland fires.	n/a
Cumulative. Cumulative impacts related to the transport, use, storage, or disposal of hazardous	No mitigation would be required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
materials, upset conditions, hazardous emissions near schools, project locations on known or unknown hazardous materials sites, airport hazards, emergency response, and fire hazards would be less than significant		
Hydrology and Water Quality		
HWQ-1. Development facilitated by the General Plan and LCP Update could result in an increase in pollutants in stormwater and wastewater, and alter drainage patterns. Compliance with NPDES permit requirements, Morro Bay Municipal Code requirements, and General Plan and LCP Update goals and policies would prevent substantial erosion and siltation, and discharges of pollutants, including pollution associated with drainage, erosion, and stormwater, and minimize adverse effects on water quality. This impact would be less than significant.	No mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific measures.	n/a
HWQ-2. Development facilitated by the General Plan and LCP Update would incrementally increase the amount of impervious surface in the City, which could reduce the potential for groundwater recharge from infiltration. Compliance with the Morro Bay Municipal Code and the Central Coast RWQCB's post-construction requirements for stormwater management would ensure that new impervious surfaces would not substantially interfere with groundwater recharge. This impact would be less than significant.	No mitigation measures are required.	n/a
HWQ-3. Development facilitated by the General Plan and LCP Update could be subject to flood hazards and could impede or redirect flood flows to adjacent areas. Compliance with applicable provisions of the Morro bay Municipal Code would require new development to be designed and constructed such that the risk and damage of flooding is not exacerbated by implementation of the General Plan and LCP Update. Impacts related to flooding and flood hazards would	No mitigation measures are required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
be less than significant.		
HWQ-4. Development facilitated by the General Plan and LCP Update may occur in areas exposed with potential for inundation by seiche, tsunami, and/or mudflow. Compliance with applicable Municipal Code requirements would ensure development within areas subject to tsunami, seiche, and mudflow would be sited, designed and constructed so as to not exacerbate risks to life and property. The General Plan and LCP Update would not increase exposure of people or structures to significant risk or loss, injury, or death involving inundation by seiche, tsunami, or mudflow. These impacts would be less than significant.	No mitigation measures are required.	n/a
Cumulative. Compliance with these existing requirements would reduce impacts associated with pollutants discharged during construction and operation of project and adverse changes to water quality throughout the cumulative impact area. Therefore, cumulative impacts related to water quality would be less than significant. Development of individual projects throughout the cumulative impact area would increase impervious surfaces and reduce groundwater recharge in the planning area, but compliance with applicable policies related to impervious surfaces would reduce impacts throughout the cumulative impact area.	No mitigation measures are required.	n/a
Land Use		
LUP-1. Implementation of the proposed General Plan and LCP Update would provide for orderly development in Morro Bay and would not physically divide an established community. This impact would be less than significant.	No mitigation is required	n/a
LUP-2. With a comprehensive update to the City's Zoning Ordinance and Zoning Map in conjunction with the General Plan and LCP Update, implementation of	Mitigation measures identified throughout this EIR would serve to reduce identified environmental impacts and further improve consistency of the project with applicable	n/a

Impact	Mitigation Measure (s)	Residual Impact
the General Plan and LCP Update would be consistent with applicable regional land use plans, policies, and regulations, such as the SLOCOG 2019 RTP and City zoning districts and standards. This impact would be less than significant.	regional land use plans, policies, and regulations. No additional mitigation for this impact is required.	
Cumulative. The General Plan and LCP Update would not contribute to a significant cumulative impact related to the physical division of any established community, and the cumulative impacts resulting from the implementation of the proposed General Plan and LCP Update would be less than significant.	Mitigation measures identified throughout this EIR would serve to reduce identified environmental impacts and further improve consistency of the project with applicable regional land use plans, policies, and regulations. No additional mitigation for this impact is required.	n/a
Noise		
N-1. Construction of individual projects facilitated by the General Plan and LCP Update would temporarily produce high noise levels, potentially affecting nearby noise-sensitive land uses. Compliance with existing standards and General Plan and LCP Update goals and policies would ensure construction activity associated with redevelopment or new development would limit noise disturbance at noise-sensitive receptors in the city. Therefore, this impact would be less than significant.	No mitigation would be required.	n/a
N-3. Development facilitated by the General Plan and LCP Update could incrementally increase traffic and associated noise levels along roadways in Morro Bay, exposing noise-sensitive land uses located near roadways to incrementally greater noise levels. However, implementation of policies in the General Plan and LCP Update would ensure that traffic noise would have a less than significant impact.	No mitigation would be required.	n/a
N-4. New development facilitated by the General Plan and LCP Update would introduce new operational noise sources associated with residential, commercial, Industrial, and mixed-use land uses. The continued regulation of on-site noise, consistent with the Morro Bay Municipal Code, would minimize disturbance to	No mitigation would be required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
adjoining uses. Therefore, operational noise from the project would have a less than significant impact.		
N-5. The General Plan and LCP Update planning area is located 17 miles from the nearest airport. Therefore, there would be no impacts associated with airport noise in the planning area.	No mitigation would be required.	n/a
Population and Housing		
PH-1. The General Plan and LCP Update would not result in growth in the planning area that is substantially greater than projected in the SLOCOG regional growth forecast. This impact would be less than significant.	Mitigation measures are not required.	n/a
PH-2. Implementation of the General Plan and LCP Update would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere. Impacts would be less than significant.	No additional policy-oriented mitigation would be required to address this impact. As individual development projects are considered for construction, separate environmental review may be required, which could result in the implementation of project-specific mitigation measures.	n/a
Cumulative. The General Plan and LCP Update would not contribute to cumulative impacts related to displacement in the greater cumulative impact analysis area (San Luis Obispo County), and would not result in significant cumulative population growth impacts beyond the planning area and the incremental population impacts of the proposed General Plan and LCP Update would not be cumulatively considerable.	Mitigation measures are not required.	n/a
Public Services and Recreation		
PUB-1. Development facilitated by the General Plan and LCP Update would result in an increase in the city's population. This would increase demand for fire, police, school, and emergency medical services and potentially create the need for new police, fire, school, or other service facilities. However, compliance with policies in the General Plan and LCP Update, payment of City-required public facilities impact fees, and management of future growth would avoid adverse	No mitigation would be required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
environmental effects associated with the provision of new or physically altered fire, police, school and other public facilities. This impact would be less than significant.		
PUB-2. Development facilitated by the General Plan and LCP Update would increase the City's population with commensurate increases in demand for parks and recreation facilities. Additional parkland has been planned such that the park service ratio would satisfy the City's requirement to provide a minimum of three acres or parkland per 1,000 residents, consistent with Quimby Act requirements. This impact would be less than significant.	No mitigation would be required.	n/a
Cumulative. The General Plan and LCP Update would result in less than significant impacts to fire, police, school, public parks and recreation, and other public services and facilities. Therefore, the General Plan and LCP Update would result in less than significant cumulative impacts to these resources.	No mitigation would be required.	n/a
Transportation and Traffic		
T-3. The General Plan and LCP Update is a programmatic guide to transportation in Morro Bay and does not include project-level design features. Future roadway improvements, site access, and other roadway design features would be designed and reviewed in accordance with all applicable federal, State, and City standards. This impact would be less than significant.	As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures. Compliance with applicable regulations, as well as the identified goals and policies regarding infrastructure safety, would ensure that potential impacts associated with transportation hazards or incompatible uses would remain less than significant.	n/a
T-4. Due to the programmatic nature of the General Plan and LCP Update and the policies to create an integrated, multi-modal transportation system the General Plan and LCP Update would not result in inadequate emergency access. This impact would be less than significant.	As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures. Compliance with applicable State and City requirements, as well as the identified goals and policies to minimize impacts related to emergency access, would ensure that potential impacts related to emergency response would remain less than significant.	n/a

Impact	Mitigation Measure (s)	Residual Impact
Utilities		
U-1. Development facilitated by the General Plan and LCP Update would increase the demand for water supply. However, the City of Morro Bay projects that city water supply is sufficient to meet the projected water demand under buildout associated with the General plan And LCP Update. This impact would be less than significant	Mitigation measures are not required.	n/a
U-2. Development facilitated by the General Plan and LCP Update would increase demand for wastewater collection and treatment, and the Morro Bay-Cayucos Wastewater Treatment Plant would not have treatment capacity to meet this demand. However, the city is constructing a new Water Reclamation Facility, which is designed to meet existing needs and future demand. Development of the new Water Reclamation Facility, and implementation of the goals and policies of the General Plan and LCP Update would ensure sufficient wastewater treatment capacity. This impact would be less than significant.	Mitigation measures are not required.	n/a
U-3. Development facilitated by the General Plan and LCP Update would increase solid waste sent to area landfills. However, Cold Canyon Landfill would have capacity to serve the development envisioned in the General Plan and LCP Update. Goals and policies in General Plan and LCP Update would increase the amount of waste that is diverted from the landfill and encourage reuse and recycling. This impact would be less than significant.	Mitigation measures are not required.	n/a
Cumulative. Cumulative impacts to utilities and service systems as a result of General Plan and LCP Update implementation would be less than significant.	Mitigation measures are not required.	n/a

Impact	Mitigation Measure (s)	Residual Impact
Energy		
E-1. The General Plan and LCP Update is based on a land-use strategy that would promote greater energy efficiency in community and municipal operations. General Plan and LCP Update policies and implementation programs would ensure that development under the General Plan and LCP Update would comply with existing energy efficiency regulations. Wasteful, inefficient, or unnecessary consumption of energy would not occur and this impact would be less than significant.	No mitigation is required.	n/a
E-2. The General Plan and LCP Update would not conflict with energy efficiency goals contained in the City of Morro Bay Climate Action Plan. Construction and operation of projects facilitated by the General Plan and LCP Update would comply with relevant provisions of the State's CALGreen Program and Title 24 of the California Energy Code. This impact would be less than significant.	No mitigation is required.	n/a
Cumulative. The General Plan and LCP Update would not be expected to contribute substantially to a cumulative increase in energy demand, result in wasteful, inefficient, or unnecessary consumption of energy, or result in the need for construction of new major facilities or substantial alteration of existing facilities to meet projected energy demands and cumulative impacts would be less than significant.	No mitigation is required.	n/a

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1 Introduction

This Environmental Impact Report (EIR) examines the potential environmental effects of the proposed City of Morro Bay General Plan and Local Coastal Program (LCP) Update, also known as *Plan Morro Bay*. The General Plan and LCP Update is defined as the proposed project for purposes of this environmental review. The environmental review process for the proposed project, and legal basis for preparing an EIR, are described below.

1.1 Environmental Impact Report Background

This document is a Draft EIR that evaluates the potential environmental impacts associated with implementation of the City of Morro Bay General Plan and LCP Update. The General Plan and LCP Update establishes the community's vision for the future development of the city and provides comprehensive polices for the city relating to land use and community design, economic development, housing, mobility, parks and open space, sustainability, quality of life, resources, services and infrastructure, and health and safety.

This section of the EIR:

1. Provides an overview of the background behind the General Plan Update;
2. Describes the purpose of and legal authority of the EIR;
3. Summarizes the scope and content of the EIR;
4. Lists lead, responsible, and trustee agencies for the EIR;
5. Describes the intended uses of the EIR;
6. Provides a synopsis of the environmental review process required under CEQA.

The contents of other EIR sections are as follows:

- Section 2, Project Description, provides a detailed discussion of the proposed project.
- Section 3, Environmental Setting, describes the general environmental setting for the City of Morro Bay.
- Section 4, Environmental Impact Analysis, describes the potential environmental effects associated with development facilitated by the proposed project.
- Section 5, Other CEQA Required Sections, discusses issues such as growth inducement, energy and significant irreversible environmental effects.
- Section 6, Effects Found to be Less than Significant, describes the environmental effects of the project that were found to be less than significant during the initial scoping and notice of preparation process for the project.
- Section 7, Alternatives, discusses alternatives to the proposed project, including the CEQA-required "no project" alternative.
- Section 8, References and Report Preparers, lists informational sources for the EIR and persons involved in the preparation of the document.

1.2 Overview of the General Plan and LCP Update

State law (Government Code Section 65300) requires that each city and county adopt a comprehensive general plan. The California Coastal Act requires that the LCP be reviewed at least once every five years after certification to determine if the LCP is being effectively implemented in conformity with the policies of the Coastal Act. The LCP consists of the City's LUP, Local Implementation Plan (LIP), portions of the Zoning Code, land use and zoning maps, and implementing actions. As a package, these documents implement the Coastal Act at the local level in Morro Bay.

The General Plan and LCP Update is a comprehensive update of the City's 1988 General Plan and 1984 LCP that requires review and recommendation for adoption by the City's Planning Commission, and the discretionary approval by the City Council. The General Plan and LCP Update presents the community's vision for Morro Bay through 2040 and establishes overarching City policies and priorities that describe how the community intends to use and manage its physical, social, and economic resources.

As described in Section 2.1 of Section 2.0, *Project Description*, State law requires that a General Plan contain the following mandatory subject areas, or "elements," including Land Use, Circulation, Housing, Open Space, Conservation, Noise, Safety, and Environmental Justice. State law also allows for optional elements that can be organized or combined at the City's discretion. The General Plan and LCP Update is divided into the following seven sections and elements: 1) Introduction; 2) Vision; 3) Blueprint including six General Plan elements; 4) Greenprint including four general plan elements; 5) Implementation; 6) Glossary and Acronyms; and 7) Appendices. The six General Plan elements in the Blueprint include: Land Use, Community Design, Economic Development, Circulation, Noise, and Housing. The four General Plan elements in the Greenprint include: Conservation, Open Space, Public Safety, and Environmental Justice. Specific requirements for each Coastal Act topic are identified within each element. As shown in Tables 2-1 and 2-2 in Section 2.0, *Project Description*, the ten General Plan sections and elements cover all of the topics that are required to be included in a General Plan and an LCP under State law.

Morro Bay adopted its current (6th cycle) Housing Element in August 2020, covering the period from 2020-2028. The 6th cycle Housing Element was certified by the California Department of Housing and Community Development (HCD) in September 2020. The Housing Element serves as a tool to identify and provide for the housing needs of the community and identifies recent demographic and employment trends that may affect existing and future housing demand and supply. The Housing Element addresses the City's ability to meet the regional housing needs as determined by the State of California.

The General Plan and LCP Update is intended to function as a policy document to guide land use decisions within the planning area through 2040. The General Plan and LCP Update was developed through an extensive public outreach and involvement process and following careful analysis by an advisory committee, commissions, City staff, elected officials, and the community. Each element of the plan addresses different aspects of the community and identifies measurable actions to guide residents, decision-makers, businesses, and City staff toward achieving the vision. Goals established within the General Plan and LCP Update are intended to help the community enhance and maintain its identity as a seaside community that values its charming, artistic town character, working waterfront, and healthy environment and lifestyle, while guiding the city toward a more sustainable future. Due to its location on the coast, Morro Bay is vulnerable to climate change, such as sea level rise and coastal flooding, drought, and related water supply deficiencies. The General Plan and LCP

Update identifies both areas that are vulnerable to hazards and impacts of climate change, as well as resiliency and adaptation strategies to help Morro Bay withstand future climate change impacts. The General Plan and LCP Update establishes overarching City policies and priorities that describe how the community intends to use and manage its physical, social, and economic resources.

1.3 Purpose and Legal Authority

This EIR has been prepared in accordance with CEQA and the *CEQA Guidelines*. In accordance with Section 15121 (a) of the *CEQA Guidelines* (California Code of Regulations, Title 14, Division 6, Chapter 3), the purpose of an EIR is to:

> Inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.

This EIR fulfills the requirements for a Program EIR. Although the legally required contents of a Program EIR are the same as those of a Project EIR, Program EIRs are by necessity more conceptual and may contain a more general discussion of impacts, alternatives, and mitigation measures than a Project EIR. As provided in Section 15168 of the *CEQA Guidelines*, a Program EIR may be prepared on a series of actions that may be characterized as one large project. Use of a Program EIR provides the City of Morro Bay (as Lead Agency) with the opportunity to consider broad policy alternatives and program-wide mitigation measures and provides the City with greater flexibility to address environmental issues and/or cumulative impacts on a comprehensive basis. Agencies generally prepare Program EIRs for programs or a series of related actions that are linked geographically, are logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program, or are individual activities carried out under the same authority and having generally similar environmental effects that can be mitigated in similar ways. By its nature, a Program EIR considers the broad effects associated with implementing a program (such as a General Plan or Specific Plan) and does not, and is not intended to, examine the specific environmental effects associated with specific projects that may be accommodated by the provisions of General or Specific Plans.

Once a Program EIR has been prepared, subsequent activities within the program must be evaluated to determine what, if any, additional CEQA documentation needs to be prepared. If the Program EIR addresses the program's effects as specifically and comprehensively as possible, many subsequent activities could be found to be within the Program EIR scope and additional environmental documentation may not be required (*CEQA Guidelines* Section 15168[c]). When a Lead agency relies on a Program EIR for a subsequent activity, it must incorporate applicable mitigation measures and alternatives developed in the Program EIR into the subsequent activities (*CEQA Guidelines* Section 15168(c)(3)). If a subsequent activity would have effects not contemplated or not within the scope of the Program EIR, the Lead Agency must prepare a new Initial Study leading to a Negative Declaration, Mitigated Negative Declaration, or a project level EIR. In this case, the Program EIR still serves a valuable purpose as the first-tier environmental analysis. The *CEQA Guidelines* (Section 15168[b]) encourage the use of Program EIRs, citing five advantages:

1. Provision of a more exhaustive consideration of impacts and alternatives than would be practical in an individual EIR.
2. Focus on cumulative impacts that might be slighted in a case-by-case analysis.
3. Avoidance of continual reconsideration of recurring policy issues.

4. Consideration of broad policy alternatives and programmatic mitigation measures at an early stage when the agency has greater flexibility to deal with them.
5. Reduction of paperwork by encouraging the reuse of data (through tiering).

As a wide-ranging environmental document, the Program EIR uses expansive thresholds as compared to the project-level thresholds that might be used for an EIR on a specific development project. It should not be assumed that impacts determined not to be significant at a program level would not be significant at a project level. In other words, determination that implementation of the proposed project as a program would not have a significant environmental effect does not necessarily mean that an individual project would not have significant effects based on project-level CEQA thresholds, even if the project is consistent with the General Plan and LCP Update.

This EIR has been prepared to analyze potentially significant environmental impacts associated with future development resulting from implementation of the General Plan and LCP Update, and also addresses appropriate and feasible mitigation measures or project alternatives that would minimize or eliminate these impacts. Additionally, this EIR will provide the primary source of environmental information for the City of Morro Bay to use when considering the proposed project.

This EIR is intended to provide decision-makers and the public with information that enables intelligent consideration of the environmental consequences of the proposed project. This EIR identifies significant or potentially significant environmental effects, as well as ways in which those impacts can be reduced to less-than-significant levels, whether through the incorporation of mitigation measures or through the implementation of specific alternatives to the proposed project. In a practical sense, this document functions as a tool for fact-finding, allowing concerned citizens and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure.

1.4 Scope and Content

In accordance with the *CEQA Guidelines*, a Notice of Preparation (NOP) of a Draft EIR was circulated to potentially interested parties from November 8, 2017 to December 7, 2017. The NOP, included in Appendix A, indicated that all of the following issues listed in the CEQA Checklist Appendix G would be discussed in the EIR. These include:

- Aesthetics, Light, and Glare
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Population and Housing
- Public Services
- Transportation
- Utilities and Service Systems
- Tribal Cultural Resources
- Energy Conservation and Other Required CEQA Topics

This EIR evaluates potential impacts in each of these areas.

The focus of this EIR is to:

- Provide information about the General Plan and LCP Update for review and consideration by the City Council and the California Coastal Commission in their selection of the proposed General

Plan and LCP Update, an alternative to the proposed General Plan and LCP Update, or a combination of various elements from the proposed General Plan and LCP Update and its alternatives, for approval.

- Review and evaluate the potentially significant environmental impacts that could occur as a result of the growth and development envisioned in the proposed General Plan and LCP Update.
- Identify feasible mitigation measures that may be incorporated into the proposed General Plan and LCP Update in order to reduce or eliminate potentially significant effects.
- Disclose any potential growth-inducing and/or cumulative impacts associated with the proposed General Plan and LCP Update.
- Examine a reasonable range of alternative growth scenarios (such as "no growth"/growth according to the existing General Plan, reduced growth, or growth in alternative locations) that could feasibly attain the basic objectives of the proposed General Plan and LCP Update, while eliminating and/or reducing some or all of its potentially significant adverse environmental effects.

The City received seven responses to the NOP including three responses from State, local and non-profit agencies and four responses from public commenters. The responses, included in Appendix A, are addressed, as appropriate, in the analysis contained in the various subsections of Section 4.0, *Environmental Impact Analysis*. The City also held a public scoping meeting for the EIR on November 21, 2017 in the Facility Room of the Veteran's Memorial Building, located at 209 Surf Street in Morro Bay. Table 1-1 summarizes the comments received, by topic, in the comment letters and at the scoping meeting.

Table 1-1 NOP Comments and EIR Response

Commenter	Comment/Request	Where Addressed in the EIR
Agency Comments		
Cayucos Sanitary District	Requests that the City consider detaching a portion of APN 073-075-016, north of Toro Creek. No specific comments about the environmental analysis.	N/A
California Department of Transportation (Caltrans)	Notes that Caltrans will review the Draft Plan, specifically the Land Use and Circulation elements, re: key interchanges with SR 1 and SR 41.	Section 4.12, *Transportation*
The Trust for Public Lands	Requests that EIR include a project alternative that involves conservation of the approximately 2,600 acres of land owned by Chevron, which separates Cayucos and Morro Bay and runs along Toro Creek Road.	Section 7, *Alternatives*
Public Comments		
Lynda Merrill, Friends of Wildlife	-Preserve open space -Create pedestrian friendly roadways -Keep Morro Bay a small town -Protect the surrounding City and State parks -Resist major changes	Section 4.3, *Biological Resources*, Section 6.0, *Effects Found to be Less than Significant*
Rigmor	-Asked the definition of SOI. -Asked what the City's plan is for the hatched area on the proposed land use map.	Section 2, *Project Description*
Bill Martony	-Asked whether the intent is for agricultural land in the SOI to remain agricultural. -Asked whether the identified ESHA in the Bay is	Section 2, *Project Description*, Section 4.3, *Biological Resources*, Section 6.0, *Effects Found to be*

Commenter	Comment/Request	Where Addressed in the EIR
	proposed to be removed from ESHA. If so, what is the purpose or reasoning of that removal? -Stated that the maps showing Special Area B (20 lots) show the incorrect zoning, and that the updated Zoning Code should correct this. -Asked if the property at the Tri-W property east of the Morro Bay Blvd off-ramp would be changed from commercial to residential.	*Less than Significant*
Betty Winholtz	-Asked whether biological resources and agricultural resources would be addressed in the EIR. -Asked whether the EIR will evaluate the required No Project Alternative. -Asked where 900 new homes would go. -Stated that agricultural land shouldn't be included in the planning area if the plan is not to develop it. -Asked that if agricultural land would be removed from SOI, what would be the percentage of the city in each land use category.	Section 2, *Project Description*, Section 4.3, *Biological Resources*, Section 6.0, *Effects Found to be Less than Significant*, Section 7, *Alternatives*

1.5 Lead, Responsible, and Trustee Agencies

The City of Morro Bay is the lead agency under CEQA for this EIR because it has primary discretionary authority to determine whether or how to approve the proposed General Plan and LCP Update.

Section 15381 of the *CEQA Guidelines* defines responsible agencies as other public agencies that are responsible for carrying out/implementing a specific component of a proposed project or for approving a project (such as an annexation) that implements the goals and policies of a General Plan. The California Coastal Commission would be a responsible agency for certification of the General Plan and LCP Update, Zoning Code Update, and Coastal Implementation Plan included in the project.

Although not responsible agencies under CEQA, several other agencies have review authority over aspects of the proposed project or approval authority over projects that could potentially be implemented in accordance with various objectives and policies included in the General Plan and LCP Update. These agencies and their roles are listed below.

- The State Geologist is responsible for the review of the City's program for minimizing exposure to geologic hazards and for regulating surface mining activities.
- The California Department of Transportation (Caltrans) has responsibility for approving future improvements to the state highway system, including State Route 1 (SR 1) and State Route 41 (SR 41) West.
- The California Department of Fish and Wildlife (CDFW) has responsibility for issuing take permits and streambed alteration agreements for any projects with the potential to affect plant or animal species listed by the State of California as rare, threatened, or endangered or that would disturb waters of the State.

Trustee agencies have jurisdiction over certain resources held in trust for the people of California but do not have a legal authority over approving or carrying out the project. *CEQA Guidelines* Section 15386 designates four agencies as trustee agencies:

1. CDFW with regard to the fish and wildlife of the state, to designated rare or endangered native plants, and to game refuges, ecological reserves, and other areas administered by the department;
2. The State Lands Commission with regard to state owned "sovereign" lands such as the beds of navigable waters and state school lands;
3. The California Department of Parks and Recreation, with regard to units of the State park System; and
4. The University of California, with regard to sites within the Natural Land and Water Reserves System.

1.6 Intended Uses of the EIR

This EIR is as an informational document for use in the City's review and consideration of the proposed General Plan and LCP Update. This document is a Program EIR. *CEQA Guidelines* Section 15168(a) states that:

> A Program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) as logical parts in a chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans, or other general criteria, to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

As a programmatic document, this EIR presents and discloses a region-wide assessment of the environmental impacts of the General Plan and LCP Update. The information and analysis in this EIR will be used by the Morro Bay Planning Commission and City Council, trustee agencies, and the general public.

The General Plan and LCP Update will guide subsequent actions taken by the City in its review of new development projects and the establishment of new and/or revised citywide or area-specific programs. This program EIR serves as a first-tier environmental document under CEQA, supporting second-tier environmental documents for projects with detailed designs that have been developed for implementation within the city. Analysis of site-specific impacts of individual projects is not the intended use of a Program EIR. Many specific projects are not currently defined to the level that would allow for such an analysis at this time. Individual and specific environmental analysis of each project will be undertaken as necessary in the future by the City prior to each project being considered for approval. Therefore, the City, acting as the Lead Agency, would be able to prepare subsequent environmental documents that incorporate by reference the appropriate information from this Program EIR regarding secondary effects, cumulative impacts, broad alternatives, and other relevant factors. If the City finds that implementation of a later activity would have no new effects and that no new mitigation measures would be required, that activity would require no additional CEQA review. Where subsequent environmental review is required, such review would focus on significant effects specific to the project, or its site that have not been considered in this Program EIR.

The LCP forms the legal standard of review for issuance of Coastal Development Permits (CDP) within the city's coastal zone.

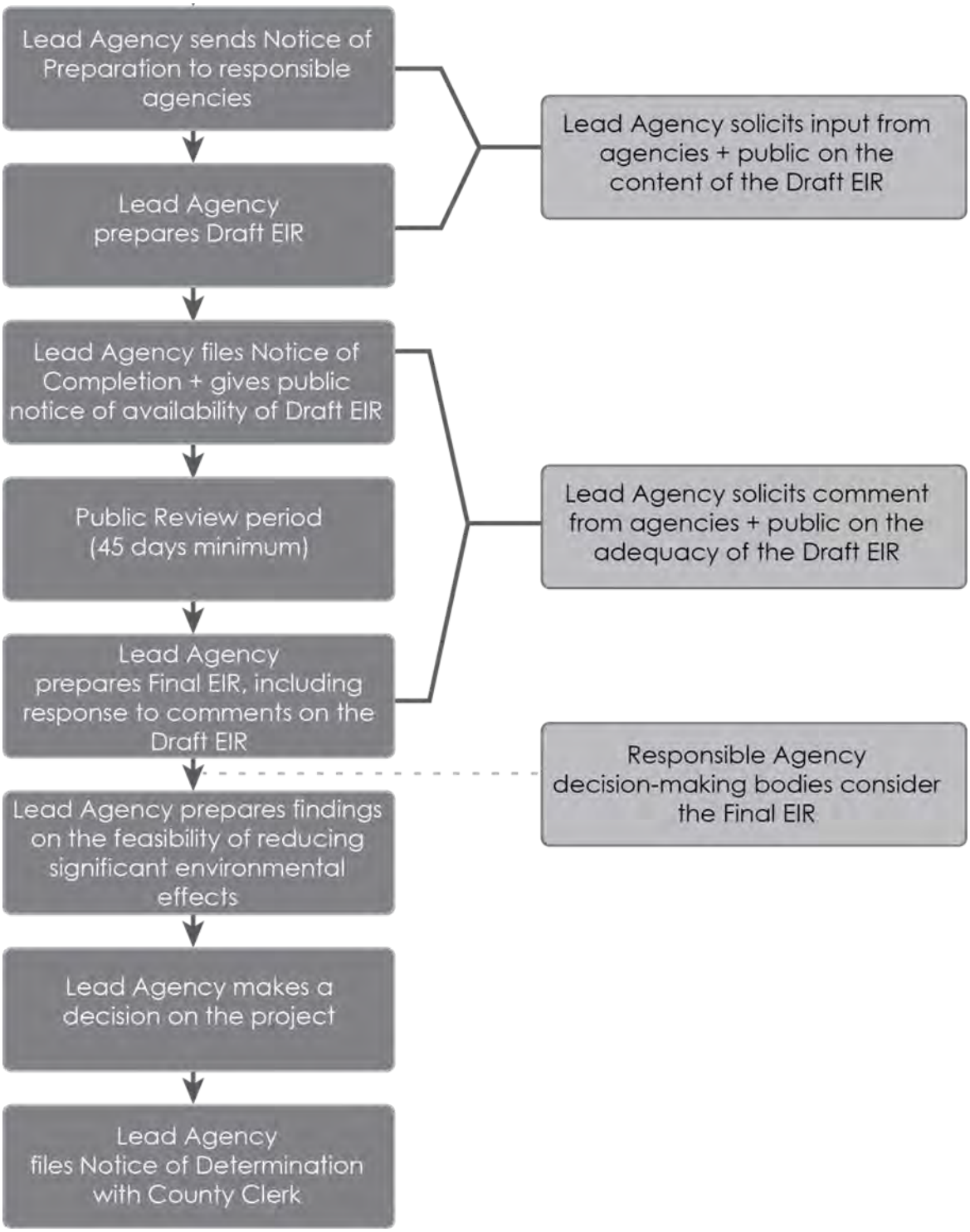
1.7 Environmental Review Process

The environmental impact review process required under CEQA is summarized below. The steps appear in sequential order.

1. **Notice of Preparation (NOP) Distributed.** Immediately after deciding that an EIR is required, the lead agency must file a NOP soliciting input on the EIR scope to "responsible," "trustee," and involved federal agencies; to the State Clearinghouse, if one or more state agencies is a responsible or trustee agency; and to parties previously requesting notice in writing. The NOP must be posted in the County Clerk's office for 30 days. A scoping meeting to solicit public input on the issues to be assessed in the EIR is not required but may be conducted by the lead agency. The NOP public comment period for the General Plan and LCP Update EIR was from November 8, 2017 to December 7, 2017 and a scoping meeting was held on November 21, 2017. A total of seven public comments were received in response to the NOP and scoping process (refer to Table 1-1).
2. **Draft EIR Prepared.** The Draft EIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) significant impacts (direct, indirect, cumulative, growth inducing and unavoidable impacts); f) alternatives; g) mitigation measures; and h) irreversible changes.
3. **Public Notice and Review.** A lead agency must prepare a Public Notice of Availability of an EIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092) and sent to anyone requesting it. Additionally, public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the Draft EIR from responsible and trustee agencies, and adjacent cities and counties. The minimum public review period for a Draft EIR is 30 days. When a Draft EIR is sent to the State Clearinghouse for review, the public review period must be 45 days, unless a shorter period is approved by the Clearinghouse (Public Resources Code 21091). Distribution of the Draft EIR may be required through the State Clearinghouse.
4. **Notice of Completion.** A lead agency must file a Notice of Completion with the State Clearinghouse as soon as it completes a Draft EIR.
5. **Final EIR.** A Final EIR must include: a) any revisions to the Draft EIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.
6. **Certification of Final EIR.** The lead agency shall certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision making body reviewed and considered the information in the Final EIR prior to approving a project.
7. **Lead Agency Project Decision.** A lead agency may: a) disapprove a project because of its significant environmental effects; b) require changes to a project to reduce or avoid significant environmental effects; or c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted.

8. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible. If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.
9. **Mitigation Monitoring Reporting Program.** When an agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.
10. **Notice of Determination (NOD).** An agency must file a Notice of Determination after deciding to approve a project for which an EIR is prepared. A local agency must file the Notice with the County Clerk. The Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30 day statute of limitations on CEQA challenges.

Figure 1 Environmental Review Process



2 Project Description

The project analyzed in this EIR is the proposed City of Morro Bay General Plan and Local Coastal Program (LCP) Update, also known as *Plan Morro Bay*. This section of the EIR describes the key characteristics of the General Plan and LCP Update, including the project proponent/lead agency, the geographic extent of the plan, project objectives, required approvals and types and extent of development forecasted under the General Plan and LCP Update.

2.1 Purpose of the General Plan and LCP Update

The General Plan and LCP Update is a comprehensive update of the City's 1988 General Plan and 1984 LCP and presents the community's vision for Morro Bay through 2040. The General Plan and LCP Update was developed through an extensive public outreach and involvement process, including careful analysis by an advisory committee, commissions, City staff, elected officials, and the community. Each element of the plan addresses different aspects of the community and identifies measurable actions to guide residents, decision-makers, businesses, and City staff toward achieving the vision. Goals established within the General Plan and LCP Update are intended to help the community enhance and maintain its identity as a seaside community that values its charming, artistic town character, working waterfront, and healthy environment and lifestyle, while guiding the city toward a more sustainable future. The General Plan and LCP Update establishes overarching City policies and priorities that describe how the community intends to use and manage its physical, social, and economic resources.

The LCP consists of the City's Land Use Plan (LUP), Local Implementation Plan (LIP), portions of the Zoning Code, land use and zoning maps, and implementing actions. As a package, these components implement the Coastal Act at the local level in Morro Bay. The adopted and certified LCP forms the legal standard of review for issuance of Coastal Development Permits (CDP) within the city's coastal zone and is legally binding on the City. The LCP may be amended to stay up to date with State laws and to continue to reflect the vision of the community.

The California Governor's Office of Planning and Research recognizes the relationship between General Plans and LCPs for coastal cities and recommends that both requirements be addressed by integrating the General Plan and the LCP. An integrated plan allows the community to apply the vision and requirements for both documents in a comprehensive manner, facilitating a unified and efficient approach to complying with both California general plan law and the California Coastal Act. Approximately 13.5 acres of the city are located outside of the coastal zone, with the remainder and majority of the city located in the coastal zone. Therefore, the City has found it appropriate to follow OPR's recommendation and integrate the updated General Plan and LCP.

State law (Government Code Sections 65300 through 65303.4) sets forth the requirement for each municipality to adopt and periodically update its General Plan, and sets the requirement that a General Plan contain the following mandatory subject areas, or "elements", including Land Use, Circulation, Housing, Open Space, Conservation, Noise, Safety, and Environmental Justice. California adopted Senate Bill 1000 on September 24, 2016 requiring cities to develop an Environmental Justice element, or related environmental justice goals and policies to reduce the unique or compounded health risks in "disadvantaged communities." Cities are required to incorporate environmental justice goals and policies into their general plan when they update two or more

general plan elements on or after January 1, 2018. State law also allows for optional elements that can be organized or combined at the City's discretion. The General Plan and LCP Update includes the required subjects/elements as well as two additional elements, Community Design and Economic Development, as detailed in Section 2.4.2, General Plan and LCP Update Organization. The environmental justice content required by SB 1000 is included in the Environmental Justice Element of the General Plan and LCP Update.

2.2 Project Proponent/Lead Agency

The City of Morro Bay is the project proponent and the lead agency for the proposed General Plan and LCP Update. The City's Community Development Department, located at 955 Shasta Avenue in the City of Morro Bay, prepared this EIR with the assistance of Rincon Consultants, Inc.

2.3 Project Location

2.3.1 Geographic Location

The City of Morro Bay is located on the Central Coast of California, midway between San Francisco and Los Angeles. The city is surrounded by a buffer of undeveloped land on the north, east, and south and by the Pacific Ocean on the west. The city's local neighbors are the City of San Luis Obispo 13 miles to the southeast, the community of Cayucos to the north, and the community of Los Osos to the south. The planning area for Morro Bay includes all area within the city boundaries (approximately 3,137 acres), as well as approximately 6,137 acres beyond the city limits. A portion of the planning area beyond the city limits, approximately 100 acres consisting of part of the estuary and a small area on the northern beachfront, is in the city's existing Sphere of Influence (SOI). Another 1,077 acres of the planning area beyond the city limits is identified as a future extension of Morro Bay's SOI. Both the current and potential future SOI areas are under County of San Luis Obispo jurisdiction. Figure 2-1 depicts a regional map of the city's relationship to nearby cities, communities, and the State highway system. Figure 2-2 shows the planning area for Morro Bay.

2.3.2 Access and Transportation Network

Regional access to the Morro Bay area is provided by State Route (SR 1), the primary regional motor-vehicle facility that follows the Pacific coastline from Los Angeles to near the Oregon border, as well as SR 41 West, which extends from the city to California's Central Valley. The segment of SR 1 that runs through Morro Bay is a four-lane divided highway connecting Morro Bay with nearby cities such as San Luis Obispo and communities such as Cayucos.

Within the city limits, motor vehicle traffic circulation is provided for by the city's roadway network. Major elements of the roadway network include SR 1, Main Street, Morro Bay Boulevard, and South Bay Boulevard. Morro Bay's bicycle route network is comprised of approximately 10 miles of bicycle routes, including 3.3 miles of off-street Class I bikeways and 7.1 miles of Class II bike lanes. Pedestrian facilities consist of sidewalks, Class I paths, and crosswalks. Sidewalks are provided along the Embarcadero and along most streets in the Downtown area. Most single-family residential areas in the city lack sidewalks. Recreational hiking trails are provided in Morro Bay State Park and include the Black Hill hiking areas and walking paths along the estuary near the State Park marina.

Figure 2-1 Regional Location

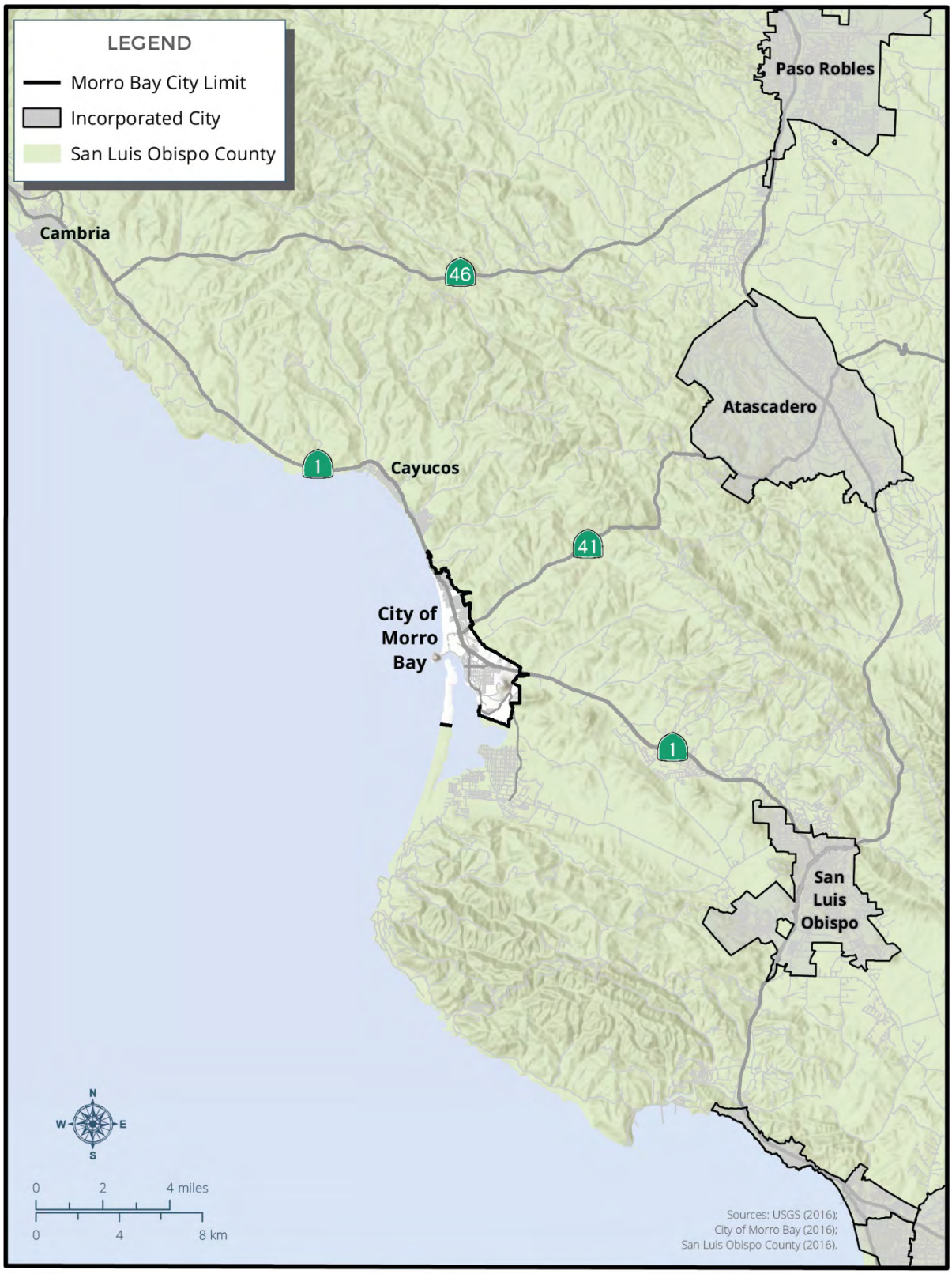
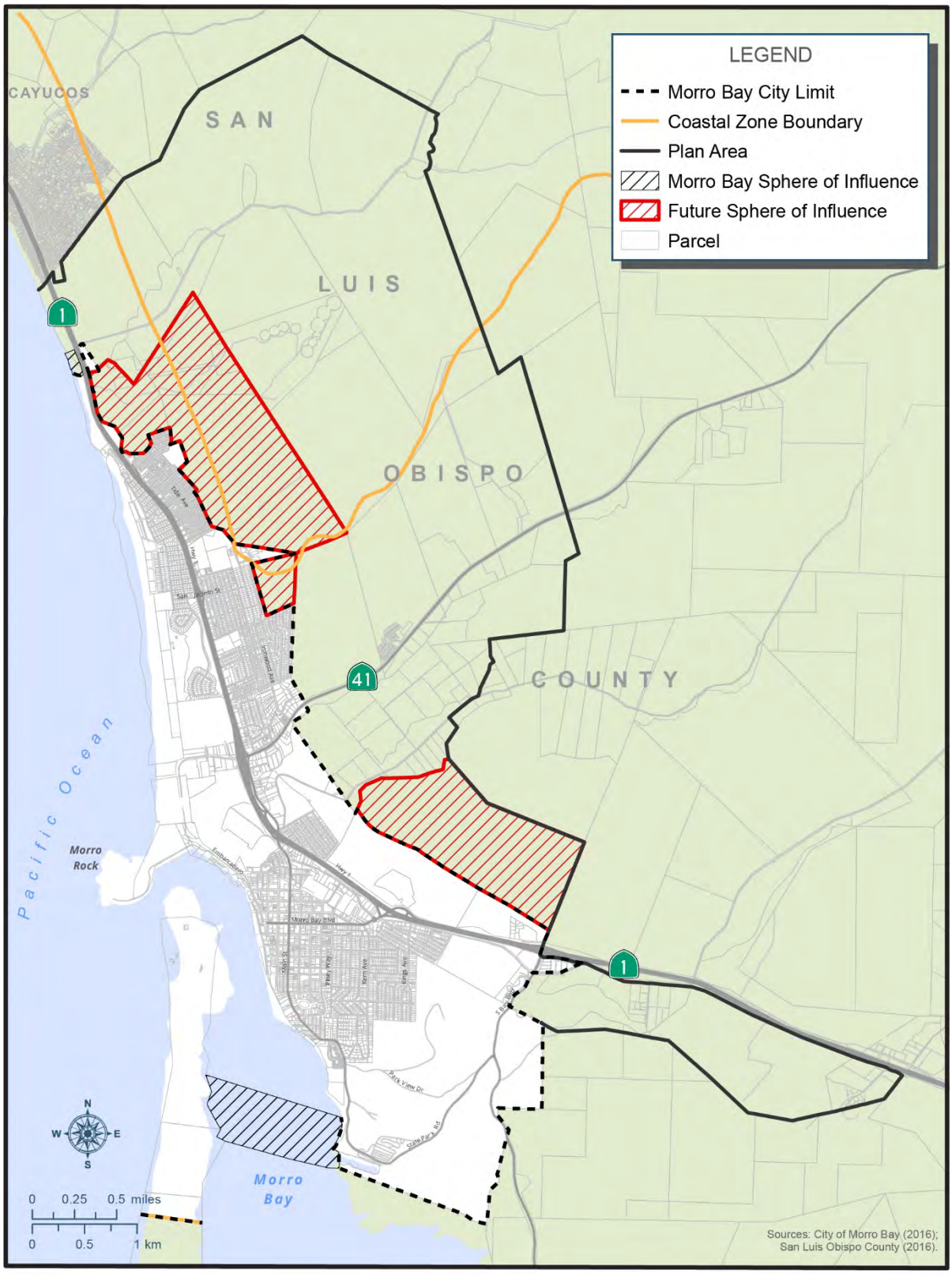


Figure 2-2 General Plan and LCP Update Planning Area



The San Luis Obispo Regional Transit Authority (RTA) is a joint powers authority providing fixed-route regional service from the Morro Bay Transit Center on Harbor Street. RTA Route 12 runs from Morro Bay to San Luis Obispo with stops in Los Osos, Cuesta College, and Cal Poly and RTA Route 15 runs from Morro Bay to San Simeon with stops in Cayucos and Cambria. The City operates Morro Bay Transit, which provides fixed-route local transit service to the city's major campgrounds, high school, senior center, grocery store, and neighborhoods throughout the city. The Morro Bay Trolley operates from Memorial Day weekend through the first weekend in October, with stops at the State Park campground, Downtown, the Embarcadero, Morro Rock, and Morro Strand campground.

2.4 Characteristics of the General Plan and LCP Update

The General Plan and LCP Update is a comprehensive update of the City's 1988 General Plan and 1984 LCP. The land use classifications included in the General Plan and LCP define the basic categories of land use allowed in the city and are the basis for the zoning districts established in the City Municipal Code, which contain more specific regulations and standards governing development on individual properties.

Under State law, a property's zoning is required to be consistent with its General Plan land use classification (Government Code §65860). Section 65860(c) of the Government Code requires that when a General Plan is amended in a way that makes the Zoning Code inconsistent with the General Plan, "the zoning ordinance shall be amended within a reasonable time so that it is consistent with the general plan as amended."

2.4.1 Objectives of the General Plan and LCP Update

The General Plan and LCP Update is intended to function as a policy document to guide land use decisions within the city planning area through the year 2040. The vision for the city over the next 20 to 30 years was developed with extensive community input. Based on this community input and in recognition of the state's planning priorities, a vision and values supporting the vision for the community were developed. The vision and values of the General Plan and LCP Update are contained in Chapter 2, Vision, and are summarized below.

2.4.1.1 Community Vision

The Community Vision is included in the General Plan as follows:

> In 2040, Morro Bay remains a small oceanfront town and thriving year-round destination, known for its natural beauty, creative people, outdoor recreation, working waterfront, and welcoming community spirit. It is a friendly, safe, resilient, and healthy place where people of all ages and economic levels live, work, play, and visit.
>
> The natural environment and wildlife are cherished and conserved and are essential elements that integrate with and define our urban landscape. Our healthy wetlands, iconic Morro Rock, and bustling harbor are complemented by expansive parks, connected bicycle lanes, safe streets, and pathways that are accessible to people of all ages and abilities.
>
> We have a deep appreciation for nature and honor our native, cultural, and maritime heritage. We maintain and support our working waterfront and carefully preserve our estuary,

watershed, natural shoreline, and surrounding open space. We adapt to changes in the climate, economy, and culture without compromising our small-town character.

Our vibrant economy is strengthened by sustainable resource practices, a responsive city government, and leading-edge technology that empowers local business owners and attracts new businesses and investors. We are a diverse, multigenerational community where head-of-household jobs, sustainable living wages, and affordable housing options serve as a foundation that allows people of all ages and income levels to thrive.

Modern, well-maintained public amenities and supportive community services nurture our residents, community organizations, and neighborhood groups. We actively participate in government decisions and take pride in volunteerism. We welcome personal expression and creativity, as reflected in our varied visitor attractions, bustling dining scene, vibrant arts culture, community events, public art, and outdoor activities. Our diverse housing, safe and eclectic neighborhoods, and reliable transit system are enhanced through suitable urban infill and mixed-use development that accommodates modest residential and commercial growth.

Mindful of our rich heritage, we take great pride in our community and work together toward a bright future.

2.4.1.2 Community Values

In order to realize the community's vision for Morro Bay, the City will focus on the following values identified in the General Plan and LCP Update:

- **Natural Environment.** Our estuary, shoreline, and open green spaces are sustainably conserved, and our parks and recreation spaces are healthy, resilient, and accessible to all.
- **Heritage & Identity.** We welcome visitors while maintaining our small-town character and honoring our maritime heritage.
- **Jobs & Housing.** A range of affordable housing options and living wage jobs provide for a high quality of life.
- **Economic Vitality.** Our diverse and sustainable economy supports both new and existing locally owned businesses, including community-supporting tourism.
- **Infrastructure & Amenities.** We have modern, resilient infrastructure and public amenities.
- **Mobility & Access.** Safe and accessible streets, trails, and multimodal transportation options conveniently connect people and places throughout town and to surrounding destinations.
- **Good Governance.** Our government is supportive, collaborative, equitable, and responsive to the needs of all segments of the population.
- **Resident Services.** We provide a range of public services that support a diverse and multigenerational community.

2.4.2 General Plan and LCP Update Organization

State law (Government Code Sections 65300-65303.4) requires a General Plan, a City policy document, to include subject matter for the following State-required elements or topics: Land Use, Circulation, Housing, Open Space, Conservation, Noise, Safety, and Environmental Justice. State law also allows for optional elements that can be organized or combined at the City's discretion. The Local Coastal Program must address priority issues for the California Coastal Commission including public access, recreation and visitor serving facilities, water quality protection, Environmentally

Sensitive Habitat Areas (ESHA) and other natural resources, agricultural resources, new development and cultural resources, scenic and visual resources, coastal hazards, shoreline erosion and protective devices, and energy and industrial development.

As shown in Table 2-1, the General Plan and LCP Update is divided into 15 sections and elements, which address the topics mandated by the State law and Coastal Commission, as well as additional topics of interest to the City. The 10 elements are grouped into a Blueprint and a Greenprint. The sections and elements of the General Plan and LCP Update are summarized as follows:

1. **Introduction**. Addresses the purpose and scope of the General Plan and Local Coastal Program; background on Morro Bay's history, current demographics, and economic conditions; planning context (other local and regional plans); the relationship of the General Plan and Local Coastal Program to other plans and documents, including the City's Municipal Code; and the geographic area and topics covered in the General Plan/Local Coastal Program.
2. **Vision**. The Community Vision section of the General Plan and LCP Update establishes a Vision & Values statement for the city. This statement sets forth a comprehensive vision for Morro Bay in the future and identifies the community's key priorities. This statement guides each element of the General Plan and LCP Update to achieve the goals of the community.
3. **Blueprint.** The Blueprint serves as a framework for development decisions in the city through 2040. This section will guide actions for residents, businesses, decision-makers, City staff members, and project developers in Morro Bay.
    a. **Land Use Element.** The Land Use Element represents the foundation of the Blueprint and the City's guide to the evolution of development patterns in Morro Bay. This element guides future development and designates appropriate locations for land uses in the city. Land Use Element goals and policies serve as a road map for the future physical development of the community by identifying the general location, distribution, and intensity for a range of residential, commercial, industrial, and institutional land uses in Morro Bay. Land Use Element goals and policies also address coastal-dependent and coastal-related uses.
    b. **Community Design Element.** The Community Design Element outlines a vision for the aesthetic development of the community and character of Morro Bay. This element establishes the City's long-term community design and development goals to maintain a unique city culture and identity with respect to community form, layout, and community character areas.
    c. **Economic Development Element.** The Economic Development Element includes goals and policies to maintain and improve job development and retention and to promote economic resiliency. This element addresses the economic implications of future development relative to housing affordability, market surplus and leakage, and demographic trends in Morro Bay through 2040.
    d. **Circulation Element.** The Circulation Element defines the local and regional transportation networks and describes how community members get around the city using streets, sidewalks, transit routes, and bicycle paths. The transportation network is a major determinant of development form and land use. Traffic patterns, congestion, access to transit, ease and safety of walking or bicycling, and other factors help to determine where people decide to live, work, or visit in Morro Bay. This element

facilitates the mobility of people and goods throughout Morro Bay using multiple travel modes to promote practices aligned with City goals.

e. **Noise Element.** The Noise Element addresses existing and future noise conditions in Morro Bay, identifies noise problems and their sources, describes how noise affects community safety, health, and comfort, and establishes policies and programs that limit excessive noise levels and improve noise/land use compatibility. Noise conflicts may affect the desirability of specific regions or neighborhoods within the community, which may interfere with the development goals for the city. Through established noise standards, community form will be preserved and maintained in accordance with City goals.

f. **Housing Element.** The Housing Element serves as a tool to identify and provide for the housing needs of the community. It identifies recent demographic and employment trends that may affect existing and future housing demand and supply. California law requires the Housing Element to establish policies and programs that will support the provision of an adequate housing supply for citizens of all income levels. The Housing Element is the only element that requires review by the State. The element addresses the City's ability to meet the regional housing needs as determined by the State of California. Morro Bay adopted its current (6th cycle) Housing Element in August 2020, covering the period from 2020-2028. The 6th cycle Housing Element was certified by the California Department of Housing and Community Development (HCD) in September 2020.

4. **Greenprint.** The Greenprint serves as a framework for how the City can use and manage its resources to benefit the community and guide it toward a more resilient and sustainable future. This section links open space, agricultural, and natural resource preservation with the development plans described in the Blueprint. The chapter is grounded in a shared vision from the community, boards and commissions, and City staff and officials for a sustainable community that sets policies and programs to achieve this shared vision. It is implemented by City ordinances, specific plans, programs, and ongoing activities.

   a. **Conservation Element.** The Conservation Element addresses the use and preservation of natural resources to improve the environmental quality of Morro Bay for years to come. Topics covered in this element include important biological communities, air quality, greenhouse gas emissions, water resources and conservation, energy resources, waste management, visual resources and viewsheds, and coastal resources. Conservation Element goals and policies promote a resilient, sustainable community offering a balance of open spaces, coastal access, and a quality built environment both along the coastline and inland.

   b. **Open Space Element.** The Open Space Element outlines a vision for facilitating coastal access and providing a range of community facilities, parks, and recreation opportunities. This element addresses the protection of natural habitat and wildlife by designating open space areas throughout the community. Open Space Element goals and policies include specific steps to protect and improve Morro Bay's coastal trails, parks, and facilities and to enhance and maintain open spaces in the coastal zone.

   c. **Public Safety Element.** The Public Safety Element minimizes community risks associated with natural and man-made hazards. This element identifies hazards that could be made more severe by the city's location on the coast and anticipated climate change impacts.

Public Safety Element goals and policies address natural hazards, coastal adaptation, and emergency response to protect residents, visitors, and wildlife from anticipated impacts.

d. **Environmental Justice Element.** The Environmental Justice Element serves as the State-required Environmental Justice Element and addresses the community's unique population's health and wellness needs, in addition to environmental equity. Morro Bay has a diverse, multigenerational demographic spread with potential to affect the city's future resiliency. Environmental Justice Element goals and policies assess the local quality of life and population vulnerabilities to help plan for an evolving community.

5. **Implementation.** Sets forth specific actions and tools for implementation of the General Plan and LCP Update, along with a detailed work program. Describes the process for maintaining and monitoring progress in implementing the General Plan and LCP Update.
6. **Glossary and Acronyms.** Provides a list of acronyms and definitions for key terms used in the General Plan and LCP Update.
7. **Appendices.** A series of background reports and technical appendices.

Table 2-2 shows the topics required by the California Coastal Act that must be addressed in the sections and elements of the General Plan and LCP Update.

Table 2-1 General Plan and LCP Update Sections/Elements and State Required General Plan Elements

Plan Morro Bay Sections/Elements	State Required Elements								
	Land Use	Open Space	Circulation	Conservation	Noise	Safety	Housing	Environmental Justice*	Not Required
Land Use	☒								
Community Design									☒
Economic Development									☒
Circulation			☒						
Noise					☒				
Environmental Justice								☒	
Housing							☒		
Conservation				☒					
Open Space		☒							
Public Safety						☒			
Implementation Actions	☒	☒	☒	☒	☒	☒	☒	☒	☒

* The SB 1000-required environmental justice content is included in the Environmental Justice Element.

Table 2-2 General Plan and LCP Update Sections/Elements and Coastal Act Required Topics

	Coastal Act Required Topics									
Plan Morro Bay Sections/Elements	Public Access	Recreation and Visitor Serving Facilities	Water Quality Protection	ESHA and Other Natural Resources	Agricultural Resources	New Development and Cultural Resources	Scenic and Visual Resources	Coastal Hazards	Shoreline Erosion and Protective Devices	Energy and Industrial Development
Land Use	☒	☒			☒					☒
Community Design										
Economic Development										
Circulation	☒									
Noise										
Environmental Justice										
Housing										
Conservation			☒	☒		☒	☒			☒
Open Space		☒								
Public Safety								☒	☒	

2.4.3 General Plan and LCP Update Goals

Based on the vision statement, guiding principles, identified major strategies and physical improvements, and input from the community, the General Plan and LCP Update includes goals in each chapter to address a specific need, concern, opportunity, or desire. Goals are broad in both purpose and aim but are designed specifically to establish positions or directions. The goals in each chapter are listed in Table 2-3.

Table 2-3 General Plan and LCP Update Goals

General Plan Chapter	Goals	
Land Use	**Goal LU-1**	The community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.
	Goal LU-2	Land use patterns improve community health and resiliency.
	Goal LU-3	Morro Bay grows in a manner that maintains community identity and well-being.
	Goal LU-4	Coastal-dependent uses are prioritized within appropriate locations in the coastal zone.
	Goal LU-5	Coastal priority uses are viable, protected, and contribute to the economy and character of Morro Bay.
	Goal LU-6	Visitors to Morro Bay have access to a variety of lower-cost lodging options to meet their needs.
	Goal LU-7	All residents and visitors have unimpeded and convenient public access to and along the coast.
	Goal LU-8	Morro Bay's downtown and waterfront areas are active and welcoming locations for shopping, recreation, public access, visitor-serving needs, and coastal services.
Community Design	**Goal CD-1**	The individual identity of each of Morro Bay's character areas is embraced and represented by new and renovated development.
	Goal CD-2	The community is designed to be resilient to future climate conditions, weather events, and economic and social change.
Economic Development	**Goal ED-1**	A strong, resilient local economy.
	Goal ED-2	Morro Bay is widely known as a destination location.
	Goal ED-3	Local businesses and employment options are high quality, diverse, and environmentally sustainable.
	Goal ED-4	Employment provides a range of head-of-household jobs that pay living wages and support living in Morro Bay.
Circulation	**Goal CIR-1**	Residents and visitors can easily move about the city in a variety of safe and active ways.
	Goal CIR-2	Morro Bay is a pleasant and safe place to walk and bike.
	Goal CIR-3	Traffic monitoring considers all methods of travel, with emphasis on active and sustainable transportation methods.
	Goal CIR-4	Morro Bay has convenient parking that enables access to the downtown and waterfront areas and the coast while enhancing the city's character.
Noise	**Goal NOI-1**	A healthy and safe noise environment for Morro Bay residents, businesses, and visitors.
	Goal NOI-2	Minimize transportation-related noise.
	Goal NOI-3	Noise from construction activities associated with maintenance vehicles, special events, and other nuisances is minimized in residential areas and near noise-sensitive land uses.

General Plan Chapter	Goals	
Environmental Justice	**Goal EJ-1**	Morro Bay residents enjoy a high quality of life that contributes to their mental, physical, and social well-being.
	Goal EJ-2	Morro Bay residents of all ages, cultures, and lifestyles enjoy a community that is inclusive, enjoyable, and meets all physical, emotional, and mental needs.
	Goal EJ-3	Residents and visitors in Morro Bay are healthy and have access to essential services.
	Goal EJ-4	Morro Bay recognizes and is prepared for increased health risks due to current and anticipated future climate change effects.
Conservation	**Goal C-1**	Sensitive habitats are protected from potential negative impacts of land use and development.
	Goal C-2	Cultural and historic resources are identified for protection and showcased as a vital part of Morro Bay history.
	Goal C-3	Air quality in Morro Bay continues to improve through local actions and interagency cooperation.
	Goal C-4	Greenhouse gas emissions in Morro Bay are reduced and consistent with state goals.
	Goal C-5	Morro Bay is a leader in energy innovation and sustainable usage.
	Goal C-6	Energy available to Morro Bay residences, businesses, and public buildings is renewable and sustainable.
	Goal C-7	Morro Bay water is safe, available, and used in an environmentally responsible manner.
	Goal C-8	Morro Bay is a zero waste community.
	Goal C-9	The aesthetic and visual natural resources in Morro Bay are protected to preserve the community's identity.
Open Space	**Goal OS-1**	The public has access to plentiful and well-maintained parks, beaches, and recreational activities throughout Morro Bay.
	Goal OS-2	The multigenerational community has access to a wide variety of recreational opportunities throughout Morro Bay.
	Goal OS-3	The City coordinates effectively with other public and private entities to support an active community with a diverse range of interconnected open spaces and recreation facilities to promote a healthy, engaged public.
	Goal OS-4	Coastal and marine habitat wildlife and resources are protected while maintaining the cultural identity of the habitat.
	Goal OS-5	Natural resources are preserved to balance the use of open space for outdoor recreation opportunities.
	Goal OS-6	Open spaces are preserved through adaptation strategies to mitigate the effects of sea level rise and promote community resiliency.
	Goal OS-7	Portions of the planning are outside the city limits are planned in a way that preserves their rural nature while providing essential services and infrastructure.
Public Safety	**Goal PS-1**	Damage from natural disasters is minimized and repaired quickly.
	Goal PS-2	Development is protected from natural disasters and hazards to the greatest extent possible.
	Goal PS-3	Morro Bay is prepared for and responsive to the effects of sea level rise and other coastal hazards in both the short and longer term future.
	Goal PS-4	Response to emergencies is quick, efficient, and effective.

General Plan Chapter	Goals	
Environmental Justice	**Goal EJ-1**	Morro Bay residents enjoy a high quality of life that contributes to their mental, physical, and social well-being.
	Goal EJ-2	Morro Bay residents of all ages, cultures, and lifestyles enjoy a community that is inclusive, enjoyable, and meets all physical, emotional, and mental needs.
	Goal EJ-3	Residents and visitors in Morro Bay are healthy and have access to essential services.
	Goal EJ-4	Morro Bay recognizes and is prepared for increased health risks due to current and anticipated future climate change effects.

Source: *Plan Morro Bay*, City of Morro Bay 2020.

2.4.4 General Plan Land Use Map

The General Plan Land Use Map establishes the general pattern of uses in the planning area. The maximum permitted land use densities and intensities are identified in the General Plan and LCP Update for these land uses. As the density and intensity standards for each land use designation are applied to future development projects and land use decisions, properties will gradually transition from one use to another, and land uses and intensities will gradually shift to align with the intent of the General Plan and LCP Update. Within the future SOI area identified on the Land Use Map, future uses may be developed subject to annexation to the City of Morro Bay in compliance with procedures identified by the San Luis Obispo County Local Agency Formation Commission (LAFCO). Figure 2-3 shows the existing, on-the-ground distribution of land use in Morro Bay. Figure 2-4 shows the proposed Land Use Map, which illustrates the distribution of the proposed land use designations in correlation to the street network and natural landscapes in the planning area. Table 2-4 provides a brief description of the General Plan land use designations.

Figure 2-3 Existing On-The-Ground Land Use

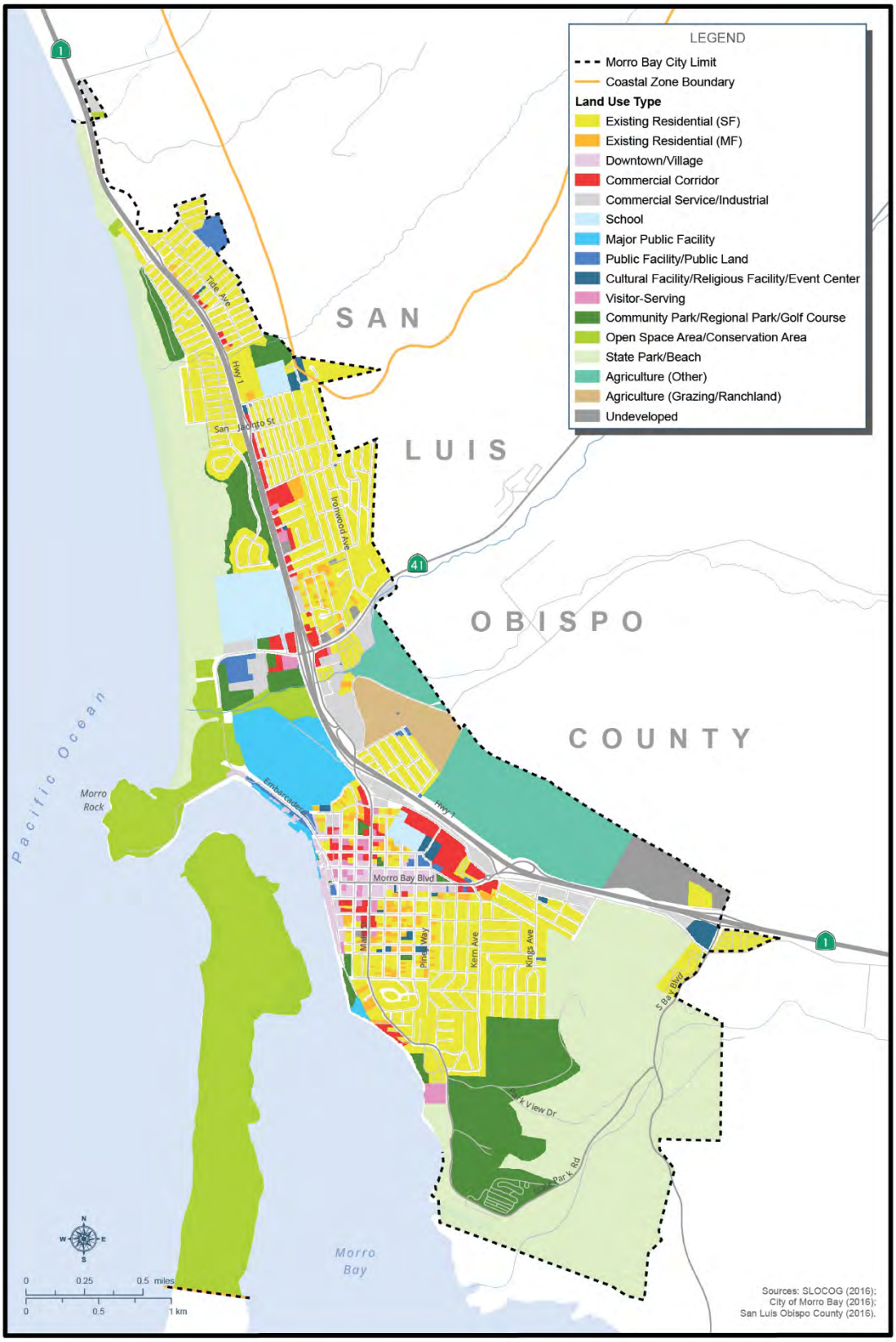


Figure 2-4 Proposed Land Use Map

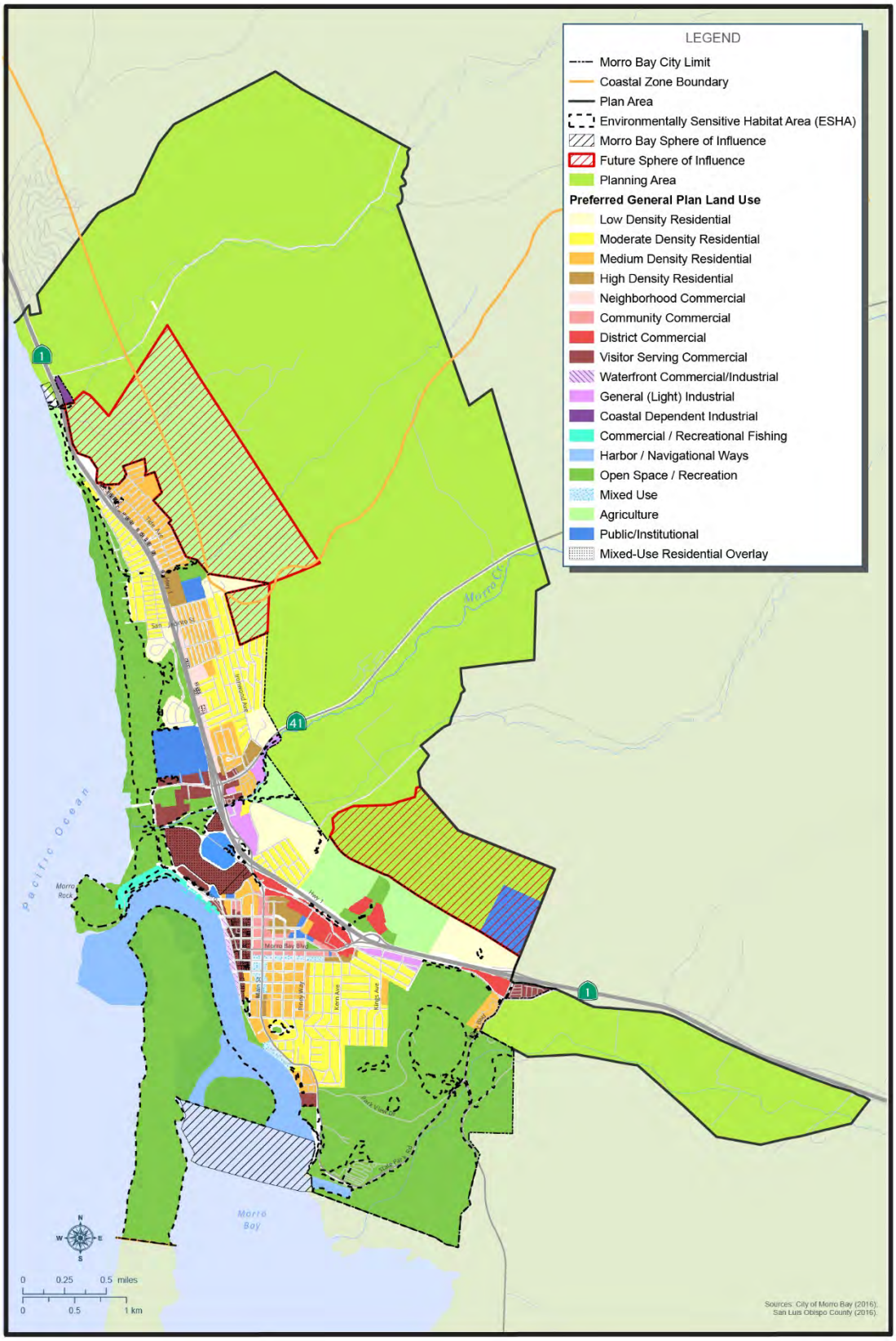


Table 2-4 Land Use Designations

Designation	Description	Density/Intensity
Low Density	Detached single-family homes and some group housing uses.	0-4.0 du/ac
Moderate Density	Detached or attached single-family homes and some group housing uses.	4.1-7.0 du/ac
Medium Density	Detached or attached single-family homes, townhomes, duplexes, apartments, condominiums, and some group housing uses.	7.1-15.0 du/ac
High Density	Multifamily housing, including apartments, townhomes, condominiums, and some group housing uses. Single-family homes are allowed where the sites' characteristics, such as size or topography, would preclude multi-family development.	15.1-27.0 du/ac
Community Commercial	Community-oriented uses including retail stores, restaurants, professional and medical offices, and personal services. Residential uses are allowed both above and behind commercial uses with discretionary approval.	1.25 FAR for nonresidential component 15.1-27.0 du/ac for residential component
District Commercial	Retail, commercial, and service uses that meet local and regional demand. This designation is intended for larger-scale development that is appropriate in an auto-oriented environment.	0.5 FAR
Neighborhood Commercial	Smaller-scale commercial uses that provide for the daily needs and services of nearby residents. Residential uses are allowed both above and behind commercial uses with discretionary approval.	1.0 FAR for nonresidential component 4.1-15.0 du/ac for residential component
Visitor-Serving Commercial	Visitor-oriented services and uses located at easily accessible locations and tourist destinations within the coastal zone. In general, ground-floor development should be reserved for retail shops, restaurants and bars, and visitor accommodations, with the upper floors reserved for additional visitor accommodations and offices.	1.25 FAR
Commercial/ Recreational Fishing	Implements Measure D, which protects the tidelands area between Beach Street and Target Rock. Development and use permits are limited to fishing activities only.	0.5 FAR
Waterfront Commercial/Industrial	A mixture of visitor-serving commercial uses and harbor-dependent land uses located in the coastal zone.	1.25 FAR
General (Light) Industrial	Light industry uses which are generally not compatible with residential or most commercial uses. Existing residential buildings are permitted and are considered conforming.	0.5 FAR
Coastal-Dependent Industrial	Uses within the coastal zone which must be located near the coast to function, and are thereby given priority pursuant to the California Coastal Act.	0.65 FAR
Mixed Use	Implemented by the zoning code, any combination of commercial uses; offices; attached single-family housing, multiple-family housing, and live-work units; institutional uses; cultural facilities; developments including an open space component; visitor-serving uses; and/or civic facilities. Mixing of these uses may occur in a vertical and/or horizontal orientation. Mixed-use development is required within the constraints of parcel size, context/adjacent uses, and access to transportation.	1.0 FAR for nonresidential component 15.1-27.0 du/ac for residential component
Public/Institutional	Facilities which serve the public, including government buildings and service facilities; or quasi-public facilities such as hospitals and cultural or civic resources.	0.5

Designation	Description	Density/Intensity
Harbor/Navigational Ways	Areas of the city covered by seawater and used for boating, fishing, and visitor-serving uses.	N/A
Open Space/Recreation	Areas of improved and unimproved park facilities, open space areas, natural resource areas, and outdoor recreation.	N/A
Agriculture	Land for cultivating crops and raising animals.	N/A
Overlays		
Mixed-Use Residential	For Visitor-Serving Commercial, the overlay allows residential uses in addition to the base allowed uses. For Neighborhood Commercial, the overlay allows residential on the whole lot.	Same as underlying base designation for nonresidential component When paired with Neighborhood Commercial, residential density is the same as for the base designation When paired with Visitor-Serving Commercial, 15.1-27.0 du/ac for residential component
Environmentally Sensitive Habitat Areas	Protected areas within the coastal zone which serve as habitat for rare or especially valuable plant or animal life that could be easily disturbed or degraded by human activity.	N/A

Source: *Plan Morro Bay*, City of Morro Bay 2018

2.4.5 Key Updates

The proposed General Plan and LCP Update includes the following key updates to the existing General Plan and LCP to achieve the community's vision for Morro Bay through 2040:

- Updated ESHA map and updated approach to identifying ESHA;
- Streamlined/greater organization of uses on the City's land use map, particularly in the downtown area;
- Addressing sea level rise and resiliency throughout;
- Encouraging mixed-use, particularly in the downtown area;
- Updates to comply with current State law;
- Inclusion of vehicle miles traveled (VMT) and level of service (LOS) for traffic analysis;
- Addressing planning area outside of city limits;
- Integration of separately managed City water plans into "OneWater Morro Bay Plan," a single cohesive document to address all water issues;
- Establishes character areas and calls for design guidelines for additional character areas of the city;
- Increased focus on requirements for lateral access along the water; and
- Specified citywide threshold for lower-cost, visitor-serving accommodations.

2.4.6 City Growth/General Plan Buildout

Table 2-5 identifies the development capacity associated with the planned distribution of land uses described in the Land Use Element and summarizes the resulting residential and nonresidential

levels of development that can be expected from implementation of land use policies established by the General Plan and LCP Update. As shown in Table 2-5, Morro Bay's population is estimated to be approximately 12,062 people in the year 2040. This represents an increase of 1,348 people (12.6 percent) from the estimated 2016 population as shown in Table 2-5. The General Plan and LCP Update does not specify a maximum population for Morro Bay. However, any growth in Morro Bay must be consistent with Measure F, a voter-approved growth management ordinance that limits the city to 12,200 residents. Measure F limits the amount of water for commercial and industrial building permits to no more than 130 percent of the residential allocation. Therefore, to exceed the current growth limit, Morro Bay must secure additional water resources and a majority of voters must elect to remove the limit.

Table 2-5 General Plan and LCP Update Maximum Development Capacity

Land Use Designation	Acres (Approximate)	Total Estimated Dwelling Units (2040)	Total Estimated Households	Population (2040)	Nonresidential Square Feet (2040)
Within city limits					
Residential	753.4	6,573	—	10,870	—
Commercial	307.6	565	—	934	8,819,081
Industrial	41.5	—	—	—	893,006
Waterfront Commercial/ Industrial	6.3	—	—	—	220,869
Mixed Use	17.6	141	—	233	607,984
Open Space & Agriculture	1,674.1	—	—	—	—
Public/Institutional	336.9	—	—	—	371,651
Outside of city, but in Future SOI and planning area					
Open Space & Agriculture	6,079.9	15	—	25	—
Public/Institutional	56.6	—	—	—	—
Total (2040)	**9,273.9***	**7,295**	**5,792**	**12,062**	**10,912,591****
Existing (2016) Totals	9,273.9*	6,414	5,063	10,714	2,613,654**
Change (2016-2040)	**—**	**881**	**729**	**1,348**	**8,298,937**

* Totals may not add up due to rounding
** Does not include square footage of campgrounds
Source: Plan Morro Bay, City of Morro Bay 2018

As shown in Table 2-5, full buildout of the General Plan and LCP Update would result in an estimated 881 new dwelling units in the city. The maximum possible number of residential units is determined by the maximum densities allowed for each land use designation and the amount of land area within that designation. However, this maximum number of units is unlikely to be reached because every residential parcel in Morro Bay would need to be developed to its maximum potential density, which is not anticipated for all parcels under actual buildout conditions due to site constraints and other factors. As with housing, job growth will be limited in part by the lack of undeveloped land in Morro Bay. 1.25 percent of the city is undeveloped, with the rest of the city occupied by development or open space. Morro Bay's current (2017) ratio of jobs to households is approximately 1.07.

2.5 Zoning Code and Coastal Implementation Plan Amendments

To maintain consistency with the General Plan and LCP Update, the project also includes a comprehensive Zoning Code Update which includes the Coastal Implementation Plan. Amendments included as part of the project include:

- Updating the allowed uses in all zones as necessary for consistency with the General Plan Land Use Designations.
- Establishing new zoning district(s) as necessary to implement the General Plan and LCP Update.
- Updating other development standards as necessary to implement the General Plan and LCP Update. This will include maximum height, setbacks, design standards and other standards.
- Updating administration and permitting to integrate coastal permit processes. Additional coastal-specific issues to be addressed include:
    - Parking and transportation demand management
    - Coastal access, beach use, and special events
    - Visitor-serving uses and tourism
    - Sea-level rise and coastal resilience
    - Stormwater management and water quality

The Zoning Code Update also addresses other issues, such as neighborhood compatibility and economic development, consistent with direction in the General Plan and LCP Update.

2.6 Required Discretionary Approvals

Following recommendations from the Planning Commission, the Morro Bay City Council will need to take the following discretionary actions in conjunction with the project:

- Certify the Final EIR
- Adopt the proposed General Plan and LCP Update
- Adopt the Zoning Code Update and Coastal Implementation Plan

The California Coastal Commission will also need to take the following discretionary actions in conjunction with the project:

- Certify the General Plan and LCP Update
- Certify the Zoning Code Update and Coastal Implementation Plan

3 Environmental Setting

According to *CEQA Guidelines* Section 15125, an EIR must include a description of the existing physical environmental conditions in the vicinity of a project to provide the baseline condition against which project-related impacts are compared. This section provides a general overview of the environmental setting for the proposed City of Morro Bay General Plan and Local Coastal Program (LCP) Update, also known as *Plan Morro Bay*. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4.0, *Environmental Impact Analysis*.

3.1 Regional Setting

Morro Bay is located along the Pacific Ocean in western San Luis Obispo County, approximately thirteen miles northwest of the City of San Luis Obispo. San Luis Obispo County is located in the central coast region of California. The city is surrounded by a buffer of undeveloped land on the north, east, and south and by the Pacific Ocean on the west. The General Plan addresses all land within the city limits and surrounding areas, including the sphere of influence (SOI), that relate to Morro Bay's planning activities, coastal resiliency, and overall community values. The City of Morro Bay has a total planning area of over 14 square miles. The area inside the city limits is approximately 5 square miles. The remaining nine square miles in the planning area are not currently part of the city. While properties outside the city limits are currently under the jurisdiction of the County of San Luis Obispo, they relate to Morro Bay's identity and character, and are therefore included in the General Plan and LCP Update planning area.

The coastal zone areas are also addressed specifically in the LCP to ensure that the community protects coastal resources and access. Nearly the entire city is inside the coastal zone. However, a significant portion of the northeastern end of the planning area (2,794 acres) is outside the coastal zone.

3.2 Physical Setting

3.2.1 General Geographic Setting

Morro Bay occupies a coastal terrace, framed on the west by the Pacific Ocean and on the east by the Coast Range and Los Osos Valley. Regional access to the city is provided by State Route (SR 1), which runs east-west and north through the community, connecting Central Morro Bay to North Morro Bay, as well as SR 41 West, which extends east from the city to U.S. Highway 101 then to California's Central Valley. Local elevations range from sea level to approximately 600 feet above mean sea level. The city is located in the Morro Bay Watershed, which covers approximately 46,600 acres in the central, coastal area of San Luis Obispo County (Appendix B). The community of Cayucos is located to the north, and the community of Los Osos is located to the south, with a buffer of undeveloped land between both communities and Morro Bay. Figure 2-1 in Section 2.0, *Project Description*, shows the regional location of the planning area.

For the purposes of this section, the planning area is limited to all of the General Plan and LCP Update components as outlined in Section 2.0, *Project Description*. The planning area for Morro Bay includes all area within the city boundaries (approximately 3,137 acres), as well as approximately

6,137 acres beyond the city limits. A portion of the planning area beyond the city limits, approximately 100 acres, consisting of part of the estuary and a small area on the northern beachfront, is in the city's existing SOI. Another 678 acres of the planning area beyond the city limits is identified as a future extension of the city's SOI. Both the current and potential future SOI areas are under County of San Luis Obispo jurisdiction. Figure 2-2 in Section 2.0, *Project Description*, shows the planning area for Morro Bay.

3.2.2 Geologic Setting

The Morro Bay planning area is located at the tectonically active southern end of the Coast Ranges geomorphic province. This area contains geologic units ranging in age from Jurassic-aged to present-aged (Appendix B). A list of the geologic units mapped at the surface within Morro Bay is presented in Table 4.5-1 and mapped in Figure 4.5-1 in Section 4.5, *Geology and Soils*.

Morro Bay and Morro Rock are the dominant geomorphic features within the project vicinity. Wide beaches and tall sand dunes are present in southern Morro Bay. Northern Morro Bay has a wide sloping beach and a series of small sand dunes. The beach and dunes can be eroded by storms, but they are generally replenished during the summer through natural processes (City of Morro Bay 2006).

3.2.3 Hydrologic Setting

The Morro Bay planning area is located on the central coast of California within the Morro Bay and Cayucos-Whale Rock Watersheds. Much of the Morro Bay Watershed remains open space and is used primarily for agriculture and a range of public uses, including parks, golf courses, nature preserves, a military base, and university-owned rangeland. The Morro Bay Watershed drains east to west through the Chorro and Los Osos Creeks into the bay. The Cayucos Creek-Whale Rock Watershed drains into Morro Creek and discharges into the Pacific Ocean. Several creeks dissect the planning area, including the Chorro, Morro, Little Morro, and Alva Paul Creeks. The watershed boundaries and primary creeks providing drainage are detailed in Section 4.8, *Hydrology and Water Quality*, of this report (refer to Figure 4.8-1).

3.2.4 Natural Setting

Morro Bay's key natural features include its coastline, estuary, and woodlands comprising diverse shrub, herbaceous, terrestrial, and aquatic habitats. Wetlands, shrublands, and forests are located primary in south Morro Bay, and herbaceous and riparian habitats are located throughout the planning area. There is one agricultural region in eastern central Morro Bay, where primarily tree crops like avocado and annual row crops are located. However, the majority of Morro Bay's land area is urbanized. The City has identified environmentally sensitive habitats, which include aquatic resources and wetland habitats; non-wetland sensitive natural communities, including foredune, backdune/dune scrub, coastal bluff, and coastal strand environments; and other breeding and overwintering sites, such as Morro Rock. Natural features and habitats in Morro Bay are described in detail in Section 4.3, *Biological Resources*, of this report (refer to Figures 4.3-1, 4.3-2, and 4.3-3, which depict vegetation communities, wetlands, and environmentally sensitive habitat areas in Morro Bay).

3.2.5 Climate

The planning area is characterized by a typical Mediterranean coastal climate, which is generally dry in the summer with mild, wet winters. The climate is moderated by the marine influence of the Pacific Ocean, which can bring persistent periods of wind and fog, especially during spring and summer months. The U.S. Climate Data Center maintains average weather data for the city, within the General Plan and LCP Update planning area. According to data collected at this weather station the warmest month of the year is September and October with an average maximum temperature of 71 degrees Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 44 degrees Fahrenheit. Rainfall is concentrated in the winter months with the wettest months of the year being January, February, and March, with average monthly rainfall totals of 3.6, 3.8, and 3.3 inches, respectively (U.S. Climate Data 2018).

3.3 Baseline and Cumulative Project Setting

3.3.1 EIR Baseline

Section 15125 of the *CEQA Guidelines* states that an EIR "must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation [NOP] is published." Section 15125 states that this approach "normally constitute[s] the baseline physical conditions by which a lead agency determines whether an impact is significant."

This EIR evaluates impacts against existing conditions, which are generally conditions existing at the time of the release of the NOP (November 2017). It was determined that a comparison to current, existing baseline conditions would provide the most relevant information for the public, responsible agencies and City decision-makers. For some issue areas, this EIR also includes consideration of impacts against a forecast future baseline condition in addition to the current baseline conditions, controlling for impacts caused by population growth and other factors that would occur whether or not the General Plan and LCP Update is adopted. For certain issue areas (including air quality, greenhouse gas emissions/climate change, energy, noise and transportation/circulation), impacts would occur as a result of background population growth, urbanization and volume of average daily traffic increases in the region that would occur by 2040, with or without implementation of the General Plan and LCP Update. Thus, for these issue areas, a comparison to a future 2040 baseline is provided for informational purposes. However, all impact determinations are based on a comparison to existing 2016 baseline conditions.

On March 4, 2020 the Governor proclaimed a State of Emergency in California as a result of the threat of Coronavirus 2019 (COVID-19). On March 18, 2020 the Emergency Services Director for San Luis Obispo County issued a Shelter at Home Order for the County of San Luis Obispo. The threat of COVID-19, as well as the subsequent State and County proclamations and orders, have resulted in temporary changes to the existing economic and physical conditions in California and San Luis Obispo County regionally and in Morro Bay locally. Temporary changes to existing environmental conditions have included reduced vehicle traffic and associated noise and pollutant emissions, reduced electricity consumption. In addition, the timing and likelihood of cumulative development and regional buildout assumptions may be affected during or after the threat of COVID-19. The magnitude and duration of the State of Emergency and associated State and County orders, or future orders related to the threat of COVID-19 cannot be ascertained. Accordingly, the effect of COVID-19 on baseline and future environmental conditions effects of COVID-19 is currently speculative. CEQA Guidelines §15064(d)(3) states that:

> *An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project. A change which is speculative or unlikely to occur is not reasonably foreseeable.*

Furthermore, CEQA Guidelines §15154 states that:

> *If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact.*

It would be speculative for the EIR to assume what changes to baseline or cumulative baseline conditions might occur as a result of COVID-19 or the subsequent State and County proclamations and orders. Therefore, this topic is not discussed further in the EIR.

3.3.2 Approach for Direct Impact Analysis

The programmatic nature of the General Plan and LCP Update necessitates a general approach to the evaluation of existing conditions and impacts associated with the proposed project. As a programmatic document, this EIR presents a regionwide assessment of the impacts of the General Plan and LCP Update. Because the EIR is a long-term document intended to guide actions over 20 years into the future, analysis relies on program-level and qualitative evaluation. Quantitative analyses are provided where applicable with available information. During future stages in planning and implementation of specific elements of the General Plan and LCP Update, project-specific CEQA documents will be prepared by the appropriate project implementation agency.

For analytical purposes, the baseline year examined throughout this EIR is 2017, except where specifically noted, as described in Section 3.3.1 above.

3.3.3 Approach for Cumulative Analysis

CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts.” Section 15130 of the *CEQA Guidelines* requires that an EIR evaluate environmental impacts that are individually limited but cumulatively considerable. These impacts can result from the proposed project alone, or together with other projects. The *CEQA Guidelines* state: “The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects” (*CEQA Guidelines*, Section 15355). A cumulative impact of concern under CEQA occurs when the net result of combined individual impacts compounds or increases other overall environmental impacts (*CEQA Guidelines*, Section 15355). In other words, cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. CEQA does not require an analysis of incremental effects that are not cumulatively considerable nor is there a requirement to discuss impacts which do not result in part from the project evaluated in the EIR.

Cumulative Impact Methodology

The General Plan and LCP Update addresses cumulative conditions by design. The planning area for Morro Bay includes all area within the city boundaries (approximately 3,137 acres), as well as approximately 6,137 acres beyond the city limits. The General Plan and LCP Update is a comprehensive update of the City’s 1988 General Plan and 1984 LCP and presents the community’s vision for Morro Bay through 2040. As such, the environmental analysis of the General Plan and LCP

Update presented throughout this EIR is a cumulative analysis consistent with CEQA policies. Furthermore, this EIR contains detailed analysis of regional (cumulative) impacts, which are differentiated from localized impacts that may occur at the city level.

The cumulative impact analyses included in each of the environmental issue areas addressed in Section 4 of this EIR examine impacts associated with implementation of the General Plan and LCP Update, in addition to implementation of projected development for San Luis Obispo County, which surrounds Morro Bay, to address cumulative effects from growth extending beyond the planning area.

When evaluating cumulative impacts, CEQA allows the use of either a list of past, present and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document, or a combination of the two approaches. The cumulative analysis presented below uses a projections-based approach. (See *CEQA Guidelines* Section 15130B)(1). Land use and growth projections for the city, which are the subject of analysis throughout this EIR, are combined with the growth projections for the adjoining County. San Luis Obispo County adjoins the city to the north, south, and east. The County is largely agricultural, with population concentrated in four regions: North County, North Coast, San Luis Obispo and South County (San Luis Obispo County 2015). Therefore, San Luis Obispo County is referred to in this analysis as the "cumulative impact analysis area." Table 3-1 shows the estimated 2016 population and projected population and housing units for the planning area as well as the cumulative impact analysis area.

Table 3-1 Population and Housing Projections of Cumulative Analysis Area, 2016-2040

	Population		Housing Units	
	2016[a]	2040	2016[a]	2040
City of Morro Bay	10,714	12,062[b]	6,414	7,295[b]
San Luis Obispo County	278,141	315,922[c]	120,308	136,657[c]

Sources:

a. California Department of Finance [DOF] 2018.

b. Draft Plan Morro Bay (General Plan and LCP Update). This projection was developed for the General Plan and LCP Update buildout model using Traffic Analysis Zone (TAZ) data which differs slightly from the corresponding estimate in the 2020-2028 Housing Element (12,092), which is based on the 2017 SLOCOG 2050 Regional Growth Forecast.

c. San Luis Obispo Council of Governments (SLOCOG) 2017.

As shown in Table 3-1, in the cumulative impact analysis area the city comprises approximately 3.9 percent of the existing County population and 5.3 percent of the existing number of housing units in the County. By 2040, this proportion is expected to remain similar (3.8 percent of the County population and 5.3 percent of housing units in the County). Thus, under both current and forecasted future conditions, the city represents a relatively small portion of the growth in the cumulative analysis impact area.

Analysis of the cumulative effects of the General Plan and LCP Update for each environmental issue area is presented at the ends of Sections 4.1 through 4.15.

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4 Environmental Impact Analysis

This section discusses the possible environmental effects of the General Plan and LCP Update for the specific issue areas that were identified through the scoping process as having the potential to experience significant effects. “Significant effect” is defined by the *CEQA Guidelines* Section15382 as:

> a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment but may be considered in determining whether the physical change is significant.

The assessment of each issue area begins with a discussion of the environmental setting related to the issue, which is followed by the impact analysis. In the impact analysis, the first subsection identifies the methodologies used and the “significance thresholds,” which are those criteria adopted by the City and other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. Each effect under consideration for an issue area is separately listed in bold text with the discussion of the effect and its significance. Each bolded impact statement also contains a statement of the significance determination for the environmental impact as follows:

> **Significant and Unavoidable**. An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per Section15093 of the *CEQA Guidelines*.
>
> **Less than Significant with Mitigation Incorporated**. An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under Section 15091 of the *CEQA Guidelines*.
>
> **Less than Significant**. An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
>
> **No Impact.** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Following each environmental impact discussion is a list of mitigation measures (if required) and the residual effects or level of significance remaining after implementation of the measure(s). In cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact.

The Executive Summary of this EIR summarizes all impacts and mitigation measures that apply to the proposed project.

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4.1 Aesthetics

The analysis in this section describes current visual conditions in and around Morro Bay and evaluates the potential aesthetic and visual impacts of the General Plan and LCP Update, including impacts to scenic vistas, scenic resources, visual character and quality, and light and glare.

4.1.1 Setting

a. Existing Visual Conditions

The City of Morro Bay is situated adjacent to the Pacific Ocean in northwestern San Luis Obispo County. Views west of State Route (SR) 1 (also referred to as Highway 1) include Morro Rock, Morro Bay, sand spit and beaches of Morro Bay State Park, and cityscape of Morro Bay. East of SR 1, the surrounding hillsides provide a backdrop for Morro Bay. Montana de Oro State Park can be seen from Main Street and Embarcadero, providing a viewshed for the city. The city contains large areas of open space along the coast. Much of the beaches and coastal lands west and south of downtown Morro Bay are designated as permanent open space for conservation and recreation, under the jurisdiction of the California State Parks System.

b. Scenic Resources

Most communities identify scenic resources as important assets that form community identity. Scenic resources can be natural or man-made features such as trees, rock formations, historic buildings, and public art. As described in the Community Baseline Assessment for the General Plan and LCP Update (refer to Appendix B), scenic resources in Morro Bay include:

- Morro Rock
- Del Mar Park
- Cloisters Park
- Former Morro Bay Power Plant
- Downtown
- Black Mountain
- Morro Bay Sandspit
- State Museum of Natural History
- Morro Bay salt marsh
- Atascadero Beach tract
- Cloisters neighborhood
- The beach
- Coleman park
- Embarcadero
- Morro Heights
- Morro Bay Golf Course
- State Boat Marina

c. Scenic Vistas and Views

A scenic vista provides views of an aesthetically valued landscape that benefits the public. The term “vista” generally implies an expansive view, usually from an elevated point or open area. This designation may be officially designated or unofficially defined by a set of criteria. The criteria used for assessing views and scenic vistas in Morro Bay are described in the Community Baseline Assessment for the General Plan and LCP Update (refer to Appendix B). These include: the enhancement of the city’s character through the use of building materials and scale of the structures; the compatibility with surrounding structures; the compatibility with the natural features of the area (i.e., topography); the preservation of public views; the enhancement and definition of the city’s image; the uniqueness of the city’s image; maintenance of scenic highway conditions; and any additional view considerations as requested by regulatory agencies. There are no officially designated scenic vistas in the planning area. However, as described in the Community Baseline

Assessment for the General Plan and LCP Update, views northward toward Morro Rock, southward toward Morro Bay Estuary and the sandspit, southward toward Los Osos and the Irish Hills, and northward toward Cayucos both along the coastline and looking northeast toward the hills, as illustrated in Figure 4.1-1, serve as scenic vistas in the city. Views east of Morro Bay along the SR 41 corridor and surrounding foothills are also an important scenic vista for the community outside of the city limits. Figure 4.1-2 provides a map of scenic views in the planning area. As shown in Figure 4.1-2, these views typically include a cityscape with the Morro Bay and Montana de Oro State Park in the background and are either seen from residential neighborhoods east of SR 1 or from westward and southward-oriented streets that provide a direct line of sight to the Morro Bay and Montana de Oro State Park. Unlike scenic vistas, which are expansive views from a particular point, scenic views are visible from multiple areas. For example, scenic views of the coastline are visible from many areas within Morro Bay.

San Luis Obispo County's Estero Area Plan (2009) includes a policy to protect scenic vistas of the Morros, which is a chain of unique volcanic peaks, connecting ridges and associated hills that stretch from San Luis Obispo to Morro Bay and separate the Los Osos and Chorro Valleys. The Morros in and near the city include Morro Rock, Black Hill, Cerro Cabrillo, Parker Ridge, and Hollister Peak. Morro Rock and Black Hill are prominently visible from various locations throughout the city. Cerro Cabrillo, Parker Ridge, and Hollister Peak are visible from only a small portion of the planning area.

d. Scenic Corridors

Scenic corridors provide an opportunity for the public to take advantage of the natural environment's aesthetic value and typically pertain to roadways and visible lands outside the roadway right-of-way. California's Scenic Highway Program designates scenic highways with the intention of protecting these corridors from change that would diminish the aesthetic value of adjacent lands. A highway is designated as an eligible scenic highway when the California Department of Transportation (Caltrans) determines that it qualifies for official status. The status of an officially designated scenic highway changes when the local governing body (City or County) applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated (Caltrans 2016). Scenic highways must have an approved Corridor Protection Program and remain in compliance to maintain scenic highway status.

According to the Caltrans State Scenic Highway Mapping System, SR 1 is an officially designated State Scenic Highway and All American Road in the planning area. SR 41 between SR 1 and U.S. 101 is eligible for State Scenic Highway designation but has not been officially designated (Caltrans 2018).

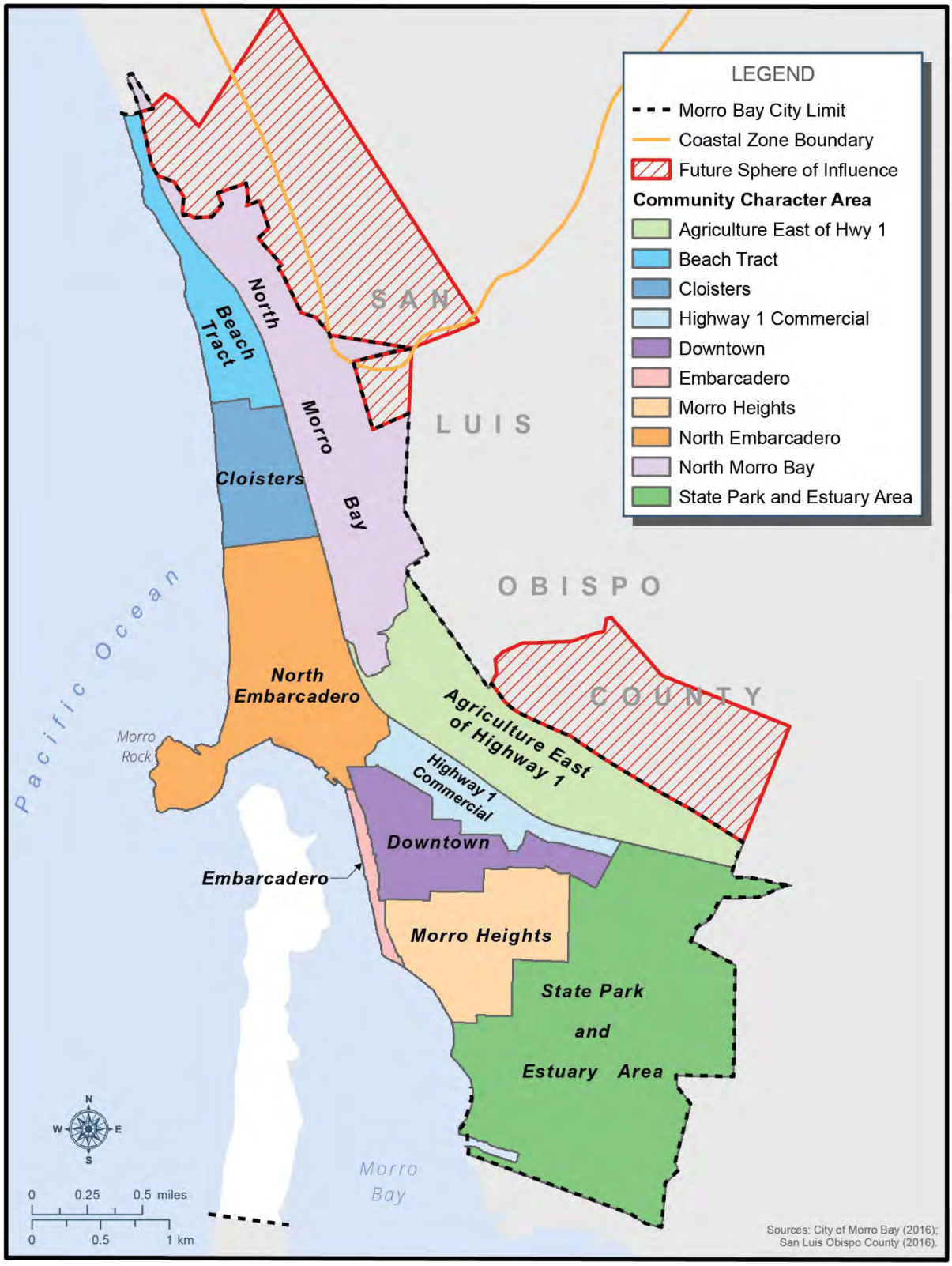
e. Visual Character

As described in the Community Baseline Assessment for the General Plan and LCP Update the existing visual character is organized by neighborhood or corridor, also referred to as "community character areas." The character-defining features of Morro Bay vary by area of the city and generally include density, building height, building bulk, the location of buildings on a lot, lot size, architectural style, exterior colors and materials, similarities and differences between neighboring structures, and the year in which structures were built. Figure 4.1-3 shows the community character areas in the city that are defined by their unique features.

Figure 4.1-1 Scenic Vistas in the Planning Area

Figure 4.1-2 Scenic Views in the Planning Area

Figure 4.1-3 Community Character Areas



The community character areas shown in Figure 4.1-3 are described as follows:

North Morro Bay

The North Morro Bay character area spans much of the length of the city on the east side of SR 1. Nearly all of North Morro Bay is residential with a single commercial strip along Main Street (frontage road on the east side of SR 1) that includes retail and office uses. The area slopes gradually, then more steeply, away from SR 1. The homes at the eastern edge of this area are located on relatively steep hills and have views of the ocean and Morro Rock.

Beach Tract

The Beach Tract character area is located on the west side of SR 1 west of North Morro Bay area and north of the Cloisters area. Morro Strand campground (State Park) is located in this area west of the SR 1 along the beach. The area west of SR 1 is nearly flat with limited vegetation. Some large eucalyptus trees are located near the intersection of SR 1 and San Jacinto Street. Alva Paul Creek runs east to west through this area and North Point Natural Area is located just north of this neighborhood. The area consists of single-family residential development and offers beach access.

Cloisters

The Cloisters character area is located on the west side of SR 1, south of the Beach Tract area. This area is one of the most recently developed areas in the city and consists of single-family residential development, natural habitat, Morro Bay High School, two RV parks, two motels, and Cloisters Community Park, which includes trails and a wetland area. The homes in the neighborhood are clustered to protect the sensitive dune habitat in the area. The area is generally flat and offers beach access. Trees have been planted at Morro Bay High School, giving this area a wooded feel.

North Embarcadero

The North Embarcadero character area includes the North Embarcadero waterfront as well as adjacent industrial areas that include the former Morro Bay Power Plant site, Lila Keiser Park, the City wastewater treatment plant, the commercial fishermen's dry storage and repair facility, and Morro Rock, with limited residentially zoned parcels in this area. The area is mostly paved and has minimal vegetation, except along Morro Creek and at Lila Keiser Park. Three prominent smokestacks at the power plant are the visually dominant feature of this area. North Embarcadero offers a clear view of Morro Rock. This area represents the largest concentration of working waterfront uses in Morro Bay, with restaurants, retail stores, piers, docks, commercial fishing offloading facilities, and other related commercial fishing infrastructure located along the waterfront. The topography in this area is flat and the only beaches are located north and south of Morro Rock. The area between the waterfront and Morro Rock is undeveloped, used for recreation and includes Coleman Park.

The Embarcadero

The Embarcadero is the most iconic character area in the city. The area has an urban and maritime feel, characterized by low-rise one- to two-story buildings and pedestrian-friendly streets. The Embarcadero combines working waterfront commercial and recreational uses with tourist-serving retail. This area is adjacent to the ocean and extends east to a bluff that serves as the dividing line between the Embarcadero and Downtown. This area runs from North Embarcadero to the State Park area at the south end of the city. The bayside of the Embarcadero is completely developed and includes both old and poorly maintained buildings and some of the city's newest development. A

number of underdeveloped properties are located on the land side of the Embarcadero. The bayside of the Embarcadero provides numerous coastal access points including formal piers, seating areas, and pathways, with some of the parcels offering lateral access along the bay. Residential development to the west of The Embarcadero is prohibited, and development to the east of the Embarcadero is limited and requires a conditional use permit. The topography is flat and there are no beaches inside the harbor. Vegetation is limited in this area.

Downtown

The Downtown character area is uphill from the Embarcadero between the waterfront and the Highway 1 Commercial area. This area includes a variety of uses including residential, retail, office, service commercial, tourist-serving, and mixed uses, with the greatest concentration of hotels, motels, and two-story buildings in the city. This area contains the oldest buildings in the city intermixed with newer buildings. There is great variety in the building styles, and most streets have large, prominent trees. The topography of this area slopes gently uphill toward SR 1.

Highway 1 Commercial

The Highway 1 Commercial character area is situated between Downtown and SR 1. This area of the planning area contains the majority of City government buildings and highway commercial development including City Hall, the Veterans Hall, and the Community Center. Highway commercial development in this area is mostly strip commercial and includes a grocery store, gas station, and other service commercial uses. The topography in this area is variable with Morro Bay Boulevard serving as the high point. The triangular City Park is located near the roundabout on Morro Bay Boulevard. There is little vegetation in this part of the city.

Agriculture East of Highway 1

This character area east of SR 1 and south of North Morro Bay (at Morro Road) is predominantly designated and used for agriculture. The northern portion of the area is primarily used for crop farming and the southern portion of the area is used for grazing and covered by annual grasses. One single-family residential neighborhood is located adjacent to SR 1 in this area. The topography slopes uphill east of SR 1. Most of the agricultural land is in large parcels of tens or hundreds of acres.

Morro Heights

The Morro Heights character area is a single-family residential neighborhood located on a hill overlooking the bay near the south end of the city. There are more irregular lots and home design variations in Morro Heights than in other residential areas of the city. The south end of this neighborhood is planted with tall eucalyptus and cypress trees and includes a very large rock outcropping.

State Park and Estuary Area

The State Park and Estuary character area is located at the south end of the city. Morro Bay State Park covers most of this area and includes a golf course, campground, marina, boat launch, hiking trails, and other uses. In this area, the Morro Bay Natural History Museum is situated on a rocky outcropping overlooking the bay, the Inn at Morro Bay is located on the water, and Chorro Creek flows along the southern end of this area. This is the most wooded residential area of Morro Bay. Black Hill, the next Morro in the volcanic chain inland of Morro Rock, is in Morro Bay State Park.

Residential development is extremely limited. The area is characterized by large eucalyptus and cypress trees, native habitat and wildlife, and hilly topography. The terrain along the water is relatively flat and this area is surrounded by Morro Bay Estuary.

f. Light and Glare Conditions

Light and glare from indoor or outdoor uses can reduce visibility of the night sky, create potential hazards to drivers, and be a nuisance to residential areas. The planning area has typical light conditions found in suburban areas (e.g., roadway lighting, commercial parking lot and building lighting, residential buildings, headlights from motor vehicles). Sources of daytime glare include direct beam sunlight and reflections from windows, architectural coatings, glass, and other shiny reflective surfaces. Nighttime lighting and associated glare is produced by both stationary and mobile sources. Stationary sources of nighttime light include structure illumination, decorative landscape lighting, lighted signs, and streetlights. The primary source of mobile nighttime light is motor vehicle headlights, particularly from SR 1 and other high traffic roadways. Sources of light and glare in residential areas include street lighting along major roads, highways, and in large parking lots. In commercial and industrial areas, large parking lots, lit signage, and strip mall development are sources of light pollution. Nighttime lighting at Morro Bay High School in the northern portion of the city also creates light and glare. Nighttime glare issues are particularly important for light sources on elevated ground, as the light can be visible from a greater distance and thus affect a larger section of the community.

g. Regulatory Setting

Federal

No existing federal regulations pertain to the visual resources in the General Plan and LCP Update planning area.

State

California Coastal Act and California Coastal Commission

The California Coastal Act of 1976 (Coastal Act; Public Resources Code Section 30000) and the California Coastal Commission, the State's coastal protection and planning agency, were established by voter initiative to plan for and regulate new development, and to create policies to protect public access to and along the shoreline. Section 30251, *Scenic and Visual Qualities,* of the Coastal Act mandates that scenic and visual qualities of coastal areas be considered and protected as resources of public importance. Pursuant to the Coastal Act, permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas designated in the Department of Parks and Recreation California Coastline Preservation and Recreation Plan (CCPRP) and by local government shall be subordinate to the character of its setting.

Caltrans Scenic Highways

Caltrans defines a scenic highway as any freeway, highway, road, or other public right-of-way, that traverses an area of exceptional scenic quality. Suitability for designations as a State scenic highway

is based on the vividness, intactness, and unity of their view corridors, as described in Caltrans' Scenic Highway Guidelines (Caltrans 2008):

- *Vividness* is the extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements. A vivid landscape makes an immediate and lasting impression on the viewer.
- *Intactness* is the integrity of visual order in the landscape and the extent to which the natural landscape is free from visual intrusions (e.g., buildings, structures, equipment, grading).
- *Unity* is the extent to which development is sensitive to and visually harmonious with the natural landscape.

Local

Local Coastal Program and Coastal Land Use Plan

To ensure maximum public access to the coast and public recreation areas, the Coastal Act directs each local government lying within the Coastal Zone to prepare an LCP consistent with Section 30501 of the Coastal Act, in consultation with the Coastal Commission, and with public participation. Until an LCP has been adopted by the local jurisdiction and certified compliant with the Coastal Act, the Coastal Commission retains permitting authority within the portion of a local jurisdiction located in the Coastal Zone. Section 30519(a) of the Coastal Act specifies that once an LCP has been developed for a municipality, development review authority is delegated to that local government.

The Morro Bay LCP and Coastal Land Use Plan (LUP) was certified in 1982, the LCP zoning ordinances were certified in 1984, and the General Plan was adopted in 1988 (City of Morro Bay 1982; City of Morro Bay 1988). The LCP has since been updated periodically and is currently undergoing a comprehensive update in tandem with the General Plan update. The LCP and LUP govern the coastal zone in the city to implement the California Coastal Act. Among others, visual resources and neighborhood character is one of the major topics addressed in the City's LUP, pursuant to the Coastal Act.

General Plan

California Government Code Section 65300 describes the scope and authority of local jurisdictions to prepare, adopt, and amend general plans. Communities prepare general plans to guide the long-term physical development of the jurisdiction, and any land within the jurisdiction's SOI. At a minimum, the California Government Code requires general plans to address land use, circulation, housing, noise, conservation, open space, and safety issues. The existing General Plan was adopted in 1988 and includes a Visual Resources and Scenic Highway element. The General Plan is currently undergoing a comprehensive update that includes a Community Design element. This element outlines the vision for the aesthetic development of the community and character of Morro Bay and to establish the City's long-term community design and development goals to maintain a unique city culture and identity with respect to community form, layout, and community character areas.

Morro Bay Municipal Code – Title 17 (Zoning)

The Zoning Code (Title 17) of the City of Morro Bay Municipal Code implements the General Plan, particularly the Land Use Element. While General Plan designations are more generalized in nature, the Zoning Code and zoning districts provide specific controls on land use, density or intensity of development, and development standards to implement the City's General Plan goals and policies. Section 17.48.190 of the Zoning Code provides standards for the protection of visual resources and

compatible design for new development in the city. Additionally, Section 17.68.030 of the Zoning Code provides a list of prohibited signage in the city. Lighting, illumination, and glare in the city are regulated by Sections 17.52.080, 17.68.050, and 17.68.120 of the Zoning Code. To maintain consistency with the General Plan and LCP Update, the Zoning Code is currently undergoing a comprehensive update including development standards as necessary to implement the General Plan and LCP Update. This will include maximum height, setbacks, design standards and other standards, which may involve updates to existing standards effecting visual resources and lighting and glare in the city (City of Morro Bay 2017).

Interim Residential Design Guidelines

In July 2015, the City adopted interim residential design guidelines, which were re-authorized in October 2016. The guidelines address the following residential design issues:

- Scale and mass
- Surface articulation
- Building orientation
- Garage placement and design
- Building materials
- Architectural elements
- Additions to existing homes
- Privacy
- Landscaping

The design guidelines were developed to provide objective guidelines for use in reviewing proposed residential projects to achieve consistency with the look and feel of the existing neighborhood (City of Morro Bay 2015).

4.1.2 Impact Analysis

a. Methodology

The assessment of aesthetic impacts involves qualitative analysis that is inherently subjective in nature. Different viewers react to views and aesthetic conditions differently. This evaluation measures the existing visual environment of the planning area, described above, against the proposed action (implementation of the General Plan and LCP Update), analyzing the nature of the anticipated change. It is important to underscore that the General Plan and LCP Update is an update to existing plans and does not contain specific development proposals. Therefore, this analysis focuses on land use changes envisioned under the General Plan and LCP Update and the aesthetic impacts on the community in terms of arrangement of built to open space, density and intensity of development, and height, according to the thresholds of significance discussed below.

b. Significance Thresholds

The following thresholds of significance are based on Appendix G to the *CEQA Guidelines*. For purposes of this EIR, implementation of the General Plan and LCP Update may have a significant adverse impact if it would do any of the following:

1. Have a substantial adverse effect on a scenic vista;

2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
3. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (Public views are those that are experienced from publicly accessible vantage point); and/or
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project have a substantial adverse effect on a scenic vista?
Threshold 2:	Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway?

Impact AES-1 COMPLIANCE WITH THE GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE POLICIES, TITLE 17 OF THE MORRO BAY MUNICIPAL CODE, AND THE CITY'S RESIDENTIAL DESIGN GUIDELINES WOULD PROTECT VISUAL AND AESTHETIC RESOURCES IN THE PLANNING AREA FROM POTENTIAL IMPACTS RESULTING FROM DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

There are no officially designated scenic vistas in the planning area. However, views northward toward Morro Rock, southward toward Morro Bay Estuary and the sandspit, southward toward Los Osos and the Irish Hills, and northward toward Cayucos both along the coastline and looking northeast toward the hills, function as scenic vistas in the city. Views east of Morro Bay along the SR 41 corridor and surrounding foothills also serve as an important scenic vista for the community outside of the city limits.

The General Plan and LCP Update would largely preserve the existing pattern of land uses and, thus, scenic views from these vistas in the planning area. However, the General Plan and LCP Update calls for redevelopment of the former Morro Bay Power Plant and existing wastewater treatment plant properties in the North Embarcadero area. It is possible that some of the existing power plant buildings would be reused, including the three prominent smokestacks that serve as a visually dominant feature of this area, under the General Plan and LCP Update. Given the location of the former Morro Bay Power Plant and wastewater treatment plant, redevelopment of these sites in the North Embarcadero neighborhood could affect views of scenic resources such as Morro Rock and the Morro Bay Power Plant smokestacks.

In addition, downtown Morro Bay and the North Morro Bay neighborhood, which are visible from the SR 1 scenic highway corridor, are identified as prime areas for intensifying infill development and redevelopment. Depending on the location, orientation, and height of new infill development and redeveloped properties, scenic vistas and scenic resources, including trees, rock outcroppings, and historic buildings, could be blocked or otherwise adversely affected in these areas as a result of the General Plan and LCP Update. Implementation of the goals and policies in the General Plan and LCP Update Conservation and Community Design Elements listed below would minimize adverse effects on scenic vistas and resources, including historic buildings.

Goal C-2 Cultural and historic resources are identified for protection and showcased as a vital part of Morro Bay history.

Policy C-2.1 **Historic and Cultural Resources Strategy.** Develop a plan to address historic and cultural resource issues in Morro Bay, which may include conducting and updating inventories, exploring certification options, and developing context statements.

Policy C-2.2 **Interagency Cooperation.** Work with the Historical Society of Morro Bay and other local groups on historic preservation objectives.

Policy C-2.3 **Protection of Cultural Resources.** Ensure the protection of cultural and archeological resources during development, construction, and other similar activities. Development shall avoid, to the maximum extent feasible, adversely impacting cultural and/or archaeological resources, and shall include adequate BMPs to address any such resources that may be identified during construction, including mitigation measures sufficient to allow documentation, preservation, and other forms of mitigation.

Policy C-2.4 **Cultural Resources Overlay.** Develop a cultural resources overlay to protect cultural, archaeological and paleontological resources in Morro Bay.

Goal C-9 The aesthetic and visual natural resources in and around Morro Bay are protected to preserve the community's identity.

Policy C-9.2 **Public View Protection.** Public views to and along the ocean and scenic coastal areas shall be protected and enhanced, and alteration of natural landforms shall be minimized. Additionally, development in visually prominent settings, including all development seen from Highway 1, shall be sited and designed to avoid blocking or having a significant adverse impact on public views. Methods to achieve this may include building and road siting, building size, design and lighting that is integrated with the environment, and clustering of development.

Policy C-9.4 **Viewshed Protection Guidelines.** Designate and protect official viewsheds through viewshed protection design guidelines. The guidelines shall include special siting and design criteria including placing accessory development such as fences away from public view as much as possible, height and story limitations, bulk and scale limitations, screening and landscaping requirements, natural materials and color requirements, minimizing lighting that spills into nighttime public views, avoiding glares from windows and reflective surfaces, and requirements to prepare landscaping plans using drought-tolerant and native plants that protect and enhance scenic resources; minimizing land coverage, grading, and structure height; and maximizing setbacks from adjacent open space areas.

Policy C-9.7 **Massing, Height, and Orientation Requirements**. Require massing, height, and orientation of new development or construction to be sited and designed to preserve public coastal views to and along the ocean and scenic areas.

Policy C-9.9 **Infrastructure, and Utility Requirements.** Encourage infrastructure and utilities that do not block or detract from views of scenic vistas. All new utilities shall be

located underground or outside of public view if feasible. If undergrounding is not possible, an in-lieu fee shall be paid toward future undergrounding.

Policy C-9.10 **Signage Requirements.** Prohibit all commercial signs within the Highway 1 right-of-way. Require commercial signs to be of a size, location, and appearance so they do not detract from the area's scenic qualities and cause visual clutter and blight.

Policy C-9.12 **Public and Private Landscaping.** Ensure new public or private landscaping considers public views and vistas, and encourage landscape installations that protect or enhance those views and vistas, including ensuring that such landscaping does not obstruct public scenic views and vistas at maturity.

The policies identified in the General Plan and LCP Update would help preserve existing scenic vistas by requiring identification, designation, and protection of viewsheds and scenic vistas and by requiring new development to incorporate design features that protect or enhance existing scenic views and vistas. Section 17.48.190 of the Zoning Code provides standards for the protection of visual resources and compatible design for new development in the city. Section 17.68.030 of the Zoning Code provides a list of prohibited signage in the city. New development or redevelopment facilitated by the General Plan and LCP Update would also be subject to the updated standards in the City Zoning Code, in association with the General Plan and LCP Update, relating to signage, design, and protection of visual resources in the city.

Compliance with City's updated Zoning Code requirements and the goals and policies proposed in the General Plan and LCP Update would protect scenic resources, including historic buildings, upon development and redevelopment facilitated by the project. Therefore, the General Plan and LCP Update would not result in adverse effects on scenic vistas or scenic resources in the planning area and impacts would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 3: Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point).

Impact AES-2 COMPLIANCE WITH EXISTING STANDARDS AND GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES WOULD ENSURE THAT REDEVELOPMENT OR NEW DEVELOPMENT COMPLEMENTS THE EXISTING VISUAL CHARACTER AND QUALITY OF MORRO BAY. THEREFORE, THE PROJECT WOULD HAVE A LESS THAN SIGNIFICANT IMPACT ON VISUAL CHARACTER AND QUALITY.

Morro Bay is a small-town coastal community with much of the land use pattern already established by existing development. Most housing in the city was built before 1970 and most buildings are one to two stories in height, with small lot sizes and a mixture of styles and colors. Vegetation is typically native and drought-tolerant, with large eucalyptus, cypress, melaleuca, and blue gum trees throughout the city. Large trees are concentrated in certain parts of the city, while some areas have few large trees, typical of a coastal plain in this part of California. The wetlands, agricultural areas, and coastline frame the city's neighborhoods, providing landscape views from nearly every part of

the city. As shown in Figure 4.1-3 and described in Section 4.1.1(e), the aesthetic character of Morro Bay is a result of the combined individual characteristics of the ten community character areas, each of which have distinctive physical and social characteristics.

Many local businesses are located in the downtown and the waterfront Embarcadero areas, within close proximity to the surrounding residential neighborhoods. As described in the discussion of key updates to the General Plan and LCP in Section 2, *Project Description*, the General Plan and LCP Update encourages mixed-uses in the downtown area, and includes greater organization of uses in these areas on the City's land use map (refer to Figure 2-4) to guide future development and designate appropriate locations for land uses.

The General Plan and LCP Update would facilitate development for housing and mixed uses on the remaining vacant parcels in the Downtown area, as well as allow for an increase in allowable building height. The General Plan and LCP Update would also facilitate redevelopment of existing built-out parcels in the North Embarcadero area to allow for visitor-serving commercial uses largely, but also for housing and mixed uses with the residential mixed use overlay. Such development and redevelopment could affect the visual character of these areas of the city. The most substantial changes would occur on the former Morro Bay Power Plant and City wastewater treatment plant sites in the North Embarcadero character area, where existing paved lots and industrial uses are planned to be replaced by Mixed-Use, Public/Institutional, and Visitor-Serving uses. The General Plan and LCP Update anticipates that the triangular parking lot portion of the site near the southern end of the character area would become a boatyard and haul-out and house a maritime museum during the life of the General Plan and LCP Update, connecting it to the other harbor-related uses on the opposite side of Embarcadero. The existing aquaculture and commercial fishing businesses in Morro Bay are identified as coastal priority uses in the General Plan and LCP Update and the General Plan and LCP Update aims to maintain and protect these resources. Therefore, aside from improvements to lateral access and additional fishing industry facilities, the General Plan and LCP Update does not anticipate substantial changes to the character of the commercial fishing area on the west side of Embarcadero.

The vision for other character areas under the General Plan and LCP Update is summarized as follows:

- *North Morro Bay*. The design vision for the North Morro Bay area includes increased shopping and services opportunities along North Main Street in neighborhood-scale, walkable centers or clusters in order to create a more pedestrian friendly environment and areas where commercial development is prioritized over residential. The character of the residential area behind Main Street is not envisioned to change.
- *Beach Tract*. The character of the Beach Tract is expected to remain relatively the same over the life of the General Plan and LCP Update as a single-family residential neighborhood along the beach.
- *Cloisters*. The residential portion of the Cloisters character area is expected to remain relatively the same over the life of the General Plan and LCP Update as a clustered single-family residential neighborhood adjacent to wetlands and the beach.
- *North Embarcadero*. The character of this area is anticipated to change substantially by 2040 due to the expected redevelopment of the Vistra power plant site. It is possible some of the existing power plant buildings may be reused. However, with or without building reuse, the site is expected to house some visitor-serving businesses or facilities and may also have office, retail, or housing.

- *The Embarcadero.* The character of this area changes periodically due to lease renewal and reinvestments in the lease sites on the west side of the Embarcadero. Many lease sites will undergo renewal or turn over to new leaseholders over the life of the project, continuing this trend. Additional improvements for lateral and other types of access as well as infrastructure improvements or changes to address expected impacts of sea level rise, are expected in this area over the life of the project. Other changes to the character of this area may result from improvements and redesign of vehicle, bicycle, and pedestrian circulation on the Centennial Parkway and adjacent properties. Embarcadero may also become limited to one-way vehicle traffic between Beach and Marina streets. Additionally, vacant and underutilized parking lots may also be repurposed for new amenities, businesses, and visitor-serving facilities.
- *Downtown.* Under the General Plan and LCP Update, this area would continue to provide places for locals and visitors to shop, with an increase in places to work and live. In the portions of the area that allow mixed-use development, zoning development standards would have heights sufficient to support mixed-uses. Vacant and underutilized sites would undergo development and improvements to provide greater connection between the waterfront and Downtown, eliminating the "dead zone" at the top of Centennial Staircase and encouraging pedestrian traffic between the two areas.
- *Highway 1 Commercial.* This City Park may be expanded to encompass the entire triangular block, if feasible. In addition, under the General Plan and LCP Update, there is potential for the creation of more housing and neighborhood-serving businesses in the blocks surrounding the park to make the area more inviting for park users and to create a gateway to the city along Morro Bay Boulevard. Additionally, under the General Plan and LCP Update, there is potential for mixed use development and increased commercial development along the Quintana Road corridor. The character is envisioned to remain similar to the current character for the remaining portion, and majority, of this area.
- *Agriculture East of Highway 1.* Little to no change in visual character is envisioned in this area over the life of the project.
- *Morro Heights.* No change in visual character is envisioned in this area over the life of the project.
- *State Park and Estuary Area.* No change in visual character is envisioned in this area over the life of the project.

Beyond changes envisioned for the North Embarcadero and parts of Downtown, the General Plan and LCP Update does not anticipate substantial changes to the existing pattern of development in the city. As a result, the General Plan and LCP Update is intended to maintain the city's small-town, eclectic character and unique aesthetic components of the individual character areas of the city.

The Community Design Element of the General Plan and LCP Update specifically addresses the components of the city's unique style that would be preserved as the city changes over time. This element focuses primarily on building design, landscaping, scale, and style, with related topics such as density and intensity and use types and locations are addressed in the Land Use Element. While the Community Design Element is not a required component of a general plan, it is intended to preserve the culture and design of the community. In addition to the goals and policies listed under Impact AES-1, the following policies in the General Plan and LCP Update Community Design and Land Use Elements would provide direction for the desired visual character and quality in Morro Bay:

Goal CD-1 The individual identity of each of Morro Bay's character areas is embraced and represented by new and renovated development.

Policy CD-1.1 **Distinct Character Areas.** Consider and maintain the distinctiveness of each character area in planning and design decision-making.

Policy CD-1.2 **Compatible New Development.** Require new development projects to be compatible with the character vision for the area in which it is located, as described in the Vision for Community Character Areas, above, including ensuring that new development is located within existing developed areas and built in a manner that respects and responds to their unique natural and built environments.

Policy CD-1.3 **Design Guidelines.** Work with residents and business owners to develop and adopt citywide design guidelines (for areas of the City that don't already have them) that illustrate appropriate form, scale, and massing for buildings while allowing for distinctive design and flexibility.

Policy CD-1.4: **Design Standards.** As part of the Zoning Code, adopt permanent design standards for the city that allow for a wide variety of architectural styles while maintaining the character of each character area and the city as a whole.

Policy CD-1.6: **Protect Agriculture.** Protect the existing agricultural and open space greenbelt surrounding existing developed areas for the its agricultural, open space, habitat, and scenic qualities, including to ensure development remains within existing developed areas with adequate public services. When approving development in areas near agricultural zones in the Planning Area, consider potential long-term agricultural impacts and require mitigation as part of development.

Policy CD-1.8: **Minimize Aesthetic Impacts.** Structures, including fences, shall be subordinate to and blended into the environment, including by using appropriate materials that will achieve that effect. Where necessary, modifications shall be required for siting, structural design, shape, lighting, color, texture, building materials, access, and screening to protect public views and ensure development protects the public viewshed. Public views shall be protected and enhanced as a matter of great public importance, particularly related to public views that include Morro Bay proper, the sandspit, and Morro Rock, and all development shall be sited and designed to be subordinate to such views.

Policy CD-1.9: **Complementary Design.** Require building designs, materials, and landscaping that are complementary to the landscape, climate, and existing development.

Policy CD-1.10: **Signs.** Require commercial signs to be of a size, location, and appearance so they do not detract from the area's scenic qualities and/or cause visual clutter and blight. New development, and renovation or expansion of existing development, shall be designed to be consistent with the community character, and to protect scenic resources.

Goal LU-1 The community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.

Policy LU-1.1 **Land Use Pattern.** Maintain the current pattern of Morro Bay's land use to preserve the distinct character areas and community form, while enhancing and transforming areas with greatest potential for change to improve economic activity and align them with the community vision. (See Figure LU-3 Land Use Map.) New development shall be located within, contiguous with, or in close proximity to existing developed areas with adequate public services and where it will not have significant effects, either individually or cumulatively, on coastal resources.

Goal LU-5 Coastal priority uses are viable, protected, and contribute to the economy and character of Morro Bay.

Policy LU-5.4 **Vistra Energy Site Master Plan**. Master plan the redevelopment of the former Vistra power plant site and surrounding area, which could include reuse of some of the existing buildings. The master plan will be the responsibility of the developer or property owner upon property development. Encourage extensive community participation in the master plan process. Ensure that the land use map identified in Figure LU-4 and development capacity established in Table LU-2 guide land planning for the site. Other objectives for the master plan include creating a better connection between the two sides of the Embarcadero at the Vistra site and creating a pedestrian-friendly atmosphere along the site's Embarcadero street frontage. The master plan shall be incorporated into the LCP via an LCP amendment prior to any CDP processing for associated development.

Goal LU-8 Morro Bay's downtown and waterfront areas are active and welcoming locations for shopping, recreation, public access, visitor-serving needs, and coastal services.

Policy LU-8.9 **Design Flexibility**. Allow for design flexibility in the downtown and waterfront areas while perpetuating quality development that will complement and enhance the area's eclectic style and small, seaside character. Development along the waterfront shall comply with the Waterfront Master Plan.

Development facilitated by the General Plan and LCP Update would result in visual changes to the community. However, development and redevelopment that may occur during the lifetime of the General Plan and LCP Update would be governed by the above goals and policies as well as the associated updates to the standards contained in the City's Zoning Code. These plans and community standards have been developed with the goal of retaining Morro Bay's visual character, while providing visual enhancements in certain areas of the city. Impacts would be less than significant with implementation of applicable policies and regulations.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 4:	Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Impact AES-3 NEW DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD BE SUBJECT TO EXISTING REGULATIONS IN THE CITY'S ZONING CODE, AND GENERAL PLAN AND LCP UPDATE POLICIES, TO PROTECT SKYWARD NIGHTTIME VIEWS AND TO LESSEN OR PREVENT GLARE. THEREFORE, THE PROJECT WOULD RESULT IN A LESS THAN SIGNIFICANT IMPACT ASSOCIATED WITH NEW SOURCES OF LIGHT AND GLARE.

The General Plan and LCP Update would facilitate new development that could introduce new sources of light and glare in Morro Bay, resulting in increased ambient nighttime lighting. New sources of light and glare could be introduced by infill development, new development on currently vacant or undeveloped lots, or modification of existing buildings. Specific sources of ambient lighting would include streetlights, parking lot lights, signage on business establishments, exterior building lights, illumination from interior lights, and lighting at outdoor recreational facilities. Reflective building and vehicle surfaces, and the headlights of motor vehicles, could generate additional glare in the planning area.

Implementation of the General Plan and LCP Update Conservation Element policies listed below would prevent new sources of light or glare that would impact views in the planning area.

Policy C-9.5 **Lighting Standards.** Development shall be sited and designed to avoid illuminating, reduce glare, protect and enhance skyward nighttime public views, and minimize lighting in open spaces and natural areas. New lighting fixtures shall be mounted at low elevations and fully shielded to direct lighting downward. Lighting along walkways should be mounted on low bollards or ground buttons. Lighting shall be focused on targeted use areas and shall be limited to what is necessary for public safety. Floodlighting shall be prohibited. Exterior lighting fixtures should complement the architectural style of structures.

Implementation of these policies would ensure that the updated Zoning Code establishes standards to prevent glare and protect the character of the city from inappropriate levels of lighting. Future development facilitated by the General Plan and LCP Update would be required to submit a lighting plan that complies with updated Zoning Code standards. Additionally, future development facilitated by the General Plan and LCP Update would require an independent environmental review that would determine the project-specific light and glare effects and subsequent mitigation measures, if required to comply with standards for lighting and building materials to prevent glare. As a result, the General Plan and LCP Update would have a less than significant impact related to the introduction of light and glare.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

d. Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on aesthetics throughout the cumulative impact analysis area and is cumulative in nature. Some types of impacts to aesthetic resources are localized and not cumulative in nature. For example, the creation of glare or shadows at one location is not worsened by glare or shadows created at another location. Rather these effects are independent and the determination as to whether they are adverse is specific to the project and location where they are created. Projects that block a view or affect the visual quality of a site also result in localized impacts. The impact occurs specific to a site or area and remains independent from another project elsewhere that may block a view or degrade the visual environment of a specific site.

There are two types of aesthetic impacts that may be additive in nature and thus cumulative: night sky lighting and overall changes in the visual environment as the result of increasing urbanization of large areas. As development in one area, such as a relatively large city adjoining agricultural land like Morro Bay, increases and possibly expands over time and meets or connects with development in an adjoining ex-urban area, the effect of night sky lighting experienced outside of the region may increase in the form of larger and/or more intense nighttime glow in the viewshed. Although growth envisioned in the General Plan and LCP Update is primarily focused on infill areas, development outside of those geographies with long-distance views may result in nighttime lighting becoming more visible, covering a larger area and/or appearing in new areas as a result of projected development under the General Plan and LCP Update.

As planned cumulative development occurs throughout San Luis Obispo County (the cumulative impact analysis area), the overall visual environment will change. However, compliance with City and County policies and standards for the protection of visual resources, compatible design for new development, and maintaining visual character, would ensure that the combination of forecasted development in the planning area and planned development in neighboring communities would not result in a substantially different visual environment than currently exists. The cumulative impacts associated with night sky lighting and changes in the visual environment would not be considered significant, and the General Plan and LCP Update’s contribution to these impacts would not be cumulatively considerable.

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4.2 Air Quality

This section analyzes the effects of the General Plan and LCP Update on air contaminant emissions and the associated impacts, as well as odors. The analysis in this section describes current air quality conditions in and around the City of Morro Bay and evaluates the potential air impacts of the General Plan and LCP Update.

4.2.1 Setting

a. Climate and Topography

The General Plan and LCP Update planning area is part of the South Central Coast Air Basin (SCCAB) which includes all of San Luis Obispo, Santa Barbara, and Ventura counties. The climate of the San Luis Obispo County area and all of the SCCAB is strongly influenced by its proximity to the Pacific Ocean and the location of the semi-permanent high-pressure cell in the northeastern Pacific. The Mediterranean climate of the region produces moderate average temperatures, although slightly more extreme temperatures can be reached in the winter and summer. The warmest month of the year is October with an average maximum temperature of 69.2 degrees Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 42.6 degrees Fahrenheit. Rainfall is concentrated in the winter months. Local climate conditions are shown in Table 4.2-1.

Table 4.2-1 Morro Bay Area Climate Conditions

Average annual rainfall	16.74 inches
Average maximum temperature (annual)	65.0 °F
Average minimum temperature (annual)	47.8 °F
Warmest month(s)	October
Coolest month(s)	December, January
Annual mean temperature	56.4 °F

Source: Western Regional Climate Center, 2018.

The region is subject to seasonal winds. Seasonal winds are strong northerly to northeasterly winds that originate from high-pressure areas centered over the desert of the Great Basin. These winds are usually warm, dry, northerly winds which blow offshore at 15 to 20 miles per hour (mph), but can reach speeds in excess of 60 mph. Seasonal winds are particularly strong in mountain passes and at the mouths of canyons. However, seasonal and local topographic conditions may alter the wind directionality experienced in Morro Bay.

Two types of temperature inversions (warmer air on top of cooler air) are created in the area: subsidence and radiational. The subsidence inversion is a regional effect created by the Pacific high in which air is heated as it is compressed when it flows from the high-pressure area to the low-pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but it is most evident during the summer months. Radiational, or surface, inversions are formed by the more rapid cooling of air near the ground at night, especially

during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants within the regional airshed, with the more stable the air (low wind speeds, uniform temperatures), the lower the amount of pollutant dispersion.

b. Air Pollutants of Primary Concern.

The State and federal Clean Air Acts mandate the control and reduction of certain air pollutants. Under these Acts, the United States Environmental Protection Agency (USEPA) and the California Air Resources Board (ARB) have established ambient air quality standards (AAQS) for certain "criteria" pollutants. Ambient air pollutant concentrations are affected by the rates and distributions of corresponding air pollutant emissions, as well as by the climactic and topographic influences discussed above. The primary determinant of concentrations of non-reactive pollutants (such as carbon monoxide [CO] and fine particulates [PM_{10}]) is proximity to major sources. Ambient CO levels usually closely follow the spatial and temporal distributions of vehicular traffic. A discussion of these primary criteria pollutants follows.

Federal and state standards have been established for ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and fine particulates (PM_{10} and $PM_{2.5}$). Standards have been set at levels intended to be protective of public health. California standards are more restrictive than federal standards for each of these pollutants except lead and the eight-hour average for CO. Table 4.2-2 illustrates the current federal and State AAQS for each of these pollutants.

Table 4.2-2 Current Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard (CAAQS)	Federal Standard (NAAQS)
Ozone (O_3)	1-Hour	0.09 ppm	–
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide (CO)	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	20.0 ppm	35.0 ppm
Nitrogen Dioxide (NO_2)	Annual	0.030 ppm	0.053 ppm
	1-Hour	0.18 ppm	0.100 ppm
Sulfur Dioxide (SO_2)	Annual	–	–
	24-Hour	0.04 ppm	–
	1-Hour	0.25 ppm	0.075 ppm
PM_{10}	Annual	20 µg/m^3	–
	24-Hour	50 µg/m^3	150 µg/m^3
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3
	24-Hour	–	35 µg/m^3
Lead	30-Day Average	1.5 µg/m^3	–
	Rolling 3-Month Average	–	0.15 µg/m^3

ppm = parts per million; µg/m^3 = micrograms per cubic meter
Source: ARB 2017a

The San Luis Obispo County Air Pollution Control District (SLOAPCD) monitors criteria pollutant levels to assure that air quality standards are met, and if they are not met, develops strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the air basin is classified as being in "attainment" or as "non-attainment." As of August 2013 (the last date that SLOAPCD's attainment status was updated), San Luis Obispo County is in non-attainment for the 1-hour and 8-hour State standards for ozone and the 24-hour State standard for PM_{10} (SLOACPD 2017).

Table 4.2-3 summarizes the annual air quality data for the local airshed. ARB maintains over 60 air quality monitoring stations throughout California, including ten stations in San Luis Obispo County. The nearest monitoring station is the Morro Bay Station, 899 Morro Bay Boulevard which is located within the city limits of Morro Bay. The Morro Bay Station collects data on ozone but does not collect data on $PM_{2.5}$ and PM_{10} concentrations. Therefore, Table 4.2-3 also shows data on $PM_{2.5}$ and PM_{10} concentrations from the San Luis Obispo-3220 South Higuera Street Station, which is the next closest station to Morro Bay. The data collected at this station is considered to be generally representative of the baseline air quality experienced in the planning area.

Table 4.2-3 Ambient Air Quality Data

Pollutant	2014	2015	2016
Ozone (ppm), Worst 1-Hour [1]	0.070	0.064	0.060
Number of days of State exceedances (>0.09 ppm) [1]	0	0	0
Ozone (ppm), 8-Hour Average [1]	0.066	0.057	0.057
Number of days of State exceedances (>0.07 ppm) [1]	0	0	0
Number of days of federal exceedances (>0.07 ppm) [1]	0	0	0
Carbon Monoxide (ppm), Highest 8-Hour Average	*	*	*
Number of days of above State or federal standard (>9.0 ppm)	*	*	*
Particulate Matter <10 microns, $\mu g/m^3$, Worst 24 Hours [2]	43.2	43.1	43.2
Number of days above State standard (>50 $\mu g/m^3$) [2]	0	0	0
Number of days above federal standard (>150 $\mu g/m^3$) [2]	0	0	0
Particulate Matter <2.5 microns, $\mu g/m^3$, Worst 24 Hours [2]	15.6	16.4	21.0
Number of days above federal standard (>35 $\mu g/m^3$) [2]	0	0	0

Notes: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

[1] Data from the Morro Bay Station

[2] Data from the San Luis Obispo-3220 South Higuera Street Station

* No data was available for the NCCAB to determine the value.

Source: ARB 2017b

The primary pollutants of concern in San Luis Obispo County are ozone (O_3) and particulate matter (PM_{10}). Table 4.2-3 provides the number of days of State or federal exceedance in a given year, that the standard would have been exceeded had sampling occurred every day of the year. The major local sources for PM_{10} are agricultural operations, vehicle dust, grading, and dust produced by high winds. Ozone is a secondary pollutant that is not produced directly by a source, but rather is formed by a reaction between nitrogen oxides (NO_X) and reactive organic gases (ROG) in the presence of sunlight. Reductions in ozone concentrations are dependent on reducing the amount of these precursors. In San Luis Obispo County, the major sources of ROG are motor vehicles, organic

solvents, the petroleum industry, and pesticides; and the major sources of NO_X are motor vehicles, public utility power generation, and fuel combustion by various industrial sources (SLOAPCD 2001).

c. Sensitive Receptors

Federal and State AAQS have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases.

The majority of sensitive receptor locations are therefore residences, schools, and hospitals. There are no hospitals located within Morro Bay. Additional sensitive receptors in the planning area include the existing elementary schools, churches, community center, and senior center. School locations in the planning area are identified in Section 4.12, *Public Services*.

d. Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) can be released from serpentine and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. The U.S. Environmental Protection Agency and ARB identify asbestos as a toxic air contaminant. ARB has established an Air Toxics Control Measure (ACTM) for NOA, which is found in the California Code of Regulations (17 CCR 93105). This measure requires specified control measures for grading or land disturbance that meets certain conditions and allows for the local APCD to exempt specific projects or areas from regulation upon review of a geological evaluation. As originally mapped by the SLOAPCD, most of central Morro Bay and all of the developed areas north of central Morro Bay are areas of concern with known serpentine rock formation, which are potential sources of NOA (SLOACPD 2017a).

e. Odors

The SLOAPCD *CEQA Air Quality Handbook* identifies multiple odor-causing sources including but not limited to; wastewater treatment plants, landfills, composting facilities, petroleum refineries, and chemical manufacturing. The main objectionable odor released from wastewater treatment plants is associated with hydrogen sulfide (H_2S), which emits an odor similar to rotten eggs.

f. Regulatory Setting

This analysis has been prepared pursuant to the California Environmental Quality Act (CEQA) of 1970 and associated Guidelines (Public Resources Code 21000 et seq. and California Code of Regulations, Title 14, Chapter 3, Sections 15000-15387) and in accordance with local, state and federal laws, including those administered by USEPA, ARB, and SLOAPCD.

The Federal Clean Air Act (FCAA) governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the USEPA administers the FCAA. Both CAAs are administered by ARB at the State level and at the regional and local levels by the AQMDs. SLOAPCD regulates air quality at the regional level for San Luis Obispo County.

Federal

The USEPA is responsible for enforcing the FCAA. The USEPA is also responsible for establishing the National AAQS, which are a requirement under the 1977 FCAA and subsequent amendments. The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g. beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by ARB.

State

In California, ARB is responsible for meeting the state requirements of the FCAA, administering the CCAA, and establishing the California CAAQS. The CCAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. ARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. ARB established passenger vehicle fuel specifications, which became effective in March 1996. ARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act

TACs in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) (Hot Spots Act). As discussed above, HAPs/TACs are a broad class of compounds known to cause morbidity or mortality (cancer risk). HAPs/TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state and federal level.

AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. To date, ARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. In 1998, diesel PM was added to ARB's list of TACs. Once a TAC is identified, ARB adopts an Airborne Toxic Control Measure for sources that emit that particular TAC. If a safe threshold exists at which no toxic effect occurs from a substance, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

The Hot Spots Act requires for existing facilities that emit toxic substances above a specified level to prepare a toxic emissions inventory and a risk assessment if the emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

Diesel Exhaust and Diesel Particulate Matter

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). Diesel exhaust is a complex mixture of gases, vapors, and fine particles that include particulate matter, benzene and formaldehyde,

which have been previously identified as TACs by ARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants program.

ARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of diesel PM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of diesel PM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In September 2000, ARB adopted the Diesel Reduction Plan, which recommends control measures to reduce risks associated with diesel PM and achieve an 85 percent reduction in diesel PM relative to 2000 levels by 2020 (ARB 2000). In 2011, ARB approved the On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation that requires existing on-road heavy-duty diesel fueled vehicles to meet specific performance requirements between 2012 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or the equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle. As emissions are reduced, risks associated with exposure to emissions also are expected to be reduced.

ARB Air Quality and Land Use Handbook

In April 2005, ARB released the final version of its *Air Quality and Land Use Handbook: A Community Health Perspective*. This guidance document is intended to encourage local land use agencies to consider the risks from air pollution before they approve the siting of sensitive land uses near sources of air pollution, particularly TACs (e.g., freeway and high traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities). These advisory recommendations include general setbacks or buffers from air pollution sources. However, unlike industrial or stationary sources of air pollution, the siting of new sensitive land uses does not require air quality permits or approval by air districts, and, as noted above, the ARB handbook provides guidance rather than binding regulations.

Regional

SLOAPCD regulates air quality in the portion of the SCCAB that is in San Luis Obispo County, and is responsible for attainment planning related to criteria air pollutants, and for district rule development and enforcement. Under state law, the SLOAPCD is required to prepare an overall plan for air quality improvement for the SCCAB, known as the Clean Air Plan (CAP). The most recent CAP was prepared in 2001. The 2001 CAP is the third update to the original 1991 CAP, adopted in 1992. The 2001 CAP describes the air quality setting for the County in detail, including the local climate and meteorology, current and projected air quality, and the regulatory framework for the management of air quality. The 2001 CAP is intended to bring the County into attainment of the State ozone standard within a three year timeframe through a comprehensive set of control measures designed to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. The 2001 CAP is incorporated by reference and is available for review at the SLOAPCD web site, www.slocleanair.org.

4.2.2 Impact Analysis

a. Methodology

Operational emissions for buildout of the General Plan and LCP Update were modeled based on the potential development capacity in 2040 relative to existing conditions using the California Emissions

Estimator Model (CalEEMod), version 2016.3.2 (i.e., the project comprises the net change between existing and 2040 conditions). Information presented in Table 2-5 in Section 2.0, *Project Description*, was used to determine the proposed project's land uses, number of residential units, and non-residential areas, which were entered into CalEEMod. The results of the CalEEMod emissions model, as well as an explanation of the methods and assumptions used to derive these inputs, are provided in Appendix C. The emissions analysis assumed that future development under the General Plan and LCP Update would comply with SLOAPCD rules, such as Rule 504, which restricts residential wood burning, and Rule 433, which sets limits on VOC content in architectural coatings.

Because project-level details are not currently known and it was assumed that full buildout of the land use plan would occur, the operational emissions as modeled provide a worst-case scenario estimate and are included in the appendix of this EIR for informational purposes. The significance of air quality impacts related to the project's operational emissions are determined through qualitative analysis in accordance with SLOAPCD guidance. Construction emissions were not modeled due to the high dependence of emission estimates on project-level construction details, which are not known at this time.

b. Significance Thresholds

Based on Appendix G of the *CEQA Guidelines,* a project may be deemed to have a significant impact on air quality if it would:

1 Conflict with or obstruct the implementation of the applicable air quality plan;
2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
3 Expose sensitive receptors to substantial pollutant concentrations; and/or
4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

As stated in the *CEQA Guidelines*, the significance criteria established by the regional air quality pollution control district may be relied upon to make determinations of significance. SLOAPCD's recommended significance criteria are established in its *CEQA Air Quality Handbook* (SLOAPCD 2012) and applicable criteria are described below.

Consistency with the 2001 CAP

Section 3.2 of the *CEQA Air Quality Handbook* states that a consistency analysis with the 2001 CAP is required for program level environmental review and that a project consistent with the land use and transportation control measures and strategies outlined in the 2001 CAP is considered consistent with the CAP. The 2001 CAP guidance for project consistency analysis states that the following questions should be evaluated:

a. Are the population projections used in the plan or project equal to or less than those used in the most recent CAP for the same area?
b. Is rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?
c. Have all applicable land use and transportation control measures from the CAP been included in the plan or project to the maximum extent feasible?

According to the 2001 CAP, if the answer to all of the above questions is yes, then the project is consistent with the CAP. If the answer to any of the above questions is no, the project is inconsistent with the CAP. For the purpose of this analysis, the project's consistency with the 2001 CAP is determined through a consistency analysis with specific land use and transportation measures and strategies included in the CAP, as well as evaluation of the three questions listed above. However, to evaluate question two, only vehicle miles traveled (VMT) is evaluated because VMT provides a better indicator of mobile source emissions and the number of vehicle trips is redundant with VMT, which is equal to the number of vehicle trips multiplied by the average trip length.

Operational Emissions

As stated in Section 3.5 of the *CEQA Air Quality Handbook*, a program level environmental review, such as for the proposed project, does not require a quantitative air emissions analysis at the project scale; instead, a qualitative analysis should be provided based on criteria such as prevention of urban sprawl and reduced dependence on automobiles and evaluation for consistency with transportation and land use planning strategies outlined in the 2001 CAP. Therefore, the significance of the project's operational emissions is determined qualitatively.

Although not applicable to the General Plan and LCP Update, the SLOAPCD has established significance thresholds for evaluating project-level operational emissions. Future development projects subject to CEQA within the Morro Bay planning area would be required to compare project operational air pollutant emissions to SLOAPCD thresholds and incorporate mitigation if emissions exceed threshold levels. Table 4.2-4 provides SLOAPCD's project-level significance thresholds for operational emissions.

Table 4.2-4 SLOAPCD Operational Emissions Significance Thresholds

	Threshold	
Pollutant	**Daily (lbs/day)**	**Annual (tons/year)**
ROG + NO_X (combined)[1]	25.00	25
Diesel Particulate Matter (DPM)[1]	1.25	–
Fugitive Particulate Matter (PM_{10}), Dust	25.00	25
CO	550.00	–

[1] SLOAPCD specifies that CalEEMod winter emission outputs should be compared to operational thresholds for these pollutants (2012).
Source: SLOAPCD 2012

Construction Emissions

Although not applicable to the General Plan and LCP Update, the SLOAPCD has developed quantitative daily and quarterly significance thresholds for project construction emissions. The daily thresholds apply to projects that would be completed in less than one quarter (90 days). The quarterly construction thresholds apply to projects that would be completed in more than one quarter. Quarterly thresholds are subdivided into Tier 1 and Tier 2, which are tied to different mitigation requirements. Projects exceeding the higher Tier 2 threshold are required to implement more stringent mitigation measures. Table 4.2-5 provides SLOAPCD's project-level significance thresholds for construction emissions.

Table 4.2-5 SLOAPCD Construction Emissions Significance Thresholds

Pollutant	Threshold		
	Daily (lbs)	Quarterly Tier 1 (tons)	Quarterly Tier 2 (tons)
ROG + NO_X (combined)[1]	137	2.50	6.30
Diesel Particulate Matter (DPM)[1]	7	0.13	0.32
Fugitive Particulate Matter (PM_{10}), Dust	–	2.50	–

[1] SLOAPCD specifies that CalEEMod winter emission outputs should be compared to operational thresholds for these pollutants (2012).
Source: SLOAPCD 2012

As with the SLOAPCD's operational thresholds, these thresholds are intended for project-level review rather than program-level environmental review as construction emissions are highly dependent on project-specific details. Thus, the significance of the construction emissions associated with buildout of the General Plan and LCP Update is evaluated qualitatively. However, future development projects within the Morro Bay planning area subject to CEQA would be required to evaluate the significance of project air pollutant emissions using SLOAPCD thresholds and incorporate mitigation if emissions exceed threshold levels in accordance with SLOAPCD guidance.

Toxic Air Contaminants

As stated in the *CEQA Air Quality Handbook*, a project that has the potential to emit toxic or hazardous air pollutants or is located in close proximity to sensitive receptors may have a significant health impact related to toxic air contaminants (TACs). A qualitative analysis is provided to determine whether the General Plan and LCP Update would result in increased exposure of sensitive receptors to diesel particulate matter (DPM) or other toxics by siting receptors along major roadways or in proximity to industrial facilities.

Odor

Table 3-3 of the *CEQA Air Quality Handbook* provides potential screening distances for nuisance sources. Projects locating sensitive receptors, or other uses where people congregate, within the screening distance of nuisance sources require further evaluation to determine whether the project would be exposed to significant odor impact. For a project that will be located near an existing odor source, the project would have a significant odor impact if it sites receptors as close or closer to the source than a location that has experienced: 1) more than one confirmed complaint per year averaged over a three year period, or 2) three unconfirmed complaints per year averaged over a three year period. A qualitative discussion is provided to determine whether the General Plan and LCP Update would facilitate new development that would result in odor-related conflicts.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project conflict with or obstruct implementation of the applicable air quality plan?
Threshold 2:	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?

Impact AQ-1 THE GENERAL PLAN AND LCP UPDATE WOULD RESULT IN AN INCREASE IN VMT THAT WOULD EXCEED THE PROJECTED RATE OF POPULATION GROWTH IN MORRO BAY, WHICH WOULD BE INCONSISTENT WITH THE SLOAPCD CLEAN AIR PLAN. THIS WOULD BE A SIGNIFICANT AND UNAVOIDABLE IMPACT.

As described in Section 4.2.3, *Significance Thresholds and Methodology*, SLOAPCD determines consistency with the 2001 CAP based on whether the project would exceed the population projections used in the CAP for the same area, whether the vehicle trips and vehicle miles traveled generated by the project would exceed the rate of population growth for the same area, and whether all applicable land use management strategies and transportation control measures from the 2001 CAP have been included in the project to the maximum extent feasible.

The consistency of the General Plan and LCP Update with each of these criteria is discussed in the following paragraphs.

Population Growth Consistency

Buildout of the General Plan would add an estimated 1,348 residents to Morro Bay by 2040 (see Table 2-4 in Section 2, *Project Description*). When added to the existing population within the City of approximately 10,714 (California Department of Finance 2018), buildout of the General Plan and LCP Update would increase the city's total population to an estimated 12,062 residents, or an increase of 12.6 percent. The 2001 CAP uses growth forecasts provided by the San Luis Obispo Council of Governments (SLOCOG) in the Regional Growth Forecast to project population-related emissions for the SCCAB (SLOAPCD 2001; SLOCOG 2017). In turn, SLOCOG population forecasts are based on the land use assumptions presented in the existing general plans of local governments within the SCCAB. When a general plan is updated, land uses are also updated to accommodate future growth projected based on recent population growth trends. Consequently, an updated general plan prepared for a local jurisdiction experiencing a higher rate of population growth than assumed in the previous general plan would have projected growth exceeding previous general plan projections and also exceeding SLOCOG projections.

Implementation of the General Plan and LCP Update would not cause the population of Morro Bay to exceed the projected 2040 medium-scenario population of 12,092 residents. In addition, future SLOCOG growth projections would incorporate the General Plan and LCP Update land use assumptions and would inform future air quality management in the SCCAB.

Vehicle Miles Traveled Increase

The Community Baseline Assessment for the General Plan and LCP Update (Appendix B) provides estimates of daily VMT within the City's Sphere of Influence (SOI) under existing conditions, buildout conditions, and buildout plus project conditions. Future VMT estimates were developed as part of the Morro Bay Circulation Element Update Final Technical Report (refer to Table 10 in Appendix E).

Daily VMT under existing conditions reflects the current roadway network and traffic volumes collected in 2016. Daily VMT under buildout plus project conditions reflects anticipated buildout under the General Plan and LCP Update.

Total daily VMT in the SOI under existing conditions is estimated to be 84,739, which equates to approximately 31 million annual VMT. Total daily VMT in the City's SOI under buildout plus project conditions is estimated to be 297,699, which equates to approximately 102 million annual VMT. Based on these projections, VMT would increase by approximately 230 percent by 2040 with implementation of the General Plan and LCP Update. The projected increase in VMT under project conditions is attributable to the large increase in customer and employee vehicle trips associated with substantial commercial growth anticipated in the General Plan and LCP Update land use plan. Because the percent increase in VMT would exceed the percent growth in population, the project would be inconsistent with the 2001 CAP's assumptions for VMT.

Implementation of Land Use and Transportation Control Measures

Five of the transportation control measures and four of the land use planning strategies contained in the 2001 CAP are applicable to the proposed project. The project's consistency with the 2001 CAP's applicable land use and transportation control measures is evaluated in Table 4.2-6.

Table 4.2-6 Project Consistency with Applicable 2001 CAP Land Use and Transportation Control Measures

2001 CAP Control Measure	Project Consistency
Land Use Planning Strategies	
L-1 Planning Compact Communities. Maintaining compact city and village areas reduces reliance on the automobile by enhancing the viability of public transit and maximizing the potential for walking and bicycling to work, shopping, and other destinations.	**Consistent** The General Plan and LCP Update would focus new development primarily in Morro Bay's city limits, as illustrated in the land use plan and as supported by the following policies included in the General Plan and LCP Update: • **Policy LU-3.6: Infill Development.** Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay. • **Policy LU-3.7: Limited Outward Expansion.** Establish criteria to allow for some limited outward expansion beyond the city's existing limits to achieve large-scale conservation of parcels and a small amount of rural-scale residential use and visitor-serving amenities to serve conservation lands. Standards applies to the future sphere of influence (SOI) area include keeping development off of ridgelines and preserve views of the City's backdrop of undeveloped open land. (See also Policies C-9.1 through C-9.5 and Implementation Actions C-30 and C-31.) In addition, the General Plan and LCP Update includes policies to reduce vehicle use and promote use of transit and active transportation, such as the following: • **Policy CIR-1.1: Balanced Transportation.** Work to complete a balanced multimodal transportation system that meets the needs of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities. • **Policy CIR-1.3: System Connectivity.** Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.

2001 CAP Control Measure	Project Consistency
	• **Policy CIR-1.4: Future Enhancements.** Identify streets in the city that can be made "complete," and plan for new bikeways, sidewalks, and crosswalks on these streets by reallocating how space within the public right-of-way is used. • **Policy CIR-2.2: Street End Pedestrian Connections.** Create safer and more distinct lateral access connections across the street ends on the west side of the Embarcadero at Dunes, Harbor, Morro Bay Boulevard, Front, Pacific, Marina, and Driftwood Streets, including by relocating parking from these areas. (See also Policies LU-4.1, LU-4.5, LU-4.6, LU-7.1 through LU-7.6, and OS-1.6 and Implementation Action LU-19.) • **Policy CIR-2.3: Pedestrian Safety.** Provide for accessible, safe, and convenient paths, sidewalks, and crossings along major streets and beach and coastal areas for all users, including the disabled, youth, and the elderly. (See also Policies LU-8.5 and OS-3.6.)
L-2 Providing for Mixed Land Use. Communities should allow a mixture of land uses that enables people to walk or bicycle to work or to purchase necessary household items or service, at locations convenient to their neighborhood.	**Consistent** The General Plan and LCP Update would support mixed-use development primarily through the Mixed-Use designation, as well as the Community, District, Neighborhood, and Visitor-Serving Commercial designations. In addition, the General Plan and LCP Update supports mixed-use development through the following policies: • **Policy LU-1.3: Access to Daily Needs.** Create sustainable development patterns characterized by mixed uses, walkable neighborhoods, and multimodal connections that allow residents to meet their daily needs for food, goods and services, employment, and other resources. • **Policy CIR-2.1: Compact Development.** Support mixed-use, compact-style, and other land use development patterns that facilitate easy active transportation and transit use. (See also Policies LU-3.1, LU-3.3, LU-3.6, and LU-3.7.)
L-3 Balancing Jobs and Housing. Within cities and unincorporated communities, the gap between the availability of jobs and housing should be narrowed and should not be allowed to expand.	**Consistent** The General Plan and LCP Update would allow for future development of new residential and employment spaces. In addition, the project would support balancing jobs and housing through the following policy: • **Policy LU-3.5: Jobs/Housing Ratio.** At buildout of Plan Morro Bay, the jobs/housing ratio should be as close to balanced (1.0) as possible.

2001 CAP Control Measure	Project Consistency
L-4 Circulation Management. The primary goal of the recommended Circulation Management Policies and Programs is to encourage the design and construction of the county's transportation system in a manner that supports alternative travel modes and decreases reliance on single occupant motor vehicles. Policies include: Promoting accessibility in the transportation system Promoting walking and bicycling Parking management Transportation demand management	**Consistent** The General Plan and LCP Update includes policies to reduce vehicle use and promote use of transit and active transportation, such as those listed under L-1, T-3 (below), as well as the following policies to support parking management: • **Policy CIR-4.1: Adequate Parking Required.** Eliminate minimum parking requirements when and where appropriate to promote walkable neighborhoods and transit and bicycle use, and establish maximum parking standards. In all cases, a finding shall be made that the proposed development can be served by adequate parking either on-site, off-site in a private parking lot, or offsite in a public parking lot provided the applicant has paid for that number of parking spaces via an in-lieu fee to the City (see also Policy CIR-4.3) In all cases, parking shall be provided in a manner that does not adversely impact the public's ability to park, unless a determination is made that existing parking in the area is sufficient • **Policy CIR-4.2: Paid Parking.** The City may seek a Coastal Development Permit to establish paid public parking spaces with reasonable rates in appropriate places. When considering a Coastal Development Permit application for any development that could reduce, degrade, or otherwise limit public parking opportunities (including paid parking) near beach access points, shoreline trails, or parklands, including any changes in parking timing, pricing, and availability, evaluate the potential impact on public coastal access, and ensure existing levels of public access are maintained, including through ensuring that alternative access opportunities, including bike lanes and parking, pedestrian trails, and relocated free vehicular parking spaces, are provided so as to fully mitigate any potential negative impacts and maximize access opportunities. Any revenue from fee-based parking programs within the Coastal Zone shall only be used to fund public access and other transportation improvements within the Coastal Zone. The funds can also be used to manage a City paid parking program. • **Policy CIR-4.3: Expand In-Lieu Fee Program.** Update parking fee requirements to expand to all commercial areas and to provide options for how in-lieu fees can improve access to downtown businesses and the coast. Ensure the in-lieu fee parking program provides adequate funding for public parking opportunities. All such fees shall be developed based on the actual cost to the City to develop and provide an equivalent number of parking spaces, including costs of land, planning, construction, and maintenance. • **Policy CIR-4.4: Shared Parking.** Encourage shared parking between adjacent uses where possible. • **Policy CIR-4.5: Coastal Access Parking.** Monitor coastal access parking demand and adjust parking strategies to ensure an appropriate amount of parking is provided so as to maximize public coastal access opportunities. • **Policy CIR-4.6: Excess Right-of-Way Parking.** In downtown and the waterfront areas, reconfigure existing parking space alignments to achieve greater parking yield. • **Policy CIR-4.7: Alternative Options.** Require or establish EV charging stations, bike sharing and park and ride locations throughout Morro Bay and in particular close to transit and amenities.

2001 CAP Control Measure	Project Consistency
Transportation Control Measures	
T-2A Local Transit System Improvements. The focus of this measure is on improving local transit service and infrastructure to increase ridership by enhancing the convenience and overall viability of the system.	**Consistent** The General Plan and LCP Update would support improvements to local transit service and infrastructure through the following policy: • **Policy CIR-1.6: Local Transit Improvement.** Continue to improve the local Morro Bay Transit Deviated Fixed Route and Call-A-Ride services and ensure connections to regional transit and active transportation facilities.
T-2B Regional Public Transit Improvements. San Luis Obispo Regional Transit Authority (SLORTA) operates the regional fixed route system, Central Coast Area Transit (CCAT). The focus of this measure is to improve regional transit service and infrastructure with the goal of increasing ridership rates in excess of countywide population growth rates.	**Consistent** The General Plan and LCP Update would support improvements to regional transit service and infrastructure through the following policies: • **Policy CIR-1.5: Regional Transit.** Coordinate with the San Luis Obispo Regional Transit Authority to ensure local transit connects smoothly with regional transit and possible future route and schedule expansions.
T-3 Bicycling and Bikeway Enhancements. To effectively encourage the modal shift to bicycles, a comprehensive program to promote bicycle use was adopted in the 1991 Clean Air Plan.	**Consistent** The General Plan and LCP Update would support increased bicycle use through policies listed under L-1 above, as well as the following policies: • **Policy CIR-2.4: Active Transportation Amenities.** Provide facilities and amenities for active transportation users at public facilities, including bicycle storage and seating areas. (See also Policies LU-8.4 and OS-1.8.) • **Policy CIR-2.5: Prioritizing Improvements.** Prioritize infrastructure improvements that benefit bicycle and pedestrian safety and convenience around community facilities and locations in pedestrian-oriented areas. (See also Policy OS-1.8 and Implementation Action OS-1.) • **Policy CIR-2.6: Destination Facilities.** Require and place access areas and facilities for bicycle, pedestrian, and transit travel in front of major destinations, such as shopping centers, parks, and schools. Facilities may include any or a combination of the following: designated passenger drop-off and pickup zones, benches, lighting, secure bike parking, shelters, and street trees. (See also Policies LU-2.3 and PS-2.1.)
T-4 Park and Ride Lots. To reduce vehicle miles traveled, this measure supports the development of new park and ride lots, including through the use of existing parking lots and developing agreements for park and ride lots when new commercial development occurs.	**Consistent** The General Plan and LCP Update would support development of park and ride lots through the following policies: • **Policy C-3.6: Park and Ride.** Support the future development of park and ride lots in Morro Bay. Site lots near commuter transit service and provide bicycle storage lockers at the lots to ensure they are designed to facilitate use by transit and active transportation users.

2001 CAP Control Measure	Project Consistency
T-6 Traffic Flow Improvements. This control measure focuses on traffic flow improvements and "traffic-calming" to improve the flow of all transportation modes. Traffic-calming refers to a full range of methods designed to improve the flow of nonmotorized transportation by slowing down the speed of motorized traffic. Traffic-calming is generally used in residential areas on non-arterial local streets and roads.	**Consistent** The General Plan and LCP Update would support improvements to traffic flow through the following policies: • **Policy CIR-1.7: System Flexibility.** Regularly evaluate and modify the overall transportation system, and remain informed and innovative regarding use of new mobility technologies. • **Policy CIR-1.10: Goods Movement.** Maintain smooth, consistent, and nonintrusive movement of trucks and goods through the city by way of truck routes, including working with businesses to minimize disruption to traffic flow during loading and unloading, and expanding designated commercial loading zones along the Embarcadero.
T-8 Teleworking, Teleconferencing, and Telelearning. This control measure seeks to reduce emissions by promoting telecommuting for any employee whose job can accommodate working from home.	**Consistent** The General Plan and LCP Update would promote telecommuting through the following policies: • **Policy C-3.7: Telecommuting.** Encourage employers to adopt teleworking, teleconferencing, and telelearning options for their employees and adopt policies and/or programs to further promote teleworking, teleconferencing, and telelearning among City staff.

Notes: Two transportation control measures, T-1B Campus Trip Reduction Program and T-5 Motor Vehicle Inspection and Control Programs, are not applicable to the project because the planning area does not include a college campus or have a smog check program.

As shown in Table 4.2-6, the General Plan and LCP Update would be consistent with applicable land use and transportation control measures contained in the 2001 CAP. In addition, the General Plan and LCP Update includes goals and policies intended to promote compact and infill development and reduce VMT, which would reduce criteria pollutant emissions associated with new development in the planning area. Implementation of the goals and policies in the General Plan and LCP Update Land Use and Circulation Elements listed below would minimize adverse effects associated with long term criteria pollutant emissions. These include:

Policy LU-1.3 **Access to Daily Needs**. Create sustainable development patterns characterized by mixed uses, walkable neighborhoods, and multimodal connections that allow residents to meet their daily needs for food, goods and services, employment, and other resources.

Policy LU-3.6 **Infill Development**. Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay.

Policy LU-3.7 **Limited Outward Expansion**. Establish criteria to allow for some limited outward expansion beyond the city's existing limits to achieve large-scale conservation of parcels and a small amount of rural-scale residential use and visitor-serving amenities to serve conservation lands. Standards applies to the future sphere of influence (SOI) area include keeping development off of ridgelines and preserve views of the City's backdrop of undeveloped open land. (See also Policies C-9.1 through C-9.5 and Implementation Actions C-30 and C-31.)

Policy CIR-1.1 **Balanced Transportation**. Work to complete a balanced multimodal transportation system that meets the needs of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities.

Policy CIR-1.3 **System Connectivity**. Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.

Policy CIR-1.4 **Future Enhancements**. Identify streets in the city that can be made "complete," and plan for new bikeways, sidewalks, and crosswalks on these streets by reallocating how space within the public right-of-way is used.

Policy CIR-1.5 **Regional Transit**. Coordinate with the San Luis Obispo Regional Transit Authority to ensure local transit connects smoothly with regional transit and possible future route and schedule expansions.

Policy CIR-1.6 **Local Transit Improvement**. Continue to improve the local Morro Bay Transit Deviated Fixed Route and Call-A-Ride services and ensure connections to regional transit and active transportation facilities.

Policy CIR-2.1 **Compact Development**. Support mixed-use, compact-style, and other land use development patterns that facilitate easy active transportation and transit use. (See also Policies LU-3.1, LU-3.3, LU-3.6, and LU-3.7.)

Policy CIR-2.2 **Street End Pedestrian Connections**. Create safer and more distinct lateral access connections across the street ends on the west side of the Embarcadero at Dunes, Harbor, Morro Bay Boulevard, Front, Pacific, Marina, and Driftwood Streets, including by relocating parking from these areas. (See also Policies LU-4.1, LU-4.5, LU-4.6, LU-7.1 through LU-7.6, and OS-1.6 and Implementation Action LU-19.)

Policy CIR-2.3 **Pedestrian Safety**. Provide for accessible, safe, and convenient paths, sidewalks, and crossings along major streets and beach and coastal areas for all users, including the disabled, youth, and the elderly. (See also Policies LU-8.5 and OS-3.6.)

Policy CIR-2.4 **Active Transportation Amenities**. Provide facilities and amenities for active transportation users at public facilities, including bicycle storage and seating areas. (See also Policies LU-8.4 and OS-1.8.)

Policy CIR-2.5 **Prioritizing Improvements**. Prioritize infrastructure improvements that benefit bicycle and pedestrian safety and convenience around community facilities and locations in pedestrian-oriented areas. (See also Policy OS-1.8 and Implementation Action OS-1.)

Policy CIR-2.6 **Destination Facilities**. Require and place access areas and facilities for bicycle, pedestrian, and transit travel in front of major destinations, such as shopping centers, parks, and schools. Facilities may include any or a combination of the following: designated passenger drop-off and pickup zones, benches, lighting, secure bike parking, shelters, and street trees. (See also Policies LU-2.3 and PS-2.1.)

2001 Clean Air Plan Consistency Conclusion

As discussed above, the General Plan and LCP Update would not conflict with SLOAPCD's assumptions for population growth, and would be consistent with applicable land use and transportation control measures contained in the 2001 CAP. However, the General Plan and LCP

Update would result in an increase in VMT of approximately 230 percent by 2040, which would exceed the projected rate of population growth in Morro Bay. As a result, the General Plan and LCP Update would obstruct implementation of the applicable air quality plan, which is a significant impact.

Mitigation Measures

The General Plan and LCP Update would comply with applicable General Plan and LCP Update goals and policies that would reduce VMT to the extent feasible. In addition, individual development projects in the planning area would require project-level environmental review, including evaluation of future projects for consistency with the applicable air quality plan in accordance with the SLOAPCD CEQA *Air Quality Handbook*, which could result in the implementation of project-specific mitigation measures to reduce VMT. However, no additional policy-oriented mitigation is available that would reduce projected VMT.

Significance After Mitigation

Additional policy-oriented mitigation is not available that would reduce the projected VMT increase such that it would not exceed population growth in the region. Therefore, the General Plan and LCP Update would be inconsistent with the 2001 CAP, and this impact would remain significant and unavoidable.

The following discussion addresses the potential human health impacts associated with significant and unavoidable long term increases in criteria pollutant emissions. This discussion is provided to address concerns raised in the Sierra Club v. County of Fresno (Friant Ranch; 2018) decision regarding adequate disclosure of the potential human health effects from significant air quality impacts. The Supreme Court opinion in Friant Ranch requires projects with significant air quality impacts to “relate the expected adverse air quality impacts to likely health consequences or explain why it is not feasible at the time of drafting to provide such an analysis, so that the public may make informed decisions regarding the costs and benefits of the project.”

In their amicus briefs on the Friant Ranch case, South Coast Air Management District (SCAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD) staff state that it is not feasible with existing modeling techniques to precisely correlate a project’s impacts related to ROG, NO_X, and PM emissions to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program, which is not the case for the proposed project (Brief for South Coast Air Quality Management District 2018; Brief for San Joaquin Valley Unified Air Pollution Control District 2018).

The SCAQMD and SJVAPCD amicus briefs note that ozone formation is not linearly related to emissions. Therefore, ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology, and seasonal impacts, and because ozone is formed later and downwind from the actual emission. In addition, the SJVAPCD amicus brief states that although emissions of particulate matter can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because local PM concentrations are affected by several factors, including wind transport, meteorology, and complex chemical factors. In addition, secondary PM is formed via a complex process such that the tonnage of PM-forming precursor emissions in a given area does not necessarily result in an equivalent concentration of secondary PM in that same area. Therefore, a general description of the adverse health impacts resulting from the pollutants at issue is the full extent of information that can be provided at this time.

The increase in ozone and PM_{10} concentrations in San Luis Obispo County as a result of project operation would contribute to adverse health impacts that are already occurring due to the region's nonattainment status for these pollutants. As discussed in Section 4.2.1(b), *Air Pollutants of Primary Concern*, the health impacts of ozone include respiratory and eye irritation and possible changes in lung functions, and the health impacts of PM_{10} include increased respiratory symptoms, aggravated asthma, development of chronic bronchitis, nonfatal heart attacks, and premature death in people with heart or lung disease.

Threshold 2:	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?
Threshold 3:	Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-2 BUILDOUT OF THE GENERAL PLAN AND LCP UPDATE WOULD RESULT IN SHORT-TERM EMISSIONS OF CRITERIA POLLUTANTS. CONSTRUCTION EMISSIONS FROM FUTURE PROJECT IN THE PLANNING AREA WOULD BE QUANTIFIED ONCE PROJECT DETAILS ARE KNOWN AND EVALUATED FOR POTENTIAL IMPACTS IN ACCORDANCE WITH SLOAPCD GUIDANCE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Buildout of the General Plan and LCP Update would result in temporary emissions associated with construction activities, such as construction worker travel to and from project sites, delivery and hauling of construction supplies and debris, fuel combustion by on-site construction equipment, and application of architectural coatings and other products. These construction activities would temporarily create emissions of dust, equipment exhaust, and other air contaminants, particularly during site preparation and grading. The magnitude of ROG and NO_X emissions would depend largely on the quantity and type of equipment used and the hours of usage. The extent of $PM_{2.5}$ and PM_{10} emissions would depend largely upon the following factors: 1) the amount of disturbed soils; 2) the length of disturbance time; 3) whether existing structures are demolished; 4) whether excavation is involved; and 5) whether transporting excavated materials off-site is necessary. Dust emissions can lead to both nuisance and health impacts.

Because construction emissions from buildout of the General Plan and LCP Update would be potentially significant, mitigation is required. The SLOAPCD provides standard mitigation measures for construction in the *CEQA Air Quality Handbook*, which are included as Mitigation Measure AQ-2. Future development projects in the Morro Bay planning area would also be evaluated for air quality impacts once project-level details are known and would be required to incorporate additional mitigation if project construction emissions exceed the thresholds established by the SLOAPCD.

Because individual projects would be required to evaluate air quality impacts resulting from construction emissions and mitigate emissions as required by SLOAPCD guidance, air quality impacts from construction of the proposed project would be mitigated to a less than significant level.

Mitigation Measures

AQ-2 Standard Mitigation for Construction Equipment

Proponents of individual land use projects, or other projects requiring grading or building permits, shall require construction contractors to incorporate the following standard mitigation measures, as applicable, to reduce ROG, NO_X, and DPM emissions from construction equipment. Mitigation

measures shall be listed on project construction plans and the project proponent shall perform periodic site inspections during construction to ensure that mitigation measures are being implemented.

- Maintain all construction equipment in proper condition according to manufacturer's specifications
- Fuel all off-road and portable diesel powered equipment with ARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road)
- Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State Off-Road Regulation
- Use on-road heavy-duty trucks that meet ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation
- Construction or trucking companies with fleets that that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NO_X exempt area fleets) may be eligible by proving alternative compliance
- All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit
- Diesel idling within 1,000 feet of sensitive receptors is not permitted
- Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors
- Electrify equipment when feasible
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible
- Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.

Significance After Mitigation

Mitigation Measure AQ-2 would reduce short-term NO_X, ROG, and DPM emissions generated by construction activities associated with future buildout of the project. This impact would be less than significant with mitigation.

Threshold 3:	Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-3 **THE GENERAL PLAN AND LCP UPDATE WOULD ALLOW FOR DEVELOPMENT OF NEW RESIDENCES AND OTHER SENSITIVE RECEPTORS IN PROXIMITY TO INDUSTRIAL USES, WHICH COULD RESULT IN EXPOSURE OF SENSITIVE RECEPTORS TO ELEVATED CONCENTRATIONS OF TACS. THE GENERAL PLAN AND LCP UPDATE WOULD NOT GENERATE LEVELS OF TRAFFIC THAT WOULD EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS, OR RESULT IN NEW DEVELOPMENT THAT WOULD EXPOSE SENSITIVE RECEPTORS TO HAZARDS ASSOCIATED WITH NATURALLY OCCURRING ASBESTOS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.**

Toxic Air Contaminants

High levels of TACs, such as diesel particulate matter (DPM), formaldehyde, benzene, acetaldehyde, and polycyclic aromatic hydrocarbons (PAH), can result in health risks for sensitive populations. ARB recommends local jurisdictions adopt land use policies to separate sensitive land uses a minimum of

500 to 1,000 feet from common TAC sources, depending on the source. SLOAPCD permitting requirements would apply to new stationary sources of TACs in Morro Bay. ARB's recommendations for siting new sensitive land uses for common mobile and stationary sources of air toxics are presented in Table 4.2-7 and published in the *Air Quality and Land Use Handbook: A Community Health Perspective* (ARB 2005). The recommended setbacks are advisory and should not be interpreted as defined "buffer zones."

Table 4.2-7 Recommendations for Siting New Sensitive Land Uses in California

Source Category	Advisory Recommended Setback Distance
Freeways and High-traffic Roads	500 feet from a freeway or urban road with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day
Distribution Centers that accommodate than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week	1,000 feet. Avoid location of new sensitive land uses near entry and exit points
Rail Yards	1,000 feet. Within 1 mile, consider siting limitation and mitigation approaches
Ports	Immediately downwind. Consult local air district
Refineries	1,000 feet
Chrome Platers	1,000 feet
Dry Cleaners Using Perchloroethylene	300 feet. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district Do not site new sensitive land uses in the same building with perc dry cleaning operations
Gasoline Dispensing Facilities	300 feet for a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater) 50 feet for typical gas dispensing facilities

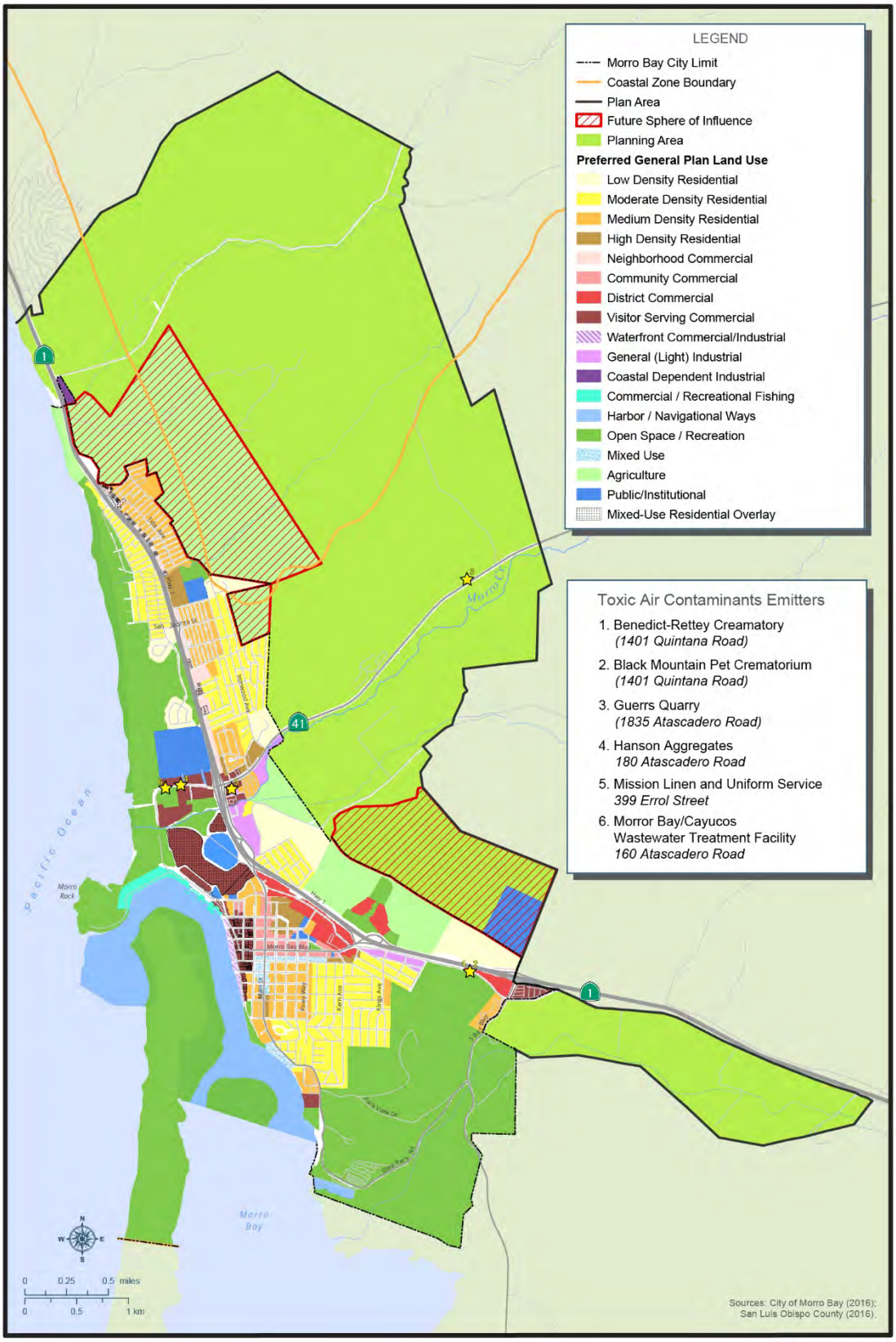
Source: ARB 2005

Potential land use sources of TACs in Morro Bay currently include one dry cleaning facility and multiple gasoline service stations. No other common sources of TACs included in Table 4.2-8 are present in the planning area. However, ARB has identified six[1] TAC sources in the planning area that are not included in Table 4.2-8 or addressed specifically in the *Air Quality and Land Use Handbook* (Morro Bay 2017, also refer to the Community Baseline Assessment for the General Plan and LCP Update [Appendix B]). These sources are shown in Figure 4.2-1, and include:

- Benedict-Rettey Crematory at 1401 Quintana Road
- Black Mountain Pet Crematorium at 1401 Quintana Road
- Guerra Quarry at 1835 Atascadero Road
- Hanson Aggregates at 180 Atascadero Road

[1] Morro Bay Power Plant ceased operation in 2014 and the site would be redeveloped for mixed-use under the project (Wilson 2014). Thus, it is not currently considered a source of TACs and would not be a future source with implementation of the project. The US Army Corps of Engineers was a temporary source of TACs during dredging work in Morro Bay Harbor (DredgingToday.com 2017).

Figure 4.2-1 Toxic Air Contaminants Sources in Morro Bay



- Mission Linen and Uniform Service at 399 Errol Street
- Morro Bay/Cayucos Wastewater Treatment Facility at 160 Atascadero Road

As shown in Figure 4.2-1, sensitive land uses, such as residences, could be located in proximity to identified TAC sources under the General Plan and LCP Update. The General Plan and LCP Update includes policies intended to maintain and improve local air quality through local actions and interagency coordination. Implementation of the policies in the General Plan and LCP Update Conservation Element listed below would minimize adverse effects associated with criteria pollutants and TACs. These include:

Policy C-3.1: Interagency Cooperation. Continue to cooperate with the SLOAPCD and other regional, state, and national agencies to implement the County Clean Air Plan, including enforcing air quality standards and improving air quality.

Policy C-3.2: Pollutant Sites. Identify opportunities to locate new air pollutant sources away from the general population.

Policy C-3.4: Vehicle Idling. Explore and implement strategies to minimize vehicle idling.

Policy C-3.5: Air Quality in Sensitive Land Uses. Minimize exposure of sensitive land uses to toxic air contaminants by locating new pollutant sources away from sensitive uses such as schools, hospitals, parks, playgrounds, residential areas, and natural and open space areas.

Compliance with existing applicable regulations, SLOAPCD permitting requirements, and General Plan and LCP Update policies would minimize risks associated with criteria pollutant and TAC emissions. Oversight by the appropriate State and local agencies and compliance by new development with applicable regulations would minimize the risk of the public's potential exposure to TAC emissions. Therefore, health risk impacts from TAC emissions would be less than significant.

Carbon Monoxide Hotspots

The General Plan and LCP Update is anticipated to increase regional VMT (refer to Section 4.13, *Transportation*). Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO ("CO hotspots") and could potentially expose sensitive receptors to substantial pollutant concentrations. The ARB considers freeways and urban roadways with more than 100,000 vehicles per day and rural roadways with more than 50,000 vehicles per day to pose a health risk to sensitive receptors within 500 feet due to DPM emissions (ARB 2005). In addition, the Bay Area Air Quality Management District (BAAQMD) has established a volume of 44,000 vehicles per hour as the level above which traffic volumes may contribute to a violation of CO standards (BAAQMD 2017). Existing traffic volumes along all of the studied roadway segments in Morro Bay under existing, buildout, or buildout with project conditions do not exceed 50,000 vehicles per day or 44,000 vehicles per hour at any location (Appendix E). Therefore, the General Plan and LCP Update would not result in volumes of traffic that would create, or substantially contribute to, hazardous levels of TACs or the exceedance of State and federal AAQS for CO.

Naturally Occurring Asbestos

NOA has been identified by the State Air Resources Board as a toxic air contaminant. Serpentine and ultramafic rocks are common in San Luis Obispo County and may contain NOA. According to the SLOAPCD NOA Map for San Luis Obispo County, most of central Morro Bay and all of the developed

areas north of central Morro Bay are areas of concern with known serpentine rock formation, which are potential sources of NOA (SLOAPCD 2018a). Future development under the General Plan and LCP Update would result in excavation and grading and therefore may encounter NOA. Under ARB's Air Toxics Control Measure (NOA ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, prior to any grading activities at a site within the green "buffer" areas on SLOAPCD's NOA map, the owner or operator would be required to comply with the NOA ATCM. The NOA ATCM requires submittal of a geologic evaluation determining whether serpentine rock is present on a project site, and if so, to what extent (less or more than one acre). Depending on the results of the geologic evaluation, a project would be required to file an exemption request form (if on serpentine is present), a Mini Dust Control Measure Plan (if less than one acre of serpentine is present), or an Asbestos Dust Control Measure Plan (if more than one acre of serpentine is present). Compliance with ARB's NOA ATCM, would ensure that impacts associated with naturally occurring asbestos would remain less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 4:	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Impact AQ-4 IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE WOULD NOT CREATE OBJECTIONABLE ODORS THAT WOULD IMPACT A SUBSTANTIAL NUMBER OF PEOPLE, AND FUTURE PROJECTS WOULD BE REQUIRED TO COMPLY WITH SLOAPCD REGULATIONS PROHIBITING NUISANCE EMISSIONS (INCLUDING ODORS). THIS WOULD BE A LESS THAN SIGNIFICANT IMPACT.

As discussed above, Table 3-3 of the SLOAPCD's *CEQA Air Quality Handbook* identifies potential odor sources and screening distances for nuisance sources. Potential odor sources identified by the SLOAPCD included manufacturing plants, coffee roasters, composting facilities, landfills, transfer stations, and wastewater treatment plants. While the city contains potential odor sources, such as coffee roasters, auto body shops, and the Morro Bay-Cayucos Wastewater Treatment Plant (WWTP), the SLOAPCD has confirmed that it has not received odor complaints for sources in Morro Bay for several years (Elliot 2018).

The General Plan and LCP Update would allow for development of new industrial sources that may generate odors. However, SLOAPCD Rule 402 prohibits discharge of air contaminants or other materials, including odors, that cause injury, detriment, nuisance or annoyance to any to any considerable number of persons or to the public, or to a business or property; the rule, however, exempts odors from agricultural operations. While the General Plan and LCP Update would allow for some development of residences and agriculture in proximity to one another (east of State Route [SR] 1), existing agricultural operations have not resulted in odor complaints, and future agricultural operations are expected to be similar in nature, consisting of small-scale crop farming and grazing. Therefore, the General Plan and LCP Update would not result in sensitive receptors being located near sources of substantial odors, and this impact would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce potential odor conflicts.

d. Cumulative Impacts

Morro Bay is located in San Luis Obispo County, which is a part of the SCCAB, along with Santa Barbara and Ventura Counties. All of the city's neighboring jurisdictions are also located in San Luis Obispo County and within the SCCAB. Air quality in the SCCAB is regulated by SLOAPCD, which has prepared an air quality plan to improve conditions and meet federal and state air quality standards. San Luis Obispo County is in non-attainment for the 1-hour and 8-hour state standards for ozone and the 24-hour state standard for PM_{10} (SLOACPD 2017). Future development throughout San Luis Obispo County would create ozone and PM_{10} emissions, which would contribute to continued or exacerbated violation of state emissions standards, resulting in a significant cumulative impact to air quality. As discussed under Impact AQ-1 and Impact AQ-2, buildout of the General Plan and LCP Update would result in an increase of VMT exceeding the rate of population increase, which would be inconsistent with SLOAPCD's 2001 CAP. The 2001 CAP is intended to bring the County into attainment of the State ozone standard. Because the General Plan and LCP Update would be inconsistent with the CAP, the General Plan and LCP Update's contribution to cumulative regional air quality impacts would be significant and unavoidable.

4.3 Biological Resources

This section addresses the existing environmental conditions in the planning area and provides an assessment of the potential for direct and indirect impacts to sensitive natural communities, special status species, regulated waterways and wetlands, sensitive habitat and mature native trees, and wildlife movement corridors. Background technical documents were prepared in support of the evaluation of impacts for biological resources and have been referenced in this section as applicable.

4.3.1 Setting

The planning area is located along the California coast east and northeast of Estero Bay and Morro Bay. The planning area includes a variety of land use types, including residential, commercial, and agricultural areas, as well as open undeveloped space consisting of native and non-native vegetation communities.

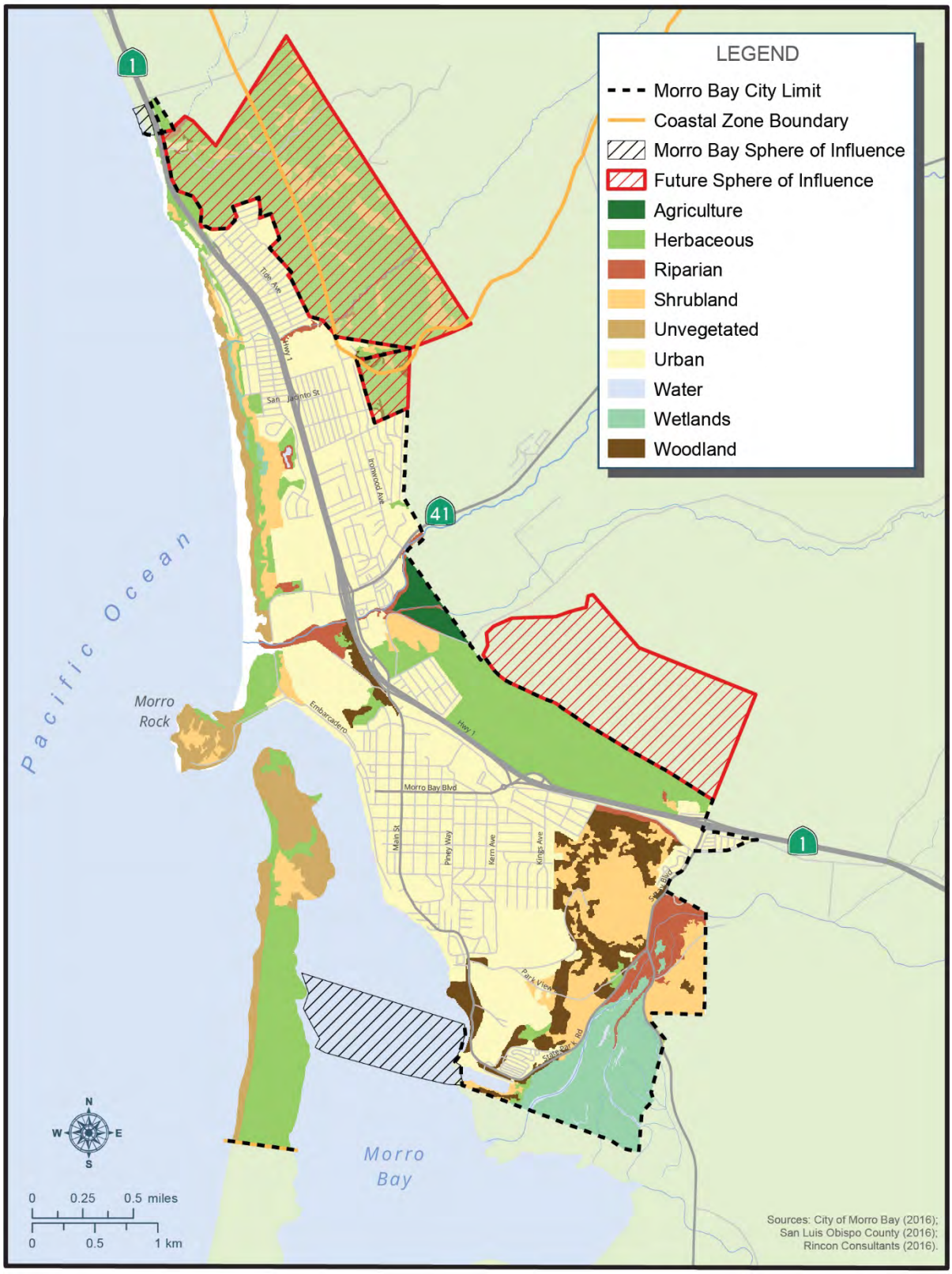
The vegetation communities and wildlife habitats in the planning area are based on the Community Baseline Assessment for the General Plan and LCP Update (refer to Appendix B) and the Environmentally Sensitive Habitat Area (ESHA) Review and Current Conditions Mapping (refer to Appendix D) as well as the County of San Luis Obispo 2007 vegetation map (San Luis Obispo County 2007 and 2009), California Department of Fish and Wildlife (CDFW) California Wildlife Habitat Relationship (CWHR) classification system (CDFW 2014), A Manual of California Vegetation, Second Edition (Sawyer et al. 2009), Atlas of Sensitive Species of the Morro Bay Area (Sims 2010), topographic maps, and recent aerial photographs (Google Earth 2018).

Vegetation types are broadly grouped by form, as shown in Figure 4.3-1. Within each broad category, multiple alliances may be present. For each broad vegetation community described, the corresponding alliances listed in the discussion are defined as vegetation classification units containing one or more associations, and defined by a characteristic range of species composition, habitat conditions, physical characteristics, and diagnostic species, typically at least one of which is found in the uppermost or dominant layer of the vegetation (Jennings et al. 2009). These vegetation communities and wildlife habitats have been adapted to reflect the current conditions within the planning area. Note that not all baseline reports and documents that informed this analysis cover the full planning area or use the same classification systems; a table that explains how the different naming systems related to one another is attached as Appendix D.

a. Terrestrial Vegetation Communities and Other Land Cover Types

Morro Bay has a wide diversity of tree (hardwood and coniferous forests, oak woodlands), shrub (chaparrals, coastal scrubs), and herbaceous (grasslands) terrestrial habitat types. Additionally, some areas have been modified for agricultural uses. Remaining areas include developed and sparsely vegetated/barren land cover types. This section addresses terrestrial habitats and other land cover types not associated with water. Vegetation communities associated with aquatic and semi-aquatic areas, including riparian and wetland vegetation types and unvegetated open waters, are discussed in section 4.3.1(b).

Figure 4.3-1 Terrestrial Vegetation Communities and Other Land Cover Types



Woodlands

Conifer and hardwood forests and woodlands in the planning area are tree-dominated habitats that can support diverse wildlife populations. The following are descriptions of native or naturalized, terrestrial, tree-dominated habitats that occur in the planning area.

Coastal Oak Woodland

Coastal oak woodlands are variable in structure. Slope, soil, precipitation, moisture availability, and air temperature cause the variations in structure of coastal oak woodlands. These factors vary along the latitudinal, longitudinal, and elevational gradients over which coastal oak woodlands are found.

In the Morro Bay General Plan and LCP Update planning area, the coastal oak woodlands are dominated by coast live oak (*Quercus agrifolia*), an evergreen hardwood tree. The overstory consists of primarily coast live oak, sometimes mixed with scattered conifers. In sites with moderate moisture, the trees are dense and form a closed canopy. In drier sites, the trees are widely spaced, forming an open woodland or savannah. The understory is equally variable. In some instances, it is composed of shrubs from adjacent chaparral or coastal scrub, which forms a dense, almost impenetrable understory. More commonly, shrubs are scattered under and between trees. Where trees form a closed canopy, the understory varies from a lush cover of shade-tolerant shrubs, ferns, and herbs to sparse cover with a thick carpet of litter. When trees are scattered and form an open woodland, the understory is grassland, sometimes with scattered shrubs. Common understory species include poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), and annual grasses. Coastal oak woodlands are not abundant in the planning area and are primarily found outside the current city limits. These woodlands correspond to the Coast Live Oak Woodland Alliance using A Manual of California Vegetation, Second Edition (MCV2) classification system (Sawyer et al. 2009).

Coniferous Woodlands

Coniferous woodland areas in the planning area primarily consist of stands of Monterey pine (*Pinus radiata*) and Monterey cypress (*Hesperocyparis macrocarpa*). While these species are native to California, Morro Bay is outside the native range of these conifers (CDFW 2018a; Jepson Flora Project [eds.] 2018; Kral 1993; Eckenwalder 1993). These species have been widely planted and have naturalized outside their range; their presence in the planning area is primarily due to past plantings of groves and windrows, including large stands at Morro Bay State Park near Black Hill and within the golf course. Other prominent groves and windrows are near the high school, along roadways, and in some neighborhoods. The configuration of trees and composition of the understory varies. Some areas, such as the groves near Black Hill, are intermixed with coastal scrub and chaparral species; other areas have annual grassland understory or landscaping. Although these groves are not naturally occurring woodlands, the structure of these vegetation communities provide valuable wildlife habitat, including roosting and nesting habitat for many species of birds. These woodlands correspond loosely to the Monterey Pine and Monterey cypress Forest Alliances described in the MCV2 system in terms of dominant species in the canopy, but lack the typical understory and age structure, and are not naturally occurring forests (Sawyer et al. 2009; CNPS 2018a).

Eucalyptus Groves

This habitat type typically ranges from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. Trees within this habitat

type are typically planted in rows for use as a wind break, and over time, young trees may recruit into spaces between the planted trees. In most cases, eucalyptus forms a dense stand with a closed canopy. Blue gum eucalyptus (*Eucalyptus globulus*) and red gum eucalyptus (*E. camaldulensis*) are the most common eucalyptus species found in these stands in the planning area. The understory of these areas tends to have extensive patches of leaf litter that limit growth of other vegetation, but understory may include species such as poison oak, and in some areas, the understory includes sparse landscape plantings. In the planning area, eucalyptus groves include linear windbreaks and broad groves. This community corresponds to the Eucalyptus Grove Woodland Semi-natural Alliance described in the MCV2 system (Sawyer et al. 2009).

Shrub-dominated Habitats

Chaparral and coastal scrub communities are prevalent in the planning area. Chaparral vegetation types are typically dominated by evergreen shrubs with stiff branches and sclerophyllous leaves, while coastal scrub vegetation types are typically dominated by semi-deciduous/drought-deciduous, aromatic shrubs with soft, pliable branches. The following are descriptions of native or naturalized terrestrial shrub-dominated habitats that occur in the planning area.

Chamise Chaparral

This habitat type ranges from nearly pure stands of chamise (*Adenostoma fasciculatum*) to mixed stands in which other chaparral species are present, but chamise is clearly dominant. Mature chamise chaparral is single-layered, generally lacking well-developed herbaceous ground cover and overstory trees. Occasionally herbs colonize openings in the chaparral. Shrub canopies frequently overlap, producing a dense canopy of interwoven branches. Fire occurs regularly in chamise-chaparral and influences habitat structure. In Morro Bay, occurrences of chamise chaparral typically correspond to the Chamise Shrubland Alliance described in the MCV2 system (Sawyer et al. 2009).

Mixed Chaparral

Mixed chaparral habitat is a dominated by shrubs with thick, stiff evergreen leaves, with a mixture of species forming the shrub canopy. Shrub height and crown cover vary with age since last burn, precipitation, aspect, and soil type. At maturity, mixed chaparral typically is a dense, nearly impenetrable thicket. On sites with serpentine soils or steep slopes, shrub cover may be reduced and shrubs may be shorter. Leaf litter and standing dead material may accumulate in stands that have not burned for several decades. This type is distinguished from chamise chaparral based on the presence and relative abundance of other shrub species in addition to chamise, such as buckbrush (*Ceanothus cuneatus*), lemonade berry (*Rhus integrifolia*), toyon (*Heteromeles arbutifolia*) and bigberry manzanita (*Arctostaphylos glauca*). Mixed chaparral can correspond to multiple alliances depending upon the species composition, including, but not limited to the Buckbrush Shrubland Alliance and the Bigberry Manzanita Shrubland Alliance described in the MCV2 system (Sawyer et al. 2009).

Coastal Scrub

The coastal scrub habitat type is most similar to central coastal scrub, as described by Holland (1986). These coastal scrub communities consist of a dense canopy of aromatic shrubs adapted to drier south-facing slopes and terraces along the coastal zone of California and northern Baja California. Vegetation in the coastal scrub type is composed primarily of soft-leaved deciduous shrubs that may reach three to six feet tall and form a dense canopy over rocky or other nutrient-

poor soils, including coastal bluffs. Evergreen shrubs are often present within this habitat type. In Central California, from Monterey to Point Conception, coastal scrub occurs primarily below 2,000 feet on the ocean side of the coastal ranges.

In the planning area, dominant species include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), and black sage (*Salvia mellifera*). Sticky monkeyflower (*Mimulus aurantiacus*) and poison oak are common associates. Grasses and herbs are interspersed, including foothill needlegrass (*Stipa lepida*) and everlasting (*Pseudognaphalium* spp.). Goldenbush (*Isocoma menziesii*) is also a common component on bluffs. In the planning area, coastal sage scrub habitats include areas consistent with the California Sagebrush Scrub Shrubland Alliance, the Black Sage Scrub Shrubland Alliance, and the Coyote Brush Scrub Shrubland Alliance described in the MCV2 system (Sawyer et al. 2009).

Coastal Dune Scrub

Coastal dune scrub communities are mature dune communities occupying the stable and more fertile soils of the interdune and backdune, compared with the unstable and low-nutrient foredune environment. Coastal dune scrub occurs on soils with higher organic matter content, higher water holding capacity, and lower salt content. These communities also have reduced reflectivity and temperature fluctuation of the soil compared to other dune communities, due to more abundant shade and vegetation litter (Holland and Keil 1995). These characteristics result in higher species diversity in these communities when compared to other dune communities.

Coastal dune scrub communities within the planning area make up the dominant habitat type of the Morro Dunes Complex, which runs north to south from Cayucos to Montana de Oro State Park. Coastal dune scrub communities are largely dominated by shrubby vegetation. Common subshrub and shrub species of coastal dune scrub in Morro Bay area include California sagebrush, coyote brush, mock heather (*Ericameria ericoides*), coastal buckwheat (*Eriogonum parvifolium*), coastal golden yarrow (*Eriophyllum staechadifolium*), golden bush, deerweed (*Acmispon glaber*), coastal silver lupine (*Lupinus chamissonis*), Blochman's groundsel (*Senecio blochmaniae*) and black sage. In addition to these shrubs and subshrubs, many native herbaceous species are present in this habitat type and include, but are not limited to, California aster (*Corethrogyne filaginifolia*), Blochman's leafy daisy (*Erigeron blochmaniae*), wallflower (*Erysimum suffrutescens*), California poppy (*Eschscholzia californica*), and horkelia (*Horkelia cuneata*) (Sims 2010; City of Morro Bay 2018). This community most closely resembles the *Lupinus chamissonis - Ericameria ericoides* Shrubland Alliance, as described in the MCV2 (Sawyer et al. 2009).

Coastal dunes in the planning area contains regions of the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) and federally endangered Morro shoulderband snail (*Helminthoglypta walkeriana*) critical habitats, and provides abundant nesting and foraging habitat for other avian and special status wildlife species. This community also provides suitable habitat for many special status plant species including dune larkspur (*Delphinium parryi* ssp. *blochmaniae*), Blochman's groundsel, and Blochman's leafy daisy (City of Morro Bay 2018).

Herbaceous Habitats

Terrestrial herbaceous vegetation communities in the planning area include foredunes and grasslands. These habitats are generally composed of areas dominated by grasses or herbaceous (nonwoody) species. The following are descriptions of native or naturalized herb-dominated habitats that occur in the planning area.

Foredune

The foredune natural community occurs at the edge of the coastal strand, where sand begins to accumulate and stabilize, with increased plant cover and diversity. This community occurs between the coastal strand and the backdune/dune scrub community. The predominant vegetation is dune mat, a sensitive natural community dominated by red sand verbena (*Abronia maritima*), beach sand verbena *(Abronia umbellata*) and beach bur (*Ambrosia chamissonis*). Other common species include yarrow (*Achillea millefolium*), coastal sagewort *(Artemisia pycnocephala*), spearscales *(Atriplex* spp.*),* sea rocket (*Cakile maritima*), beach primrose (*Camissonia cheiranthifolia*), seaside daisy (*Erigeron glaucus*), and seaside golden yarrow*.* Foredune communities in Morro Bay are most closely associated with the Beach Bursage – Sand Verbena – Sea Rocket Association of the Dune Mat Herbaceous Alliance, as described in the MCV2 (Sawyer et al. 2009).

Most of this community overlaps with the western snowy plover critical habitat and provides essential habitat for other special status species, such as legless lizard (*Anniella pulchra*). The foredune also contains suitable habitat for special status plant species such as beach spectaclepod (*Dithyrea maritima*), red sand verbena, and coast woolly-heads (*Nemacaulis denudata* var. *denudata*). This community also provides abundant foraging habitat for many special status wildlife species in the coastal zone.

Annual Grasslands

This habitat type consists primarily of non-native annual grasses and a mixture of native and non-native herbs, and typically lacks shrub or tree cover. The physical characteristics and species composition of annual grasslands are variable. Common grass species in Morro Bay include wild oats (*Avena* spp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), and red brome (*B. madritensis*). Common herb species can include non-native filarees (*Erodium* spp.), and bur clover (*Medicago polymorpha*) as well occasional patches of wildflowers, including California poppy and succulent lupine (*Lupinus succulentus*). Annual grasslands can correspond to multiple alliances depending upon the species composition, and in the planning area, may include, but are not limited, to Wild Oat *S*emi-Natural Stands and Brome (ripgut, red) – Purple False Brome Semi-Natural Stands as described in the MCV2 (Sawyer et al. 2009). Some grasslands in the planning area within and around the city are utilized for livestock grazing, and are differentiated from pasture vegetation types based on management and species composition. Annual grasslands are not abundant within the current city limits but are more common in the portions of the planning area surrounding the city.

Perennial Grassland

Perennial grassland habitats contain native perennial grasses as a consistent component of a grass-dominated herbaceous vegetation community. Many of these habitats have been invaded by non-native annual grasses and herbs statewide, and annual grasses are frequently a common component of these communities. In the planning area, perennial grassland habitats have the characteristic presence of perennial grass species such as California oatgrass (*Danthonia californica*), purple needlegrass (*Stipa pulchra*), and meadow barley (*Hordeum brachyantherum*). Annual grasses are typically also present at moderate to high cover. Native annual and perennial wildflowers are also a typical component. Perennial grassland habitat typically occurs in deeper soils than scrub communities. Perennial grassland can correspond to multiple alliances depending upon the species composition. These alliances can include, but are not limited to, the California Oatgrass Herbaceous Alliance and Purple Needlegrass Herbaceous Alliance as described in the MCV2 (Sawyer et al. 2009).

Perennial grasslands are not abundant within current city limits, but are more common in the portions of the planning area surrounding the city.

Agricultural Land Cover Types

Agricultural Fields

Vegetation in this habitat includes a variety of sizes, shapes, and growing patterns. Most irrigated row and field crops are grown in rows. Some crops may form 100 percent canopy at some times of year while others may have significant bare areas between rows. Many crops are annuals, such as lettuces, peas, and cole crops, while others, such as asparagus and berries, as well as tree crops, such as oranges and avocados, are perennial. Annuals are usually planted in winter or spring and harvested one or two seasons later. However, they may be planted in rotation with other irrigated crops year-round. Winter wheat or barley may sometimes be planted after the harvest of a previous crop in the fall, dry farmed (during the wet winter and early spring months), and then harvested in the late spring. Cultivated agricultural lands in the planning area are primarily used to grow peas, peppers, beans, avocados, and dry farmed crops.

Pasture

Managed pasture vegetation is typically a mix of perennial grasses and legumes that completely cover the soil. Structurally, this habitat type resembles annual grassland habitats, and in this document this type is differentiated from annual grassland based on evident active management of the vegetation through practices such as irrigation, seeding, and high stocking rates, as well as differences in species composition. Vegetation height varies, according to season and livestock stocking levels. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation, weed control, and the type of livestock on the pasture.

Sparsely/Non-vegetated Habitats and Developed Areas

Developed areas are abundant in the city, and uncommon in the surrounding planning area. Species that occur in these developed areas are typically adapted to human caused disturbance and/or composed of ornamental species. Additionally, some barren or sparsely vegetated areas are present. These include both natural features, such as beach and rock outcrop, and areas that are bare due to past disturbance. The following are descriptions of developed and sparsely/non-vegetated habitats that occur within the planning area.

Coastal Strand

The coastal strand community is present in the regions of unstable sand on beaches immediately adjacent to the ocean. Due to the harsh environmental conditions such as salt spray, tidal inundation, and high winds, these communities typically have little to no vascular vegetation (Sims 2010). An accumulation of uprooted algae, driftwood and other debris is common in this community, which extends between the approximate low tide line of the open ocean and the relatively more stabilized foredune. The coastal strand also provides essential foraging habitat and prey base for many coastal avian wildlife, including the threatened western snowy plover, and other wildlife species in the area. It is also an important passive recreational area. This land cover type is not classified in the MCV2 system due to lack of vegetation.

Morro Rock

Morro Rock is located at the mouth of the bay and is the northernmost visible volcanic plug in a chain of plugs extending from Islay Hill in San Luis Obispo. The ecological preserve on Morro Rock serves as a nesting site for peregrine falcons. The rock is sparsely vegetated; where vegetation is present, cover is sparse.

Other Barren Areas

This land cover type is defined by the absence of vegetation. Any habitat with less than 2 percent total vegetation cover and less than 10 percent cover by tree or shrub species is defined as barren. Structure and composition of barren habitats are largely determined by the region of the State as well as surrounding environment. Examples of barren habitats include areas of exposed parent rock (rock outcrops) and rocky slopes. Due to the inadequacies in nutrient and water content throughout thin layers of soil and the presence of solid or densely packed rock that forms an impenetrable layer for plant roots to grow, rock outcrops often lack much vegetation. In Morro Bay, rock outcrops often coincide with serpentine soils, which further limit certain plant species growth (Sims 2010).

Urban

This land cover type is a predominately man-made habitat comprising residential, commercial, and industrial developed areas, with large developed areas lacking vegetation. Plant species within urban habitats are typically ornamental and other nonnative invasive plant species.

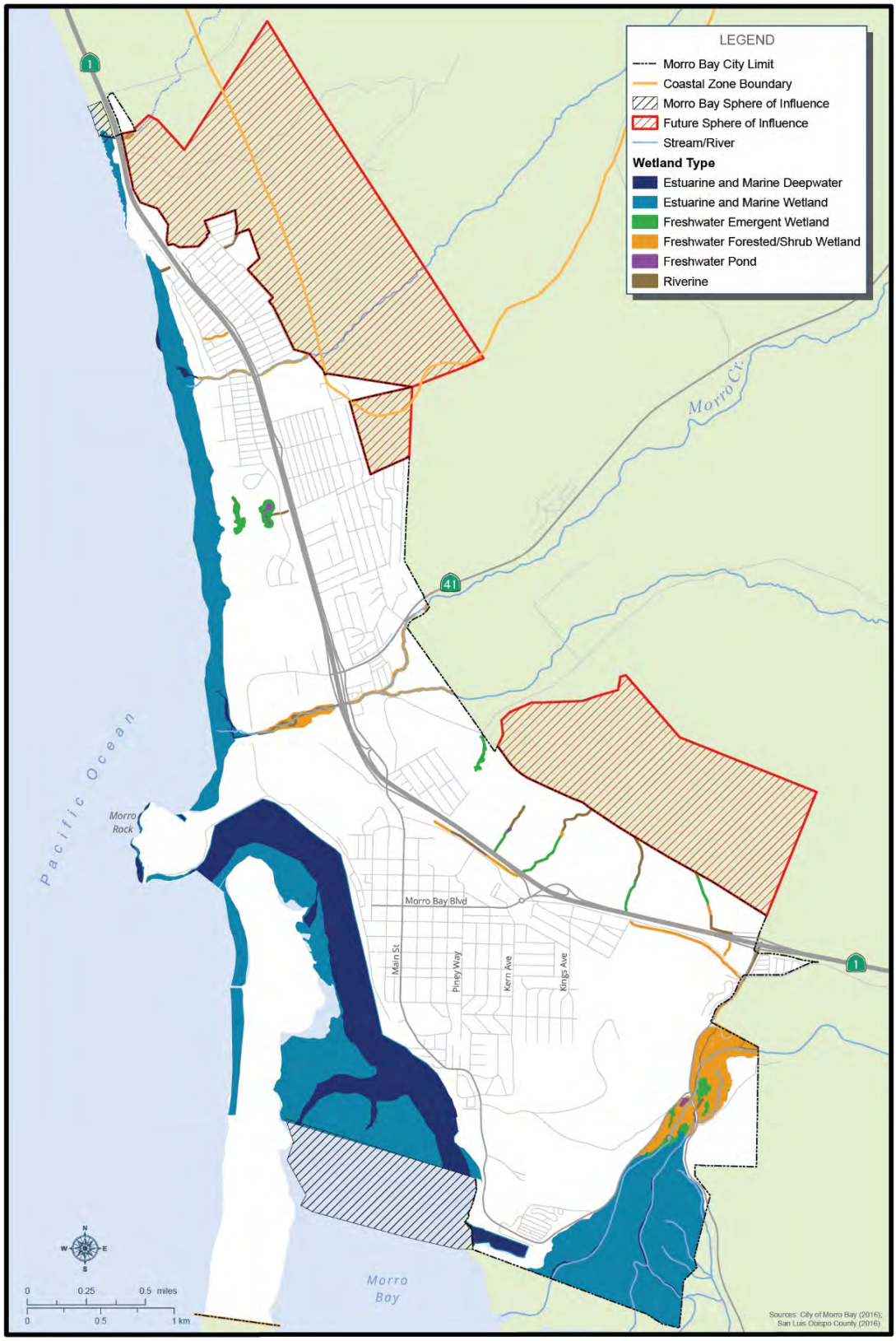
b. Aquatic and Semi-Aquatic Habitats

The planning area contains a wide diversity of aquatic and semi-aquatic vegetation communities and land cover types. The following sections describe vegetation communities and land cover types within or closely associated with aquatic and semi-aquatic areas. Descriptions are summarized from previous baseline reports and published datasets, including the vegetation datasets discussed in Section 4.3.1(a) such as the CWHR (CDFW 2014), the Community Baseline Assessment for the General Plan and LCP Update (Appendix B), and the ESHA Report (Appendix D), as well as datasets focused specifically on drainages, wetlands and riparian areas, including the National Wetlands Inventory (NWI; USFWS 2018a) and the National Hydrography Dataset (USGS 2018). The NWI and National Hydrography Dataset information for the planning area are depicted in Figure 4.3-2. Drainages, wetlands, riparian communities and open waters in the planning area are also depicted in broad terms in Figure 4.3-1.

Watershed

The planning area is within two watersheds, the Morro Bay Watershed in the southern portion of the planning area, and the Cayucos Creek-Whale Rock Watershed in the northern portion of the planning area (Resource Conservation Districts of San Luis Obispo County [RCDs] 2014). The Morro Bay Watershed covers 46,598 acres, and the mouth of the watershed falls within the planning area. Most of the watershed is used for open space, agriculture, and recreation. Approximately 10 percent of the watershed is urban. Waters in this watershed drain into the Chorro and Los Osos creeks, which drain into the Morro Bay Estuary, Morro Bay, and then into Estero Bay in the Pacific Ocean. The Chorro Creek subwatershed accounts for about 60 percent of the total land area in this watershed and drains into the estuary (RCDs 2014).

Figure 4.3-2 National Wetlands Inventory & National Hydrography Dataset for the Planning Area



The Cayucos Creek-Whale Rock Watershed covers 54,974 acres, a portion of which drains into Morro Creek, which discharges into the Pacific Ocean (RCDs 2014). Several additional subwatersheds also drain to the Pacific Ocean. Most of the watershed is used for open space and agriculture. Approximately 6 percent of the watershed is urban.

Drainages, Riparian Areas, Wetlands, and Other Waters

Several creeks and their tributaries flow through the city and terminate into the Morro Bay Estuary or directly into the Pacific Ocean within the City's Coastal Zone. Willow riparian woodland and willow scrub often occurs along both perennial and intermittent streams. Some of these areas overlap portions of federally designated critical habitat for California red-legged frog (*Rana draytonii*), steelhead (*Oncorhynchus mykiss*) south-central California Coast distinct population segment (DPS), and tidewater goby (*Eucyclogobius newberryi*). The multi-layered riparian vegetation, available water supply, and vegetative cover make these areas essential habitat for several special status species. Smaller streams may lack riparian canopy. Wetlands are regarded as important biological resources both because of their rarity and because they serve a variety of functional values. Several types of wetlands exist in the city and planning area, including but not limited to freshwater marsh, springs and seeps, portions of lakes, ponds, rivers and streams, coastal salt marsh, and backdune wetlands.

Note that the NWI uses a different classification system for aquatic and semi-aquatic habitats compared with vegetation classification systems. The descriptions below and tables in Appendix D describe the different classifications that may apply to each aquatic and semi-aquatic habitat type presented below.

Rivers and Streams

Rivers and streams in the planning area include ephemeral and intermittent streams and dry washes, which are common in the Coast Range. Morro Bay supports numerous creeks and drainages. Drainages that contain water year-round or experience periodic filling and draining provide foraging habitat, breeding habitat, and movement habitat for a variety of aquatic animals and a number of special-status species. The NWI classification system treats rivers and streams as Riverine systems. Where wetland and riparian vegetation are present, the NWI classification system differentiates these areas as Palustrine and Lacustrine types, which are discussed in more detail in subsequent sections below. Drainages do not correspond to a specific vegetation alliance in the MCV2 system (Sawyer et al. 2009).

Chorro Creek, Morro Creek, Alva Paul Creek, and Toro Creek, as well as numerous intermittent and ephemeral streams, are located within the planning area. Morro Creek, the largest creek in the City's Coastal Zone, terminates into the ocean, and includes designated critical habitat for the federally threatened steelhead. Morro Creek and Toro Creek form seasonal sand bars at the mouth of the streams that block direct flow to the sea during summer months, creating a lagoon between the stream mouth and the Pacific Ocean. Waterfowl and shorebirds use temporary lagoons as a migratory stop-over and may also use these habitats during breeding season. The lagoons also provide potential habitat for a number of fish species, including the federally endangered tidewater goby. These and other creeks and waterways provide suitable habitat for fish, bird and plant species. Small streams may flow for only a few days following storms, but provide groundwater recharge, seasonally wet habitat, and also convey water, nutrients, and potential pollutants to the bay and the ocean, thus influencing quality of downstream receiving waters.

Note that some segments of stream features adjacent to SR 1 in the planning area were realigned and/or channelized in the past. Additionally, a number of stormwater channels convey runoff from roads and developed areas during storms. These features are not natural watercourses but some features do convey water into natural wetlands and waterways. These modified waterways, which periodically or permanently contain water and support hydrophytic vegetation or hydric soils, may also be considered wetlands based on the California Coastal Commission definition of a wetland (14 California Code of Regulations [CCR] Section 13577[b]).

Riparian Thickets and Woodlands

Riparian thickets and woodlands generally grow immediately adjacent to freshwater bodies, forming a vegetated corridor along the stream. Riparian areas often occur along both perennial and intermittent streams, freshwater wetlands, and other waterways within the planning area. Multi-layered riparian vegetation, available water supply, and vegetative cover make these areas essential habitat for wildlife. Some of these areas overlap portions of California red-legged frog, steelhead, and tidewater goby critical habitat. Riparian habitats are present along drainages and form wider bands in areas with lower velocity flows, floodplains, and gentle topography.

Riparian thickets and woodlands take multiple forms in the planning area. Within the existing city limits, riparian thickets and woodlands are primarily willow woodland and willow scrub communities, dominated by shrubs, particularly arroyo willow (*Salix lasiolepis*) and mulefat (*Baccharis salicifolia*). Other common species found in riparian thickets include coyote brush, poison oak, and dock (*Rumex* spp.). In other parts of the planning area, larger trees form an upper canopy, typically dominated by cottonwoods (*Populus* spp.) and sycamore (*Platanus racemosa*), with an understory shrub layer typically consisting of willows (*Salix* spp.), mulefat, poison oak, and herbaceous species. Note that willow stands are also found occasionally as components of back dune wetland complexes where they are not directly associated with streams. Riparian thickets and woodlands can correspond to multiple alliances depending upon the species composition. These alliances can include, but are not limited to, the Arroyo Willow Thickets Shrubland Alliance, the California Sycamore Woodlands Alliance, and the Black Cottonwood Forest Alliance as described in the MCV2 (Sawyer et al. 2009). The NWI categorizes such riparian areas as Palustrine Scrub-Shrub and Palustrine Forested types.

Wetlands

Wetlands are regarded as important biological resources both because of their rarity and because of the ecosystem and water quality services they provide. Some of these areas contain sensitive natural communities or provide habitat for sensitive species including the federally and state endangered salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*). Wetland areas occur in regions that are periodically or permanently covered by shallow water, are dominated by hydrophytic vegetation, or have soils that are predominantly hydric.

Several types of naturally occurring wetlands exist in the city and planning area, including freshwater marshes, springs and seeps, and vegetated portions of ponds, rivers and streams, as well coastal salt marsh and estuary. As noted above, wetland areas can also occur within storm-water outfalls and urban run-off channels if those areas support periodic or permanent shallow or flowing water that can support hydrophytic vegetation or hydric soils. Three wetland types occur within the city and planning area and are discussed is more detail below.

ESTUARINE WETLANDS/COASTAL SALT MARSH AND PICKLEWEED MAT

Estuarine systems are composed of tidal habitats and adjacent tidal wetlands that are influenced by water runoff from, and often semi-enclosed by, land. They are located along low-energy coastlines and have variable salinity. Portions of estuarine systems are typically vegetated with emergent coastal salt marsh species. Coastal salt marshes occur in bays and other areas protected from open ocean where there is a mixing of freshwater from streams and springs with salt water from the ocean. They intergrade with the unvegetated portion of the estuarine system, and are subject to periodic inundation (Holland and Keil 1995). Coastal salt marshes occur in the Morro Bay Estuary and along the margins of Morro Bay. Species diversity within the coastal salt marsh tends to be relatively lower than other wetland communities because fewer species can tolerate the high salinity and fluctuations of water height. Plants of the coast salt marsh are mostly herbaceous perennials that are adapted to growing in saline environments, and generally short-statured with reduced leaves. Many species of this community also have tissues with many air cavities, which allow them to respire in environments with low oxygen, and salt glands that allow excess salts to be excreted. Other species have cells that contain high concentrations of dissolved solutes, allowing them to absorb water without osmotic imbalances (Holland and Keil 1995).

The delta at the mouths of Chorro and Los Osos Creeks is primarily vegetated with pickleweed (*Salicornia pacifica*; also called *Sarcocornia pacifica* in some references) mat wetland. These wetlands are tidally influenced, and soils are saline due to the tidal waters. Pickleweed mat marsh is the dominant natural community where Chorro Creek terminates into Morro Bay Estuary. The marsh is influenced by seasonal variations of fresh, brackish, and saline water and the level of the water table that occurs close to or at the surface for at least part of the growing season.

Other brackish and salt marsh habitats are present, including areas that provide suitable habitat for the endangered California seablite (*Suaeda californica*), a vascular plant that colonizes the upper portion of the intertidal zone and areas near the high tide line. Additionally, coastal brackish marsh includes areas at mouths of streams where salt marsh bulrush and other salt-tolerant emergent hydrophytes are dominant, as well as potentially suitable habitat for another listed plant, salt marsh bird’s beak. Other common species in the coastal salt marshes in the planning area include California saltbrush (*Atriplex californica*), spearscale (*A. triangularis*), slough sedge (*Carex obnupta*), saltgrass (*Distichlis spicata*), giant rush (*Juncus acutus*), creeping rush (*J. lesueurii*), sea lavender (*Limonium californicum*), coastal silverleaf (*Potentilla anserina),* American three-square (*Schoenoplectus americanus*), common three-square (*S. pungens*), and arrowgrass (*Triglochin concinna*) (Sims 2010).

Coastal marshes provide essential habitat for many species, including important foraging and breeding habitat for avian and aquatic species, as well as suitable habitat for special status plant species, as mentioned above, including the federally and State endangered salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*) and federally endangered California seablite.

These wetlands can correspond to multiple alliances depending upon the species composition. These alliances can include, but are not limited to, the Pickleweed Mats Herbaceous Alliance and American bulrush marsh, as defined by Sawyer et al. (2009). The NWI classifies these types as estuarine and marine wetlands. The CWHR groups these wetlands as saline emergent wetlands (CDFW 2014).

FRESHWATER EMERGENT WETLANDS

Multiple freshwater emergent wetlands are located within the planning area. These areas are dominated by wetland vegetation such as dock (*Rumex* spp.), brownheaded rush (*Juncus phaeocephalus*), and tule (*Schoenoplectus acutus*), growing in areas fed by fresh, nonsaline water. Freshwater emergent wetlands are found both at springs and seasonal drainages and provide habitat for avian and special status plant species. Some of these wetlands also include areas of California red-legged frog critical habitat. Wetlands that occur in a mosaic of cattails (*Typha* spp.), California bulrush (*Schoenoplectus californicus*), and willows interspersed with open water patches around and within ponds is also included in this type.

These wetlands can correspond to multiple alliances depending upon the species composition. These alliances can include, but are not limited to, the Iris-leaf Rush Seeps Provisional Herbaceous Alliance (California Native Plant Society [CNPS] 2018a), Hardstem Bulrush Marsh, California bulrush marsh, and Cattail Marsh Herbaceous Alliances as defined by Sawyer et al. (2009). The NWI classifies these types as palustrine emergent wetlands. The CWHR groups these wetlands as freshwater emergent wetlands.

DUNE WETLANDS

Dune wetlands occur under two general scenarios – they often occur where fresh water from rivers or streams accumulates behind a sandbar at the mouth of a coastal stream, and they can also occur where perched groundwater accumulates in low-lying backdune areas, often due to lenses within the dune that restrict water movement, not directly tied to the mouth of a river or stream. The soils in these areas have slow drainage and form mesic environments with nutrient rich soils and high potential to support wetland vegetation. These communities are found where Alva Paul Creek enters the coastal natural communities within the City's Coastal Zone, and in low lying areas in the backdune of the dune complex along the coast. Dune wetlands are dominated by sand dune sedge (*Carex pansa*), spiny rush (*Juncus acutus*), and brownheaded rush, with inclusion of arroyo willow and understory of dock, and coastal silverweed. These dune wetlands contain suitable habitat for special status plant species and provide nesting, foraging, and refuge for wildlife species.

These wetlands can correspond to multiple alliances depending upon the species composition. These alliances can include, but are not limited to, the Iris-leaf Rush Seeps Provisional Herbaceous Alliance (CNPS 2018a) and Sand Dune Sedge Swaths Herbaceous Alliance as defined by Sawyer et al. (2009). The NWI classifies these types as palustrine emergent wetlands. The CWHR groups these wetlands as freshwater emergent wetlands.

Open Waters

Some aquatic habitats are not vegetated or are only very sparsely vegetated. These include the open water portions of freshwater ponds, as well as tidal channels, bays and mudflats.

FRESHWATER PONDS

Freshwater ponds typically include open water in the center of the pond, and vegetative cover is commonly present along the edges and may include trees, shrubs, emergent herbaceous plants, mosses, and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. Ponds are present within the city and the surrounding pond areas. Freshwater ponds provide important breeding habitat for special-status

species such as California red-legged frog and western pond turtle (*Emys marmorata*). The NWI classifies these types as palustrine or lacustrine habitats, depending on size.

ESTUARINE/MUDFLATS, TIDAL CHANNELS, AND SHALLOW BAY, AND MARINE OPEN WATERS

Estuarine areas that are vegetated with emergent estuarine/coastal salt marsh species were previously discussed. Unvegetated tidal channels and mudflats are also part of the estuarine system, as are shallow bay areas suitable for eelgrass. The shallows of Morro Bay and the associated estuary consist of a varying degree of brackish water. These waters are a mixture of tidal waters of the Pacific Ocean and freshwaters from surrounding watersheds. Brackish waters also contain areas of steelhead designated critical habitats near mouths of certain creeks. Salinity increases with proximity to the open ocean and distance from the freshwater inputs. These waters provide nesting and foraging habitat for many bird species in the area, as well as abundant fish habitat. Open water areas and shallows provide suitable habitat for marine mammals such as otters and seals.

At the mouth of the major streams, larger tidal channels are evident and interspersed with coastal salt marsh. The majority of these channels have non-vegetated beds and are largely exposed at low tide, allowing foraging habitat for coastal bird species and other wildlife. Mudflat habitats along coastlines occur where the shore is protected from waves and vegetation is not abundant. In Morro Bay, mudflats are present in some parts of the estuary. The gentle movement of salt water inland and fresh water outward into the estuary carries fine sediments, which settle out as mud. At low tide the intertidal mud is exposed as a mudflat leaving water only in permanent channels. At high tide the mudflat is covered with water. The back bay at Morro Bay is a large area of mudflat and coastal salt marsh habitat. If mud has built up to near or above the high tide line, it may support sparse salt marsh habitat. Therefore, herbaceous species common to the coastal salt marsh habitat in Morro Bay are also likely to occur in the mudflat habitats at very low cover. The shallow waters of Morro Bay support declining populations of eelgrass, and provide abundant foraging habitat for coastal bird species. The eelgrass beds are essential nurseries and foraging habitat for fish and crustaceans, but extent of eelgrass in Morro Bay has declined substantially in the last decade.

Marine habitats are also present in the deep channel and along the margin of the coastal strand. These areas are generally associated with open ocean and have salinities exceeding 30 parts per thousand with little or no dilution except at the immediate mouths of estuaries and freshwater streams. The NWI categorizes these types as estuarine and marine systems.

c. Sensitive Natural Communities, ESHA, and Critical Habitats

Definitions

Sensitive natural communities are vegetation types, associations, or sub-associations that support concentrations of special status plant and/or wildlife species, are of relatively limited distribution, and/or are of particular value to wildlife. According to the CDFW Vegetation Program, Alliances with State ranks of S1-S3 and certain other specified associations are considered imperiled, and thus, potentially of special concern. Natural communities with these ranks are generally addressed during CEQA environmental review with compensatory mitigation prescribed for impacts as applicable. Riparian areas are also considered sensitive natural communities by CDFW.

Similarly, the California Coastal Act Section 30107.5 of the CCR, discusses sensitive natural communities as Environmentally Sensitive Areas, which include any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and

developments. The California Coastal Act criteria for determining whether a vegetation community qualifies as an Environmentally Sensitive Habitat Area (ESHA) are based upon the habitat's ecological importance, including the rarity or function of the habitat. Many of the vegetation communities that meet CDFW's definition as sensitive are also ESHAs.

Critical habitat is a term used in the federal Endangered Species Act (ESA) and defined as a specific geographic area (or areas) that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. These areas provide notice to the public and land managers of the importance of these areas to the conservation of a listed species. Special protections and/or restrictions are possible in these areas when Federal funding, permits, licenses, authorizations, or actions occur or are required.

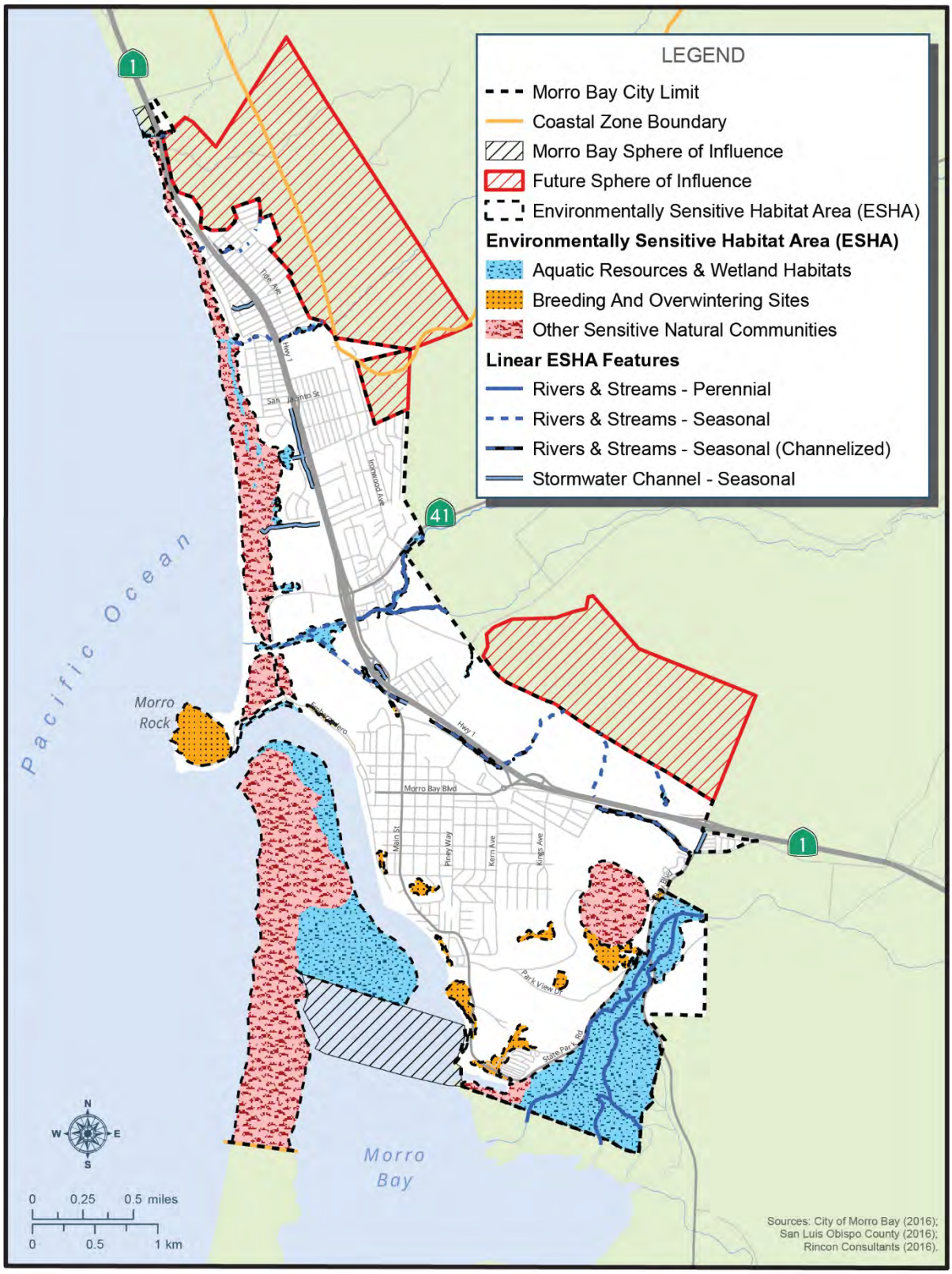
Sensitive Habitats within the Planning Area

In coastal areas, sensitive natural communities and riparian areas as defined by CDFW are also typically considered to be ESHAs. Within the existing city limits, a recent data review and mapping effort updated the current extent and approximate locations of ESHA resources within the coastal zone (refer to Appendix D). This review identified ESHAs based on presence and habitat needs of special status plants or animals, the presence of a sensitive habitat considered to be imperiled, and/or presence of streams, wetlands, and riparian areas consistent with coastal definitions of wetlands. Many ESHAs are vegetation communities that are included in the CDFW sensitive natural community list; however, ESHA also includes areas with breeding, roosting, or other essential habitat for protected species even when the vegetation itself is not sensitive. The ESHA resources determined to occur within the existing city limits within the planning area are broadly categorized into three groups, with finer distinctions made within each group

- Aquatic resources and wetland habitats
  - Rivers and Streams
  - Creeks and Tributaries
  - Willow Woodland and Willow Scrub
  - Shallow Bay, Mudflat and Eelgrass Habitat
  - Tidal Channels
  - Estuarine Wetlands, Coastal Salt Marsh, and Pickleweed Mat
  - Dune wetlands
  - Freshwater Emergent Wetlands
- Other Sensitive Natural Communities
  - Foredune
  - Backdune and Stabilized Dune with Dune Scrub
  - Coastal Bluff Scrub
  - Black Hill Natural Area
- Other Breeding and Overwintering Sites
  - Morro Rock
  - Other roosting and overwintering sites

Figure 4.3-3 depicts locations of ESHA resources. For more complete descriptions of the ESHA resources, see the pertinent vegetation community descriptions in Sections 4.3.1(a) and 4.3.1(b) above and the ESHA report contained in Appendix D.

Figure 4.3-3 ESHAs within Current City Limits



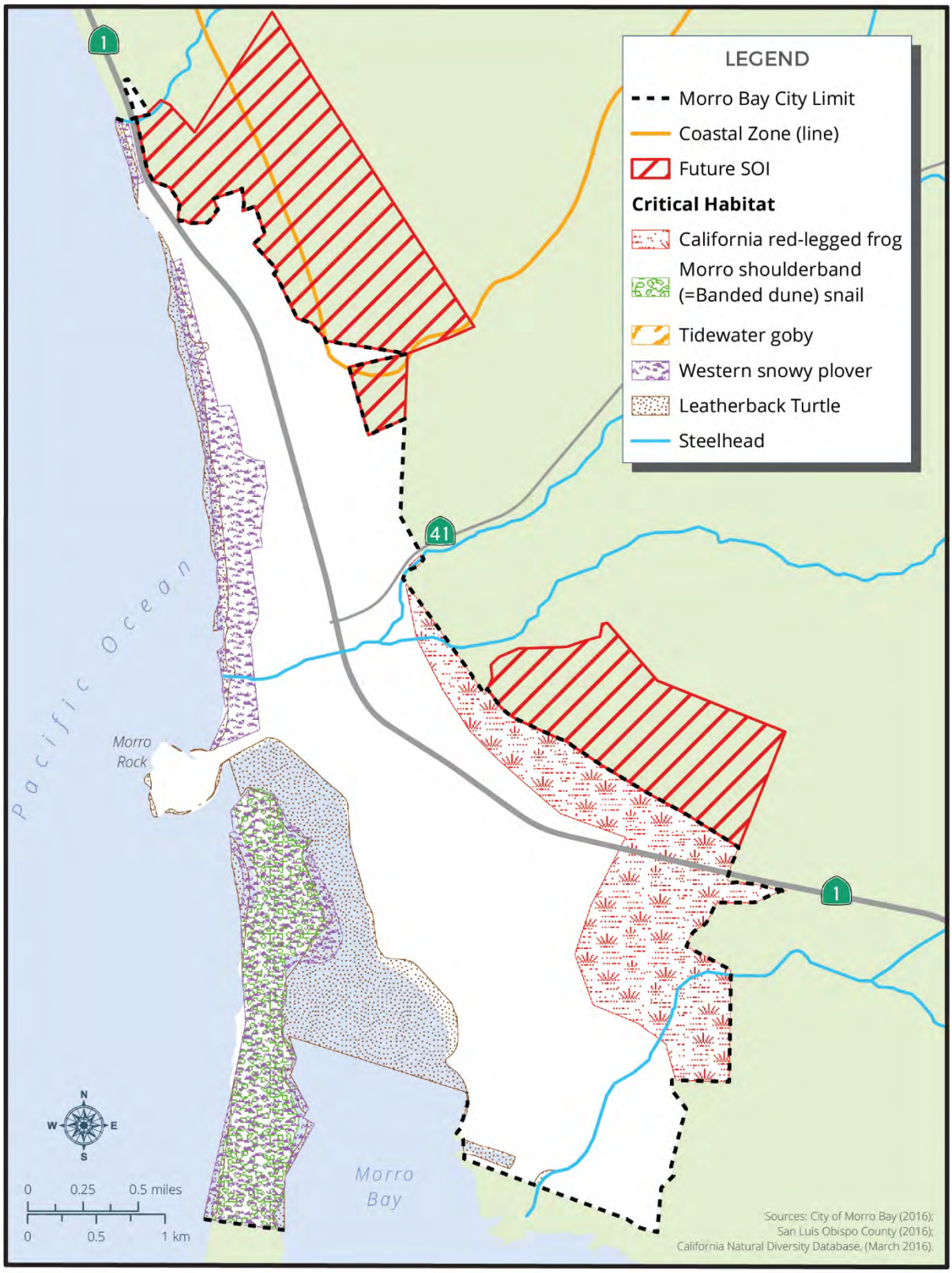
Some of the planning area outside the existing city limits falls within the coastal zone, and similar ESHA communities to those inside city limits are present. Additional sensitive natural communities that are not abundant within city limits may also be present in the planning areas outside city limits, including perennial grasslands and other types of riparian communities and wetlands.

For portions of the planning area outside the coastal zone, ESHA designations would not apply. Sensitive natural communities in these areas include drainages, riparian and wetland communities, and could also include unique chaparral alliances and perennial grasslands consistent with CDFW's definitions of a sensitive natural community.

The USFWS Critical Habitat Mapper (2018c) and NMFS West Coast Critical Habitat website (2018) depict designated critical habitats in the planning area. Final designated critical habitats for the following species occur within the planning area: steelhead, California red-legged frog, Morro shoulderband snail, tidewater goby, Pacific leatherback sea turtle (*Dermochelys coriacea*), and western snowy plover (refer to Figure 4.3-4). Records for steelhead, California red-legged frog, Morro shoulderband snail, tidewater goby, and western snowy plover are reported from the Morro Bay coastal zone. Steelhead and California red-legged frog are also expected in upstream portions of the planning area outside the coastal zone. No federally designated critical habitats for plant species occur in the planning area.

Note that critical habitat for Pacific leatherback sea turtle along the Pacific coast, including the vicinity of Morro Bay, was designated on the basis of prey base. Pacific leatherback are specialists that consume jellyfish, including brown sea nettle (*Chrysaora fuscescens*) and other scyphomedusae of the order Semaeostomeae, such as moon jellies (*Aurelia labiata*) (NMFS 2012a, 2012b). Pacific leatherbacks are not known or expected to breed on beaches in Morro Bay. Additionally, Pacific leatherbacks do not typically pursue prey farther than the mean lower low water and thus are not expected from shallow water habitats of the immediate shore of the Morro Bay coastal zone, including the intertidal zone. Pacific leatherback could occur in the marine environment offshore, as they have been reported foraging in the deeper coastal waters of Estero Bay marine environment, based on telemetry data, fishery interaction data, and aerial surveys (NMFS 2012b).

Figure 4.3-4 Critical Habitats in the planning area



d. Special Status Species

Federal, State, and local authorities under a variety of legislative acts share regulatory authority over biological resources. For the purpose of this EIR, special status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the ESA; those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); and animals designated as "Species of Special Concern" or "Fully Protected" by the CDFW, and those locally designated as having special status, including monarch butterfly (*Danaus plexippus*).

Species of Special Concern (SSC) is a category used by the CDFW for those species that are considered indicators of regional habitat changes or are considered to be potential future protected species. Species of Special Concern do not have any special legal status except that which may be afforded by the California Fish and Game Code. The SSC category is intended by the CDFW for use as a management tool to include these species into special consideration when decisions are made concerning the development of natural lands, and these species are considered sensitive under the CEQA Appendix G questions.

Additionally, special status plants with California Rare Plant Rank (CRPR) of 1 and 2 are special status species. CDFW standards state that plants with a CRPR 1A, 1B, 2A, and 2B may meet definitions of rare or endangered under *CEQA Guidelines* Sections 15380 (b) and (d) (CDFW 2018b). By CNPS standards, the plants of CRPR Ranks 1A, 1B, 2A and 2B may meet the definitions of Sections 2062 and 2067 (CESA) of the California Fish and Game Code, and are eligible for State listing, thus should be considered under *CEQA Guidelines* Section 15380. In some circumstances, plants with CRPR 3 or 4 may also warrant

consideration under *CEQA Guidelines* Section 15380, if cumulative impacts to such plants are significant enough to affect their overall rarity (CDFW 2018b).

Morro Bay is home to several species protected by federal and State agencies, and the planning area surrounding the city also supports suitable habitat for many special status species. The CNDDB (CDFW 2018c), CNPS Online Inventory of Rare and Endangered Plants (2018b), and USFWS Information for Planning and Consultation tool (IPaC; USFWS 2018b) together list 88 special status species known or with potential to occur within the planning area. Of these, 52 are plant species and 36 are wildlife species.

Special Status Plants

Based on the database and literature review, 52 special status plant species are known to occur, or have potential to occur, within the planning area. Many of these species are associated with ESHAs, or with sensitive natural communities in areas outside the coastal zone. Table 4.3-1 lists these special status plant species, their listing status, and their CRPR.

Table 4.3-1 Special Status Plant Species Documented in or with the Potential to Occur in Morro Bay

Scientific Name	Common Name	FESA/CESA Status	CRPR
Agrostis hooveri	Hoover's bent grass	--/--	1B.2
Arctostaphylos cruzensis	Arroyo de la Cruz manzanita	--/--	1B.2
Arctostaphylos luciana	Santa Lucia manzanita	--/--	1B.2
Arctostaphylos morroensis	Morro manzanita	FT/--	1B.1
Arctostaphylos osoensis	Oso manzanita	--/--	1B.2
Arctostaphylos pechoensis	Pecho manzanita	--/--	1B.2
Arctostaphylos pilosula	Santa Margarita manzanita	--/--	1B.2
Arctostaphylos tomentosa ssp. *daciticola*	dacite manzanita	--/--	1B.1
Arenaria paludicola	marsh sandwort	FE/SE	1B.1
Astragalus didymocarpus var. *milesianus*	Miles' milk-vetch	--/--	1B.2
Bryoria spiralifera	twisted horsehair lichen	--/--	1B.1
Calochortus obispoensis	San Luis mariposa lily	--/--	1B.2
Carex obispoensis	San Luis Obispo sedge	--/--	1B.2
Castilleja densiflora var. *obispoensis*	San Luis Obispo owl's-clover	--/--	1B.2
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	--/--	1B.1
Chenopodium littoreum	coastal goosefoot	--/--	1B.2
Chlorogalum pomeridianum var. *minus*	dwarf soaproot	--/--	1B.2
Chloropyron maritimum ssp. *maritimum* (=*Cordylanthus maritimus* ssp. *maritimus*)	salt marsh bird's-beak	FE/SE	1B.2
Chorizanthe breweri	Brewer's spineflower	--/--	1B.3
Cirsium occidentale var. *compactum*	compact cobwebby thistle	--/--	1B.2
Cirsium fontinale var. *obispoense*	San Luis Obispo fountain thistle	FE/SE	1B.2
Cirsium rhothophilum	Surf thistle	--/ST	1B.2
Cladonia firma	popcorn lichen	--/--	2B.1
Delphinium parryi ssp. *blochmaniae*	Dune larkspur	--/--	1B.2
Delphinium parryi ssp. *eastwoodiae*	Eastwood's larkspur	--/--	1B.2
Delphinium umbraculorum	umbrella larkspur	--/--	1B.3
Dithyrea maritima	beach spectaclepod	--/ST	1B.1
Dudleya abramsii ssp. *bettinae*	Betty's dudleya	--/--	1B.2
Dudleya abramsii ssp. *murina*	mouse-gray dudleya	--/--	1B.3
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	--/--	1B.1
Erigeron blochmaniae	Blochman's leafy daisy	--/--	1B.2
Eriodictyon altissimum	Indian Knob mountainbalm	FE/SE	1B.1
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	--/--	1B.1
Extriplex joaquinana	San Joaquin spearscale	--/--	1B.2

Scientific Name	Common Name	FESA/CESA Status	CRPR
Fritillaria ojaiensis	Ojai fritillary	--/--	1B.2
Fritillaria viridea	San Benito fritillary	--/--	1B.2
Horkelia cuneata var. *puberula*	mesa horkelia	--/--	1B.1
Horkelia cuneata var. *sericea*	Kellogg's horkelia	--/--	1B.1
Lasthenia californica ssp. *macrantha*	perennial goldfields	--/--	1B.2
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	--/--	1B.1
Layia jonesii	Jones' layia	--/--	1B.2
Malacothamnus palmeri var. *palmeri*	Santa Lucia bush-mallow	--/--	1B.2
Monardella palmeri	Palmer's monardella	--/--	1B.2
Monardella sinuata ssp. *sinuata*	southern curly-leaved monardella	--/--	1B.2
Monardella undulata ssp. *undulata*	San Luis Obispo monardella	--/--	1B.2
Nemacaulis denudata var. *denudata*	coast woolly-heads	--/--	1B.2
Poa diaboli	Diablo Canyon blue grass	--/--	1B.2
Sanicula maritima	adobe sanicle	--/SR	1B.1
Streptanthus albidus ssp. *peramoenus*	most beautiful jewelflower	--/--	1B.2
Suaeda californica	California seablite	FE/--	1B.1
Sulcaria isidiifera	splitting yarn lichen	--/--	1B.1
Trifolium hydrophilum	saline clover	--/--	1B.2

FT: Federally threatened FE: Federally endangered SE: State endangered
ST: State threatened SR: State rare
CRPR: California Rare Plant Rank

Special status plants that are known or have potential to occur in the planning area can occupy a broad range of habitat types. Some are associated with foredune and backdune systems, such as beach spectacle pod, dune larkspur, Blochman's leafy daisy, mesa Horkelia, and coast woolly heads. Others are associated with chaparral communities, such as several of the manzanita species. Some species occur in serpentine-influenced soils, including Jones' layia and the fritillaries. Others are associated with coastal salt marsh and estuary habitats, including California seablite. Additionally, some of the species listed are not currently known from within the city limits but are regionally occurring species that could occur in the surrounding planning area.

Special Status Wildlife

Based on the database and literature review, 36 special status wildlife species are known, or have potential to occur within the planning area. Many of these species are associated with ESHAs or with sensitive natural communities outside the coastal zone. Table 4.3-2 lists these special status wildlife species, their listing status, and other status designations.

Table 4.3-2 Special Status Wildlife Species Documented in or with the Potential to Occur in the planning area

Scientific Name	Common Name	FESA/CESA Status	Other CDFW & Local Status
Invertebrates			
Branchinecta lynchi	Vernal pool fairy shrimp	FT/--	--
Danaus plexippus	monarch butterfly	--/--	Locally Important
Helminthoglypta walkeriana	Morro shoulderband (=banded dune) snail	FE/--	--
Fish			
Eucyclogobius newberryi	tidewater goby	FE/--	SSC
Oncorhynchus mykiss irideus	steelhead - south-central California coast DPS	FT/--	--
Amphibians			
Batrachoseps minor	lesser slender salamander	--/--	SSC
Rana draytonii	California red-legged frog	FT/--	SSC
Taricha torosa	Coast Range newt	--/--	SSC
Reptiles			
Anniella pulchra	silvery legless lizard	--/--	SSC
Emys marmorata [Actinemys pallida]	western pond turtle	--/--	SSC
Phrynosoma blainvillii	Blainville's coast horned lizard	--/--	SSC
Thamnophis hammondii	two-striped garter snake	--/--	SSC
Birds			
Agelaius tricolor	tricolored blackbird	--/ST	SSC
Aquila chrysaetos	golden eagle	--/--	FP
Athene cunicularia	burrowing owl	--/--	SSC
Brachyramphus marmoratus	Marbled murrelet	FT/SE	--
Charadrius alexandrinus nivosus	western snowy plover	FT/--	SSC
Circus cyaneus	northern harrier	--/--	SSC
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT/SE	--
Elanus leucurus	white-tailed kite	--/--	FP
Empidonax traillii extimus	Southwestern willow flycatcher	FE/SE	--
Falco peregrinus anatum	American peregrine falcon	DL/DL	FP
Lanius ludovicianus	Loggerhead shrike	--/--	SSC
Laterallus jamaicensis coturniculus	California black rail	--/ST	FP
Gymnogyps californianus	California condor	FE/--	FP
Rallus obsoletus obsoletus [=R. longirostris obsoletus]	Ridgway's rail [=California clapper rail]	FE/SE	FP
Sterna antillarum browni	California least tern	FE/--	FP
Vireo bellii pusillus	Least Bell's vireo	FE/--	

Scientific Name	Common Name	FESA/CESA Status	Other CDFW & Local Status
Mammals			
Antrozous pallidus	pallid bat	--/--	SSC
Corynorhinus townsendii	Townsend's big-eared bat	--/--	SSC
Dipodomys heermanni morroensis	Morro Bay kangaroo rat	FE/SE	FP
Eumops perotis californicus	western mastiff bat	--/--	SSC
Enhydra lutris nereis	Southern sea otter	FT/--	FP
Neotoma lepida intermedia	San Diego desert woodrat	--/--	SSC
Nyctinomops macrotis	big free-tailed bat	--/--	SSC
Taxidea taxus	American badger	--/--	SSC

FT: Federally threatened FE: Federally endangered SE: State endangered
ST: State threatened SR: State rare DL: Delisted
FP: Fully Protected SSC: Species of Special Concern

Generally, special status species are most likely to occur in undeveloped areas and open space areas. However, riparian areas that intersect urban development may also provide habitat and movement corridors for special status species.

The planning area provides important habitat for avian wildlife, including several listed species and other special status species. Some of these species, such as marbled murrelet, are not known to nest in the area, but can overwinter. California condor may forage and has been documented roosting on peaks in the near vicinity. Additionally, rookeries of herons, egrets, and cormorants are known to occur in the planning area. Western snowy plover nests in dune habitats within the city. Species such as golden eagle and tricolored blackbird are not reported to nest within the city but could nest in more rural portions of the planning area surrounding the city.

Ponds, wetlands, streams, and riparian areas provide habitat for aquatic and semi-aquatic amphibians and reptiles, including California red-legged frog, western pond turtle, and two-striped garter snake. Rural portions of the planning area include large areas of designated critical habitat for California red-legged frog. Streams in the planning area provide potentially suitable habitat and passage for steelhead, and lower reaches of certain streams with brackish conditions may be suitable for tidewater goby.

Two species included in Table 4.3-2 were historically documented from the planning area but are not currently known to have extant populations in the planning area. Ridgway's rail [= California clapper rail] was previously known from the coastal marsh habitat associated with the estuary but has not been observed in the area in decades and is currently believed to be extirpated. Similarly, the Morro Bay kangaroo rat was known from dune habitat along the sand spit but has not been observed during recent surveys of suitable habitat in the Baywood dune sheet south of Morro Bay, where the last known occurrences were thought to persist.

e. Wildlife Movement Corridors

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration

corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats within the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (such as rock outcroppings, vernal pools, or oak trees) may need to be located within the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large and small scale. Regionally, the City of Morro Bay is located at the edge of an identified essential connectivity area (ECA), as mapped in the report, California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (2010). This ECA that connects Natural Landscape Blocks such the Los Padres National Forest and other relatively intact natural areas. This essential habitat connectivity is mapped as somewhat permeable along the eastern edges of the planning area and less permeable in developed areas. Outside the city, the planning area extends much further into this ECA and the relatively natural, undeveloped character of this area allows for terrestrial wildlife to move relatively unhindered. This area is linked through a mosaic of rural lands, many of which retain native vegetation, to public lands such as the Los Padres National Forest, providing movement opportunities for terrestrial wildlife.

Small scale habitat corridors are also present in the Morro Bay coastal zone and include drainages and other topographic features that facilitate movement, and contiguous areas of natural vegetation, including the coastal dunes and Black Hill Natural Area. Perennial streams, wetlands, shallow bays and estuaries, including Morro Creek and Morro Bay Estuary, provide potential fish and other aquatic wildlife movement habitat. Morro Creek is critical habitat for steelhead and provides essential habitat connectivity between the Pacific Ocean and spawning habitat upstream.

Finally, as previously noted, Morro Estuary and Bay provide important wintering habitat for large numbers of avian wildlife, which fly long distances annually to winter in the area. These habitat features provide important stopover and wintering habitat for migratory birds.

f. Regulatory Setting

Federal, State, and local authorities under a variety of statutes and guidelines share regulatory authority over biological resources. The primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions, which in this instance includes the City of Morro Bay and for areas outside city limits, the County of San Luis Obispo. The CDFW is a trustee agency for biological resources throughout the State as defined in CEQA and also has direct jurisdiction under the California Fish and Game Code, which includes, but is not limited to, resources protected by the State of California under the CESA. In addition, the local Regional Water Quality Control Board (RWQCB) is a responsible agency for waters of the State. The California Coastal Commission also has the authority to approve the LCP and has the right to appeal development projects within the Coastal Zone Appeals Jurisdiction. Below are summaries of the federal, State, and local regulations or guiding documents that could apply.

Federal

Endangered Species Act

Under the ESA, authorization is required to "take" a listed species. Take is defined under Section 3 of the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation (50 Code of Federal Regulations [CFR] Sections 17.3, 222.102); "harm" is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Critical habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. Section 7 of the federal Endangered Species Act outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat.

Section 7(a)(2) of the ESA and its implementing regulations require federal agencies to consult with USFWS or NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat. For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under Section 10(a) of the ESA. Section 10(a) allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

The USFWS and NMFS share responsibility and regulatory authority for implementing the ESA (7 United States Code [USC] Section 136, 16 USC Section 1531 et seq.).

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it is unlawful, except as permitted by regulations, "to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, […] any migratory bird, or any part, nest, or egg of any such bird" (16 USC Section 703(a)). The Bald and Golden Eagle Protection Act is the primary law protecting eagles, including individuals and their nests and eggs. The USFWS implements the Migratory Bird Treaty Act (16 USC Section 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668). Under the Bald and Golden Eagle Protection Act's Eagle Permit Rule (50 CFR 22.26), USFWS may issue permits to authorize limited, non-purposeful take of bald eagles and golden eagles.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) regulates marine fisheries in U.S. federal waters. The Magnuson-Stevens Act was first passed in 1976 and was revised in 1996 and 2007. The purpose of the Magnuson-Stevens Act is to provide long-term biological and economic sustainability of U.S. marine fisheries.

The NMFS has regulatory authority for implementing the Magnuson-Stevens Act. The NMFS requires regional fishery management councils to develop Fisheries Management Plans (FMPs) specific to their regions, fisheries and fish stocks. For waters off the U.S. West Coast, the Pacific Fishery Management Council has developed four FMPs, which are implemented through fisheries

regulations for coastal pelagic species, groundfish species, highly migratory species and salmon species. These FMPs also identify Essential Fish Habitat, which is broadly defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

Section 10 of the River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the U. S. Army Corps of Engineers (USACE), for the construction of any structure in or over any navigable water of the United States. Regulated activities include dredging or disposal of dredged materials, excavation, filling, rechannelization and construction of any structure or any other modification of a navigable water of the United States.

Clean Water Act

Under Section 404 of the Clean Water Act, the USACE, with U.S. Environmental Protection Agency (EPA) oversight, has authority to regulate activities that result in discharge of dredged or fill material into wetlands or other "waters of the United States." Perennial and intermittent creeks are considered waters of the United States if they are hydrologically connected to other jurisdictional waters. In achieving the goals of the Clean Water Act, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any discharge of dredged or fill material into jurisdictional wetlands or other jurisdictional "waters of the United States" would require a Section 404 permit from the USACE prior to the start of work. Typically, when a project involves impacts to waters of the United States, the goal of no net loss of wetlands is met by compensatory mitigation; in general, the type and location options for compensatory mitigation should comply with the hierarchy established by the USACE/EPA 2008 Mitigation Rule (in descending order): (1) mitigation banks; (2) in-lieu fee programs; and (3) permittee-responsible compensatory mitigation. Also, in accordance with Section 401 of the Clean Water Act, applicants for a Section 404 permit must obtain water quality certification from the State Water Resources Control Board (SWRCB) or appropriate RWQCB.

State

California Endangered Species Act

CESA (Fish and Game Code Section 2050 et seq.) prohibits take of State-listed threatened and endangered species without a CDFW incidental take permit. Take under CESA is restricted to direct harm of a listed species and does not prohibit indirect harm by way of habitat modification.

Protection of fully protected species is described in California Fish and Game Code Sections 3511, 4700, 5050 and 5515. These statutes prohibit take or possession of fully protected species. Incidental take of fully protected species may be authorized under an approved Natural Communities Conservation Plan.

Natural Community Conservation Planning Act

The Natural Communities Conservation Planning Act was established by the California Legislature, is directed by the CDFW, and is implemented by the State, as well as public and private partnerships as a means to protect habitat in California. The Natural Communities Conservation Planning Act takes a regional approach to preserving habitat. A Natural Communities Conservation Plan identifies and provides for the regional protection of plants, animals and their habitats, while allowing compatible and appropriate economic activity. Once a Natural Communities Conservation Plan has

been approved, CDFW may provide take authorization for all covered species, including fully protected species, Section 2835 of the California Fish and Game Code.

California Fish and Game Code Sections 3503, 3503.5 and 3511

California Fish and Game Code Sections 3503, 3503.5 and 3511 describe unlawful take, possession, or destruction of birds, nests and eggs. Fully protected birds (California Fish and Game Code Section 3511) may not be taken or possessed except under specific permit. Section 3503.5 protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs.

Native Plant Protection Act

The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (California Fish and Game Code Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the CDFW at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

Section 1600 et seq. of the California Fish and Game Code

Section 1600 et seq. of the California Fish and Game Code prohibits, without prior notification to CDFW, the substantial diversion or obstruction of the natural flow of, or substantial change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. In order for these activities to occur, the CDFW must receive written notification regarding the activity in the manner prescribed by the CDFW, and may require a lake or streambed alteration agreement. Lakes, ponds, perennial and intermittent streams and associated riparian vegetation, when present, are subject to this regulation.

Porter-Cologne Water Quality Control Act

Pursuant to Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredge or fill material must also obtain water quality certification under Section 401 from the RWQCB. Additionally, the SWRCB and each of nine local RWQCBs have jurisdiction over “waters of the State” pursuant to the Porter-Cologne Water Quality Control Act, which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to “isolated” waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The local RWQCB implements this general order for isolated waters not subject to federal jurisdiction.

The CWA and associated federal regulations (Title 40 of the CFR 123.25(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15)) require nearly all construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more, including smaller sites in a larger common plan of development or sale, to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit for their stormwater discharges, and develop a Storm Water Pollution Prevention Plan (SWPPP). The NPDES Program is a federal program which has been delegated to the State of California for implementation through the SWRCB and RWQCBs.

California Coastal Act

The California Coastal Act (Coastal Act) outlines standards for development within the coastal zone and includes specific policies (see Division 20 of the Public Resources Code) that address issues such as terrestrial and marine habitat protection, commercial fisheries, and water quality. The coastal zone encompasses 1.5 million acres of land, and stretches from three miles at sea to an inland boundary that varies from several blocks in urban areas to as much as five miles in less developed areas. The majority of the City of Morro Bay is located within the coastal zone. The coastal zone extends into federal waters under the federal Coastal Zone Management Act.

Chapter 3 of the Coastal Act contains the standards used by the California Coastal Commission in the review of coastal development permits and local coastal plans. The seven articles within Chapter 3 govern all development along the coast, and mandate protection of public access, recreational opportunities, and marine and land resources. Chapter 3, Article 4 addresses protection of the marine environment including water quality issues, wetlands protections, and coastal armoring. Chapter 3, Article 5 includes protections for environmentally sensitive habitat.

Local

Morro Bay Municipal Code

The City of Morro Bay Municipal Code Title 12, Chapter 12.08, City tree regulations, outlines a comprehensive plan for the planting and maintenance of trees in, on, or within the public right-of-way, provides rules and regulations for the planting, care and maintenance of such trees, and defines landmark and specimen trees. Municipal Code Title 17, Chapter 12.199 includes removal or harvesting of major vegetation in the City's definition of "Development." In July 2007 the City Council amended the Major Vegetation Removal, Replacement and Protection Guidelines. The Guidelines establish when a permit and replacement of vegetation is required, but do not otherwise amend the LCP or Municipal Code.

The City of Morro Bay Municipal Code Title 16 Subdivisions, Chapter 16.44, Conservation Subdivisions establishes requirements for cluster development proposals intended to protect environmentally significant attributes and preserve open space. A conservation subdivision must meet requirements for open space protected in perpetuity, including an instrument to protect the open space from future development in perpetuity.

The City of Morro Bay Municipal Code Title 17 Zoning implements the general plan and local coastal plan. The Morro Bay City Zoning Ordinance Chapter 17.40.040, Environmental Sensitive Habitat (ESH) overlay zone, identifies ESH areas to be protected and preserved, including buffers, outlines allowed uses, and restricts new uses and expansions of existing uses in these areas. Reduction of buffers requires consultation with CDFW, mitigation, and consistency with existing policies in the coastal land use plan. This chapter also outlines performance standards for new developments with regard to protecting ESH.

4.3.2 Impact Analysis

a. Methodology

Environmental impacts to biological resources may be assessed using impact significance criteria from federal, State, and local regulations. *CEQA Guidelines*, Chapter 1, Section 21001 (c) states that it is the policy of the State of California to "prevent the elimination of fish and wildlife species due to

man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities." Environmental impacts relative to biological resources may be assessed using impact significance criteria encompassing *CEQA Guidelines* and federal, State and local plans, regulations, and ordinances.

The impact analysis is based on available literature regarding the existing biological resources within the General Plan and LCP Update planning area. Data used for this analysis are summarized in the Section 4.3.1.

b. Significance Thresholds

The following thresholds are based on Appendix G of the *CEQA Guidelines*. Impacts would be significant if the adoption and implementation of the General Plan and LCP Update would result in any of the following:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS;
3. Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, or hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The following section presents an analysis of the potential for impacts to sensitive biological resources from the adoption and implementation of the General Plan and LCP Update.

c. Project Impacts and Mitigation Measures

The following section presents an analysis of the potential for impacts to sensitive biological resources from the adoption and implementation of the General Plan and LCP Update.

Threshold 1:	Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS?

Impact BIO-1 NEW DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD IMPACT LISTED AND OTHER INDIVIDUAL SPECIAL STATUS SPECIES AND FORAGING AND BREEDING HABITAT FOR SPECIAL STATUS WILDLIFE AND HABITAT FOR SPECIAL STATUS PLANTS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH INCORPORATION OF MITIGATION.

State and/or federally listed animal species with the potential to occur as year-round residents in the planning area include western snowy plover, Morro shoulderband snail, California red-legged frog, steelhead (south-central California coast DPS), vernal pool fairy shrimp, tidewater goby, southern sea otter, and black rail. Several additional listed species of birds, including California condor, least Bell's vireo, yellow-billed cuckoo, tri-colored blackbird, marbled murrelet and least tern are not known to have local breeding populations within the planning area but have been reported wintering or migrating through the planning area. Non-listed fully protected species, including golden eagle, peregrine falcon, and white tailed kite, are known and therefore expected to occur within the planning area. Other native birds are also known to nest in the planning area, including species protected by the Migratory Bird Treaty Act as well as native birds whose nests are protected by California Fish and Game Code. Several non-listed species of special concern are also known or have potential to occur in the planning area, including legless lizard, coast horned lizard, western pond turtle, pallid bat, and American badger. Suitable habitat for special status wildlife is primarily associated with areas identified as ESHA within current city limits, and with native vegetation communities in the surrounding planning area.

State and/or federally listed plant species known or with the potential to occur within in the planning area within the existing city limits include Morro manzanita, marsh sandwort, salt marsh bird's-beak, beach spectacle pod, and California seablite. Potentially suitable habitat in the surrounding planning area is also present for adobe sanicle, Indian knob mountainbalm, San Luis Obispo fountain thistle, and surf thistle, as well as numerous additional non-listed special status plants. Suitable habitat for special status plants is primarily associated with ESHA within the existing city limits, and within native vegetation communities in the surrounding planning area.

The goals, policies, and implementation actions of the General Plan and LCP Update allow for growth and redevelopment within the planning area in the existing city limits and allow limited development activities within the current SOI. More specifically, the General Plan and LCP Update would facilitate development of up to 800 new residential units and 8 million square feet of non-residential development in the planning area. Depending on the location, orientation, and design of new development and redeveloped properties, new development could impact foraging and breeding habitat for special status wildlife and habitat for special status plants, introduce or spread invasive species that compete with native species, and directly injure or kill individuals during construction and occupancy of new facilities. Although growth envisioned in the General Plan and LCP Update would generally preserve the existing pattern of uses and would be focused on

redevelopment and infill rather than outward expansion, some parcels may support special status wildlife and plant species, and development could further fragment movement corridors for wildlife. Additionally, the future SOI may include limited development at a future date, with the potential to result in similar impacts to listed and other special status species as development currently envisioned in the General Plan and LCP Update.

Major strategies of the General Plan and LCP Update are intended to balance the role of land use and circulation planning with supporting resource conservation and sustainability and identify the role of resource conservation and sustainability in supporting Morro Bay's economy. The General Plan and LCP Update includes Open Space/Recreation and Agriculture land use designations focused on parks, open spaces and natural resource areas, and land for cultivation and grazing agricultural uses intended to retain existing resources and the rural character of the area surrounding the city. The Land Use element also includes an ESHA overlay to identify areas within the coastal zone that serve as habitat for rare or especially valuable plant or animal life, including foredune and dune scrub/back dune systems, and wetland and riparian areas, including the estuary. Although the General Plan and LCP Update include policies to conserve and minimize impacts to ESHAs, full avoidance of ESHAs is not feasible. Projects such as transportation improvements and linear utility projects facilitated by the General Plan and LCP Update may cross through ESHAs, and some parcels zoned for development are not adequately sized or shaped to allow for full avoidance of ESHA during development. Impacts to ESHAs that support special status species would also affect the individuals relying on these habitats.

Implementation of goals and policies in the Land Use, Community Design, Conservation, and Open Space Elements of the General Plan and LCP Update would encourage the conservation and protection of open space and natural resources within the General Plan and LCP Update planning area and minimize adverse effects on listed and other special status species. Currently, nearly half of the land within Morro Bay is part of the Morro Bay State Park or another beach area, and parks and open space form another 18 percent. The General Plan and LCP Update does not contemplate a major shift from this existing pattern, retaining habitat for listed and other special status wildlife and plant species. Limited outward expansion, redevelopment, and flexible use would minimize encroachment into habitats suitable for special status species. Although some agricultural areas are not suitable resident habitat for special status wildlife and plants, retention of existing agricultural areas for agricultural uses would retain existing movement corridors and minimize effects to movement of special status wildlife. The following policies from the Land Use Element, Community Design Element, and Open Space Element of the General Plan and LCP Update promote a land use pattern that focuses on retaining existing patterns of land use, and redevelopment and infill rather than outward expansion into rural areas.

Policy LU-1.1 **Land Use Pattern.** Maintain the current pattern of Morro Bay's land use to preserve the distinct character areas and community form, while enhancing and transforming areas with greatest potential for change to improve economic activity and align them with the community vision. (See Figure LU-4 Land Use Map.) New development shall be located within, contiguous with, or in close proximity to existing developed areas with adequate public services and where it will not have significant effects, either individually or cumulatively, on coastal resources.

Policy LU-3.1 **Growth Limits.** Continue to limit the amount of development, including future population growth accommodated by *Plan Morro Bay,* to a level supported by

adequate and long-term sustainable available land, water supply, and other infrastructure and service capacity.

Policy LU-3.6 **Infill Development.** Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay.

Policy LU-3.7 **Limited Outward Expansion.** Allow for some limited outward expansion beyond the city's existing limits to achieve large-scale conservation of parcels and a small amount of rural-scale residential use and visitor-serving amenities to serve conservation lands. Standards applied to the future sphere of influence (SOI) area include keeping development off of ridgelines and preserve views of the city's backdrop of undeveloped open land. (See also Policies C-9.1 through C-9.5 and Implementation Actions C-30 and C-31.)

Policy LU-5.2 **Agricultural Uses.** Maintain prime agricultural land and other lands suitable for agricultural use in the planning area in long-term agricultural production.

Policy CD-2.2 **Flexible Use.** Identify potential buildings for future adaptive reuse, and encourage incorporating flexibility in building designs to maximize the future use of buildings.

Policy OS-7.2 **Place Value on Agriculture.** Continue to protect high quality agricultural areas within the City's planning area but outside the city limits for future agricultural use.

The following General Plan and LCP Update Conservation Element goals and policies would maximize retention of sensitive natural habitats, including ESHAs, wetlands, and other habitats for special status species by requiring setbacks from ESHAs, minimize encroachment into habitats suitable for special status species, encouraging restoration of degraded areas, and fostering partnerships with agencies and other local stakeholders to protect natural resources.

Goal C-1 **Sensitive habitats are protected from potential negative impacts of land use and development.**

Policy C-1.1 **Environmentally Sensitive Habitat Areas.** Protect Environmentally Sensitive Habitat Areas, or "ESHAs," defined as any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments. In the Morro Bay coastal zone, these areas include, but are not limited to:

a. Aquatic Resources and Wetland Habitats, which include all year-round and seasonal rivers and streams, wetlands (including fresh and salt water marshes), and riparian vegetation.

b. Other Sensitive Natural Communities, which include foredune, backdune/dune scrub, coastal bluff faces, and coastal strand environments.

c. Breeding and Overwintering Sites, which include all roosts, nests, and rookeries for such species as herons, egrets, cormorants, and peregrine falcons, and all documented monarch butterfly overwintering roosts.

Policy C-1.2 **Development in ESHA.** Development in ESHA (as defined in Policy C-1.1 and Coastal Act Section 30107.5) shall be limited to uses dependent on the resource (e.g., habitat restoration, scientific research, and low-intensity public access and recreation), as well as the uses specified in Coastal Act Sections 30233 and 30236 for wetlands and streams, respectively. All allowable development in ESHA shall be sited and designed to protect against significant disruption of habitat values, including to rare and endangered species. Development in areas adjacent to ESHA shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitats

Policy C-1.3 **Biological Site Assessments.** A biological assessment shall be required for any development proposed on sites that include or are within 100 feet of mapped ESHA in Figure C-2, and all other sites with natural vegetation regardless of whether ESHA has been mapped in Figure C-2, and for all other projects for which evidence indicates that ESHA may be present either on or adjacent to the site. The best available information about the location of ESHA in the City shall be used. Such assessment shall be prepared at the owner's expense by a qualified biologist approved by the City and shall, at minimum:

a. Identify and confirm the extent of the ESHA,

b. Document any site constraints and the presence of sensitive plant or animal species,

c. Recommend buffers and development setbacks and standards to protect the ESHA,

d. Recommend mitigation measures to address any allowable impacts, and

e. Include any other information and analyses necessary to understand potential ESHA impacts as well as measures necessary to protect the resource as required by the Local Coastal Program.

If the site contains the potential for monarch overwintering or rookeries due to the presence of appropriately sized trees and groves, a seasonally timed survey appropriate for detecting the target species must also be included in the study.

Policy C-1.4 **Dune ESHA.** For all new development within dune ESHA that could impact dune ESHA, and in addition to the biological assessment described above, a qualified, City-approved biologist shall prepare a dune stabilization and/or restoration plan. The dune stabilization/restoration plan shall include, at minimum:

a. The removal of all nonnative and invasive plants species,

b. Revegetation with native plant species, including rare and/or endangered species,

c. Maintenance and monitoring requirements,

d. Methods for directing public access, and

e. A schedule for plant establishment including targets for plant variation and density, contingency measures, and reporting.

The dune stabilization/restoration plan shall prohibit the use of any nonnative plant species and shall require that all nonnative species be removed and not allowed to persist. Initiation of restoration activities shall be required prior to occupancy/use of any allowable new development.

Policy C-1.5 **ESHA Buffers.** Development shall be set back from ESHA through buffers of a sufficient width and design to protect ESHA sensitive resources from the impacts of adjacent uses, including impacts from construction and post-construction activities, and such buffers shall be maintained in a natural condition, with the only allowed uses being the ones allowed in the ESHA itself.

For aquatic resources and wetlands, the buffer shall be the following, whichever is wider, on both sides of the stream:

a. For rivers, streams and riparian areas, the required buffer shall extend at least 50 feet from the outer edge of the riparian vegetation on both sides of the river, stream, and/or riparian area or 50 feet itself [measured perpendicularly from the top of the river, stream, or measure from riparian area bank for areas without riparian direction of the vegetation]) or

b. For wetlands, the required buffer shall extend at least 100 feet from the edge of the wetland (measured perpendicularly from the direction of the wetland itself).

c. For dunes, the required buffer shall extend at least 50 feet from the edge of the wetland.

For all other ESHA, the buffer shall be a minimum of 50 feet. These widths may be adjusted by the City as appropriate to protect the ESHA habitat value of the resource, but shall not be less than 25 feet. Such reduction shall only be allowed if the reduced buffer provides the same or greater protection to the ESHA than the required buffer. Such adjustment shall be made on the basis of a biological site assessment supported by substantial evidence that includes but is not limited to:

a. Sensitivity of the ESHA, including any sensitive species, to disturbance.

b. Habitat requirements of the ESHA, including the migratory patterns of affected species and tendency to return each season to the same nest site or breeding colony.

c. Topography of the site.

d. Movement of stormwater.

e. Permeability of the soils and depth to water table.

f. Vegetation present.

g. Unique site conditions.

h. Whether vegetative, natural topographic, or built features (e.g., roads, structures) provide a physical barrier between the proposed development and the ESHA.

i. The likelihood of increased human activity and disturbance resulting from the project relative to existing development.

Policy C-1.6 **Structures in ESHA Buffers.** No permanent structures shall be permitted within the setback area except for the minimum amount of fencing required for security and habitat protection purposes or structures of a minor nature such as fences or at-grade improvements for pedestrian or equestrian trails.

Policy C-1.7 **Endangered Species Habitats.** Ensure that all recreational use (such as hiking and birdwatching) is compatible with the protection, of rare or endangered species habitats.

Policy C-1.8 **Takings.** If development in ESHA and/or required ESHA buffers must be allowed to avoid an unconstitutional taking of private property without just compensation, the amount and type of development allowed shall be the least necessary to avoid a taking, and shall be as consistent with LCP policies as possible. Unavoidable impacts must be minimized; temporary impact areas within ESHA and required ESHA buffers must be restored upon completion; and all adverse impacts to ESHA must be fully mitigated in kind (e.g., the mitigation must replace lost habitat functions and values at a minimum 2:1 ratio).

Policy C-1.9 **Partnerships.** Foster and develop public/private partnerships to protect natural resources.

Policy C-1.10 **Updates to ESHA Resources.** Ensure that all information on ESHA is updated regularly, including but not limited to GIS and database resources.

Policy C-1.11 **Habitat Restoration.** Create, improve, and acquire areas that enhance habitat resources and identify, prioritize, and restore them as habitat key areas that link fragmented open space wildlife habitat, as funding and land are available.

Policy C-1.12 **Interagency Collaboration.** Work with local and state jurisdictions to preserve and extend the habitats located in and surrounding the planning area of Morro Bay.

Policy C-1.13 **Improvements to Open Space Areas.** Improve remaining open space areas in wetlands and along the coast to the greatest extent possible to improve existing natural habitats and prevent the deterioration of local wildlife.

Policy C-1.14 **Natural Resource Protection.** Natural resources that are not ESHA shall also be protected as much as feasible.

Policy C-1.15 **Eelgrass Protection.** Continue to address and mitigate eelgrass impacts on a project-by-project basis using implementation guidelines from the California Eelgrass Mitigation Policy (CEMP) to promote eelgrass growth in the bay. In addition, investigate establishing an eelgrass mitigation bank.

Policy C-1.16 **Tree Planting and Removal.** Certain trees are “major vegetation,” where the removal of which constitutes development and requires a Coastal Development Permit. A Coastal Development Permit is required for removal of all native trees and all trees that measure 6 inches in diameter at 54 inches above grade. Replanting of a tree as replacement of an existing tree is required. Dead trees (snags) on City property in the coastal zone should be retained, where possible, to provide habitat, including for cavity-nesting birds. No permit is required for

removal of dead, dying, and diseased trees or trees that pose a health, life, and safety issue. These trees must be inspected and verified by an International Society of Arboriculture (ISA) certified arborist or Registered Professional Forester (RFP).

Policy C-7.23 **Preservation of Morro Bay Estuary.** Take an ecosystem approach to the preservation of the Morro Bay Estuary by consulting with scientists, environmental historians, the US Army Corps of Engineers, and regional and state agencies to regularly evaluate the health of the complete estuary ecosystem. Adjust local and regional requirements and prohibitions on development, building design, water craft usage, pollution control, and other important issues to maintain the quality of the estuary system.

The following General Plan and LCP Update Open Space Element policies would address potential conflicts between resource conservation and recreational uses of open spaces and promote persistence of special status species in open spaces. These policies would minimize impacts from active recreation areas in passive open spaces through vegetative screening, retention of portions of parks as natural habitats, and retaining natural barriers in shoreline open spaces to reduce sea level rise effects.

Goal OS-4 Coastal and marine habitat wildlife and resources are protected while maintaining the cultural identity of the habitat.

Policy OS-4.2 **Marine Habitat and Recreation Balance.** Continue to preserve portions of parks as natural habitat for a variety of species.

Policy OS-4.3 **Beach Maintenance.** Consider species and habitat impacts and potential improvements when performing beach maintenance and monitoring recreational resources.

Policy OS-4.4 **Beach Habitat.** Ensure beaches and coastal areas can function as a quality habitat for permanent and migratory species.

Policy OS-4.5 **Minimal Activity Impacts to Habitat.** Consult with locally knowledgeable scientists to design parks and trails in a way that protects coastal, wetland, and marine habitats from maintenance, construction, recreation, and industrial activity impacts while promoting sustainable recreational and open space uses.

Policy OS-4.6 **Marine Resources.** Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to species and areas of special biological significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and maintain healthy populations of all species of marine organisms, adequate for long-term commercial, recreational, scientific, and educational purposes.

Goal OS-5 Natural resources are preserved to balance the use of open space for outdoor recreation opportunities.

Policy OS-5.1 **Passive Open Spaces.** Maintain vegetative corridors as passive open spaces to provide a balance between natural landscapes and active outdoor use spaces in parks.

Policy OS-5.2 **Separation of Uses.** Locate active recreational uses away from sensitive habitats or passive recreation areas to create a distinct separation of uses for efficient use of open space.

Policy OS-5.3 **Open Space Assets.** Maintain, protect, and enhance parks by prioritizing the preservation of the natural beauty, restoration and enhancement of land-based natural resources, and safe use of the land.

Goal OS-6 Open spaces are preserved through adaptation strategies to mitigate the effects of sea level rise and promote community resiliency.

Policy OS-6.2 **Barrier Conservation.** Prohibit the destruction of natural barriers in open spaces along the shoreline.

The General Plan and LCP Update Open Space Element includes the following policy to address infrastructure and services provided to areas outside the city limits within the future SOI areas.

Policy OS-7.1 **Account for External Impacts.** If any portion of the area outside the city limits is included in the City's sphere of influence in the future, prepare and adopt a plan for the affected parcels that includes infrastructure and services provided by the City of Morro Bay.

These goals and policies and the associated implementation to limit habitat loss, maintain habitat integrity and connectivity, and protect special status species would minimize, and often avoid, impacts from potential direct and indirect effects to special status species and sensitive habitats. Additionally, all development under the General Plan and LCP Update would be subject to the provisions of the various federal and State natural resources regulations (discussed in subsection 4.3.1(f), *Regulatory Setting*) and their respective permitting processes. Although compliance with applicable regulations and implementation of General Plan and LCP Update goals and policies would minimize or avoid impacts to special status species and sensitive habitats, the General Plan and LCP Update does not include policy language that would address avoidance, minimization, and mitigation of effects to special status species individuals or policy language that would address effects to special status species in future SOI areas. Therefore, impacts to special status species would be potentially significant and additional policy-based mitigation would be required to avoid and/or minimize impacts to special status species and nesting birds.

Mitigation Measures

The following measures are required to address potential impacts to special status species.

BIO-1(a) Avoidance and Minimization during Development

Policy C-1.3 shall be updated to read:

Policy C-1.3 **Biological Site Assessments.** A biological assessment shall be required for any development proposed on sites that include or are within 100 feet of mapped ESHA in Figure C-2, and all other sites with natural vegetation regardless of whether ESHA has been mapped in Figure C-2, and for all other projects for which evidence indicates that ESHA may be present either on or adjacent to the site. The best available information about the location of ESHA in the City shall be used. Such assessment shall be prepared at the owner's expense by a qualified biologist approved by the City and shall, at minimum:

a. Identify and confirm the extent of the ESHA,

b. Document any site constraints and the presence of sensitive plant or animal species,

c. Recommend buffers and development setbacks and standards to protect the ESHA,

d. ~~Recommend mitigation measures to address any allowable impacts~~ If listed species are present, specify avoidance and minimization measures, including compensatory mitigation, to be implemented to avoid or minimize take of individuals and loss of occupied habitat, and specify the necessary consultation pathway(s) with USFWS, NMFS, and/or CDFW to obtain incidental take coverage, where necessary, and

e. Include any other information and analyses necessary to understand potential ESHA impacts as well as measures necessary to protect the resource as required by the Local Coastal Program.

If the site contains the potential for monarch overwintering or rookeries due to the presence of appropriately sized trees and groves, a seasonally timed survey appropriate for detecting the target species must also be included in the study.

BIO-1(b) External Impacts

Policy OS-7 shall be updated to read:

Policy OS-7.1 **Account for External Impacts.** If any portion of the area outside the city limits is included in the City's sphere of influence in the future, prepare and adopt a plan for the affected parcels that includes infrastructure and services provided by the City of Morro Bay. The plan shall also identify policies for the protection of natural resources in the affected areas.

Significance After Mitigation

Impacts to special status species would be less than significant with implementation of Measures BIO-1(a) and BIO-1(b), which would update policies in the General Plan and LCP Update to protect listed species and provide direction on resource protection in any future SOI.

Threshold 2:	Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
Threshold 3:	Would the project have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact BIO-2 THE GENERAL PLAN AND LCP UPDATE WOULD NOT FACILITATE DEVELOPMENT THAT WOULD DIRECTLY IMPACT RIPARIAN AND WETLAND HABITS AND OTHER SENSITIVE NATURAL COMMUNITIES. HOWEVER, FUTURE DEVELOPMENT MAY HAVE ADVERSE INDIRECT IMPACTS ON WETLANDS AND AREAS UNDER THE JURISDICTION OF THE CDFW, RWQCB AND/OR USACE, AS WELL AS FOR BOTH WITHIN AND OUTSIDE THE CITY'S COASTAL ZONE. COMPLIANCE WITH EXISTING REGULATIONS AND IMPLEMENTATION OF APPLICABLE GENERAL PLAN AND LCP UPDATE POLICIES WOULD AVOID OR MINIMIZE, POTENTIAL IMPACTS TO RIPARIAN AND WETLAND HABITS AND OTHER SENSITIVE NATURAL COMMUNITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Sensitive natural communities in the planning area include foredunes, backdunes, dune wetlands, and bluff scrub, as well as wetlands and riparian areas. Wetlands in the planning area include estuarine and marine wetlands, estuarine and marine deepwater, freshwater emergent wetlands, freshwater forested/shrub wetlands, riverine, lake, and freshwater ponds. Morro Creek, Chorro Creek, and Toro Creek are major streams in the planning area, and the Morro Bay and estuary are important coastal aquatic habitats. The Pacific Ocean occurs along the west edge of the planning area. Known wetlands, riparian areas, salt marsh, estuary, shallow bay and other aquatic resources within current city limits are designated as ESHA, and policies in the General Plan and LCP Update outline conservation and setbacks from aquatic resource ESHAs and prescribe mitigation for situations in which impacts are unavoidable. Although the General Plan and LCP Update includes policies to conserve and minimize impacts to wetlands, and riparian areas, certain project types, such as transportation improvements and linear utilities cross through these habitats such that full avoidance is not feasible. Additional wetlands may be discovered during site specific surveys. Detailed wetland delineations would be needed to determine the extent of any jurisdictional wetlands and other waters at specific locations and each agency is responsible for making a final determination on the extent of jurisdictional waters for a particular site.

Wetlands and waterways may be subject to USACE, RWQCB and/or CDFW jurisdiction(s), as well as subject to the CCA. Compliance with the requirements of the CWA, Porter-Cologne, California Fish and Game Code, and CCA would be required for any project proposed under the General Plan and LCP Update. Additionally, several policies discussed in Impact BIO-1 promote a land use pattern that focuses on retaining existing patterns of land use, and redevelopment and infill rather than outward expansion into rural areas limit the areal extent of potential encroachments into aquatic resource types. Policies listed under Impact BIO-1, including Policy C-1.1 Sensitive Habitats, Policy C-1.2 Habitat Protection, Policy C-1.3 ESHA Protection, Policy C-1.4 Biological Site Assessments, Policy C-1.5 ESHA Buffers, Policy C-1.6 Structures in ESHA Buffers, and Policy C-1.15 Wetlands, would require protection of sensitive habitats, including wetlands and riparian areas, would require a site assessment to complete a detailed inventory of sensitive habitats prior to new development and specify buffers from ESHA, and would require mitigation for situations in which full avoidance is determined by the City to be infeasible to avoid a takings. Policies C-1.8 Partnerships, C-1.10 Habitat Restoration, and C-1.12 Improvements to Open Space Areas, listed under Impact BIO-1, would

facilitate conservation and restoration of sensitive habitats, including wetlands and riparian areas. In addition, the following General Plan and LCP Update Conservation Element policy would reduce impacts to eelgrass habitats.

Policy C-1.15 **Eelgrass Protection.** Continue to address and mitigate eelgrass impacts on a project-by-project basis using implementation guidelines from the California Eelgrass Mitigation Policy (CEMP) to promote eelgrass growth in the bay. In addition, investigate establishing an eelgrass mitigation bank.

Additionally, the following General Plan and LCP Update Community Design Element and Conservation Element goals and policies would reduce potential for indirect effects on wetlands, riparian areas, and streams as a result of development effects on water quality and as a result of future extreme weather events.

Goal CD-2 The community is designed to be resilient to future climate conditions, weather events, and economic and social change.

Policy CD-2.1 **Local Food Production.** Encourage the installation of vegetative roofs, rainwater bioswales, home composting and small-scale gardening and animal keeping in areas that can support such uses.

Policy C-7.13 **Drainage Technologies.** Require that new development projects employ innovative and efficient drainage technologies that comply with federal and state water quality requirements and reduce runoff and water quality impacts to downstream environments.

Policy C-7.14 **Pollutant Runoff.** Reduce pollutants in runoff from agriculture and new development by requiring the use of the most effective best management practices currently available. All runoff shall be filtered and treated to remove expected pollutants prior to being directed to infiltration areas and/or stormwater systems. Where runoff cannot be adequately accommodated on-site through on-site systems, any excess runoff shall be conveyed inland in a non-erosive manner. Also encourage green infrastructure on designated “Green Streets” where stormwater and runoff would be managed, captured, and cleansed in public rights- of- ways. Main Street should be studied for potential as a Green Street.

New development or redevelopment facilitated by the General Plan and LCP Update would also be subject to the standards in the Municipal Code relating to sensitive natural communities, ESHA, wetlands, and riparian areas in the city. Compliance with City’s updated Municipal Code requirements and the goals and policies proposed in the General Plan and LCP Update would protect wetlands, riparian areas, streams and other sensitive natural communities from potential impacts associated with development and redevelopment facilitated by the project. Therefore, the General Plan and LCP Update would not result in significant adverse effects on riparian areas and other sensitive natural communities, drainages, wetlands and other aquatic habitats and impacts would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific measures.

Threshold 4:	Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact BIO-3 NEW DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE MAY REMOVE TREES, ENCROACH ON ROOKERIES AND BREEDING SITES, IMPEDE MOVEMENT OF TERRESTRIAL AND AQUATIC WILDLIFE, AND OTHERWISE INTERFERE WITH THE MOVEMENT OF WILDLIFE. IMPACTS TO WILDLIFE CORRIDORS, ROOKERIES, AND NEST SITES WOULD BE LESS THAN SIGNIFICANT WITH INCORPORATION OF MITIGATION.

The planning area is located west of the Los Padres National Forest, and natural habitats in the Coast Range along the east side of the planning area provide a nearly continuous band of habitat suitable for movement connecting the eastern planning area to the National Forest. An essential connectivity area is mapped in the eastern portion of the planning area, with core areas east of the existing city limits. Within the city limits, large portions of the planning area are urbanized and lack broad connections from natural habitats along the immediate coast to the rural connectivity area in the east. However, riparian areas and other open spaces form local wildlife corridors within the existing city limits. Outside of the city limits, critical habitat for steelhead is present within the planning area, and includes Morro Creek, Little Morro Creek, and Chorro Creek, both within the existing city limits and further upstream. Adequate passage for fish to move up these streams is an essential component of these critical habitat designations.

Several rookeries and breeding sites are known to be present within the planning area. These include a peregrine falcon nesting site at Morro Rock, as well as heron, egret, and cormorant rookeries in groves of prominent trees. These nesting sites are used for many years. Finally, the planning area includes several groves that provide overwintering habitat for monarch butterflies, an important geographic component of this species' migratory patterns. Although many of the rookeries and the monarch overwintering sites are associated with non-native vegetation, these areas have been identified as ESHAs due to the comparative rarity of these habitats in the planning area and vicinity and the importance of these habitats in the life cycles of the affected species.

Development facilitated by the General Plan and LCP Update would allow for construction of new residential units and non-residential development in the planning area. Depending on the location, orientation, and design of new development and redeveloped properties, development could encroach on rookeries and breeding sites, reducing their suitability for use by breeding birds. Development could also result in removal of trees that provide the microclimates necessary for overwintering monarchs. Although growth envisioned in the General Plan and LCP Update is primarily focused on infill areas, infill development could reduce local movement opportunities for small and medium sized terrestrial wildlife by reducing the number and altering distribution of vacant lots. Additionally, transportation improvements and the establishment of linear utilities facilitated by the General Plan and LCP Update may cross streams and riparian areas. New or extended structures that cross streams can create impediments to movement of fish and can also impede movement of terrestrial wildlife.

As described under Impact BIO-1 and Impact BIO-2, the General Plan and LCP Update includes policies that specify protections for ESHAs, including breeding and overwintering sites, as well as the riparian corridors and stream channels that serve as local wildlife movement corridors for many species. Additionally, implementation actions C-1, C-4, C-5, and C-6, included in the Implementation section of the General Plan and LCP Update, provide specific direction regarding breeding and overwintering sites, including flexibility to adjust to the potential for these sites to move and change over time.

As discussed under Impact BIO-1, policies regarding future land use and preservation of the rural character of lands in the planning area outside city limits promote retention of larger scale wildlife movement. However, the General Plan and LCP Update does not include policies specific to protecting fish passage in steelhead streams or maintaining local wildlife movement corridors when completing transportation and circulation improvements. Although the General Plan and LCP Update policies would preserve open space and protect sensitive habitats resulting in the protection of wildlife movement corridors, wildlife movement corridor protection is not specifically stated. Therefore, this impact to wildlife movement corridors would be potentially significant, and mitigation is required.

Mitigation Measures

The following measure is required to limit impacts to wildlife movement corridors, particularly fish passage.

BIO-3 Wildlife Movement Corridors Protection

The following policy shall be added to the Conservation Element.

Policy C-1.17 **Project Design for Wildlife Connectivity.** Design new stream crossing structures and extensions or modifications of existing structures to accommodate wildlife movement. At a minimum, structures within steelhead streams must be designed in consultation with a fisheries biologist and shall not impede movement. New projects with long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing or other project components shall not block wildlife movement through riparian or other natural habitat. Where fencing or other project components that may disrupt wildlife movement is required for public safety concerns, they shall be designed to permit wildlife movement.

This policy shall be supported by adding the following implementation action to Goal-1 of the Conservation Element:

Wildlife movement features shall be included when designing new or modified stream crossing structures to allow wildlife movement including for aquatic and terrestrial species. Fencing or other components shall be designed to allow movement.

Significance After Mitigation

Impacts to wildlife movement corridors would be less than significant with implementation of Measure BIO-3 to add a General Plan and LCP Update policy to preserve wildlife movement corridors.

Threshold 5:	Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
Threshold 6:	Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Impact BIO-4 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD NOT CONFLICT WITH APPLICABLE LOCAL POLICIES PROTECTING BIOLOGICAL RESOURCES OR AN APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The planning area is not within the boundaries of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other local, regional or state conservation plan, nor is it immediately adjacent to such a plan. Therefore, development facilitated by the General Plan and LCP Update would not be subject to the provisions of such plan. However, future development under the General Plan and LCP Update would be subject to all applicable local policies and regulations, including applicable requirements of the Morro Bay Municipal Code, related to the protection of important biological resources. The General Plan and LCP Update does not contemplate modifications to Municipal Code Chapter 12.08, City Tree Regulations, which provides standards for the removal, protection, and preservation of street trees and trees within the public right of way. Therefore, the General Plan and LCP Update would not conflict with these regulations. Additionally, the goals and policies listed under Impacts BIO-1 and BIO-2 would ensure that buildout in the planning area under the General Plan and LCP Update occurs in a manner that supports Municipal Code Chapter 16.44, Conservation Subdivisions, which is intended to protect environmentally significant attributes and preserve open space. Therefore, the General Plan and LCP Update would not conflict with applicable local policies and regulations, and this impact would be less than significant.

Mitigation Measures

No policy-oriented measures would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, including evaluation of individual development projects for consistency with applicable local policies protecting biological resources, which could result in the implementation of project-specific mitigation measures.

d. Cumulative Impacts

Biological resources impacts as described above are related to the potential for direct and indirect impacts to sensitive natural communities, special status species, regulated waterways and wetlands, sensitive habitat and mature native trees, and wildlife movement corridors. Implementation of the land use development patterns under the General Plan and LCP Update could result in impacts on special-status species, riparian, wetland, or other sensitive natural communities, as well as wildlife movement in the planning area, and contribute to cumulative impacts to these resources within the greater cumulative impact area (adjacent communities, including San Luis Obispo county). As a result, cumulative impacts to sensitive biological resources would be potentially significant. Mitigation measures BIO-1(a), BIO-1(b), and BIO-3 would require additional policy language in the General Plan and LCP Update to protect biological resources that have potential to be impacted by development facilitated by the General Plan and LCP Update. These mitigation measures would

reduce the General Plan and LCP Update's potential contribution to cumulative impacts to special status species and wildlife movement corridors to a less than significant level. Therefore, the contribution of the proposed General Plan and LCP Update to cumulative impacts would not be cumulatively considerable with implementation of applicable General Plan and LCP Update goals and policies and required mitigation.

4.4 Cultural Resources

The analysis in this section has been prepared in accordance with *CEQA Guidelines* Section 15064.5 and considers potential impacts to archaeological, and historic resources. This section includes a brief summary of cultural resources background information and a review of known archaeological and built environment resources as well as potential impacts to these resources as a result of the General Plan and LCP Update. Potential impacts to tribal cultural resources are addressed in Section 4.15, *Tribal Cultural Resources*. Potential impacts to paleontological resources are addressed in Section 4.5, *Geology/Soils*.

4.4.1 Setting

a. Regional and Local Geology

The City of Morro Bay lies at the southern end of the Coast Ranges geomorphic province and contains geologic units ranging in age from Jurassic to recent (CGS 2002). The surface geologic units in the city are listed and described in Table 4.5-1 and mapped in Figure 4.5-1 in Section 4.5, *Geology and Soils*.

b. Prehistoric Background

Morro Bay is located in the Central Coast archaeological region. The Central Coast is defined as extending from south of San Francisco Bay to the northern edge of the Southern California Bight. The prehistoric cultural chronology for the Central Coast can be generally divided into six periods: Paleo-Indian (ca. 10,000–8,000 B.C.), Millingstone/Early Archaic (8,000- 3,500 B.C.), Early (3,500-600 B.C.), Middle (600 B.C.-A.D. 1000), Middle-Late Transition (A.D. 1000-A.D. 1250), and Late (A.D. 1250-contact [ca. A.D. 1769]; Appendix B). These periods are described below.

Paleo-Indian Period (ca. 10,000–8,000 B.C.)

Recent data from Paleo-Indian sites in Southern California indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas and on Pleistocene lake shores in eastern California. Although few Clovis-like or Folsom-like fluted point arrowheads have been found in Southern California, it is generally considered that the emphasis on hunting may have been greater during the Paleo-Indian period than in later periods (Appendix B).

Millingstone/Early Archaic Period (8,000- 3,500 B.C.)

The Millingstone period is characterized by an ecological adaptation to collecting suggested by the appearance and abundance of well-made milling implements. Millingstones occur in large numbers for the first time in the region's archaeological record and are even more numerous near the end of this period. Aside from millingstones, typical artifacts during this period include crude core and cobblecore tools, flake tools, large side-notched projectile points, and pitted stones (Appendix B).

Early Period (3,500-600 B.C.)

An extensive series of shoreline midden deposits are within the Central Coast region dating to the Early period, signifying an increase in occupation of the open coast. Sites dating to this period are marked by large lithic artifact assemblages, which include Central Coast Stemmed Series and side-

notched projectile points. The material culture recovered from Early period sites within the Central Coast region provides evidence for continued exploitation of inland plant and coastal marine resources. Artifacts include milling slabs and handstones, as well as mortars and pestles, which were used for processing a variety of plant resources. Bipointed bone gorge hooks were used for fishing. Shell beads and obsidian are hallmarks of the trade and exchange networks of the Central and Southern California coasts. The archaeological record indicates a substantial increase in the abundance of obsidian at Early period sites in the Monterey Bay and San Luis Obispo areas (Appendix B).

Middle Period (600 B.C.-A.D. 1000)

A pronounced trend toward greater adaptation to regional or local resources occurred during the Middle period. For example, the remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in archaeological deposits along the coast. Related chipped stone tools suitable for hunting were more abundant and diversified, and shell fishhooks became part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common during this period. Projectile points include large side-notched, stemmed, and lanceolate or leafshaped forms. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive became common. Sites from this period show a retention of stemmed points and the disappearance of the larger side-notched points (Appendix B).

Middle-Late Transition Period (A.D. 1000-A.D. 1250)

The Middle-Late Transition period is marked by relative instability and change, with major changes in diet, settlement patterns, and interregional exchange. The relatively ubiquitous Middle period shell midden sites found along the Central Coast were abandoned by the end of the Middle-Late Transition period, so most Transition period and Late period sites were first occupied during those periods. One site (Site SLO-239) has been tentatively dated to the Middle-Late Transition period and contains the only residential feature, a circular house floor, dating to this time period (Appendix B).

Late Period (A.D. 1250-contact [ca. A.D. 1769])

Late period sites are marked by small, finely worked projectile points, such as desert side-notched and cottonwood points, as well as temporally diagnostic shell beads. The small projectile points are associated with bow and arrow technology and indicate influence from the Takic migration from the deserts into Southern California. Common artifacts identified at Late period sites include bifacial bead drills, bedrock mortars, hopper mortars, lipped and cupped Olivella shell beads, and steatite disk beads. The presence of beads and bead drills suggest that low-level bead production was widespread throughout the Central Coast region (Appendix B).

c. Ethnographic Background

The project site is within the Salinan and Chumash ethnographic territories. The boundaries for these two territories are currently still being debated. The historic boundary created by Kroeber (1925) placed Salinan territory from the Pacific coast shoreline inland 80 km to the Santa Lucia and Diablo ranges, as well as the Salinas River, and extending into Monterey, San Luis Obispo, Fresno, and Kern counties. The ethnographic territory of the Chumash was placed by Kroeber a few miles north of what is now San Luis Obispo and extending south to Malibu Canyon. The Chumash spoke six languages, Obispeño being associated with the Northern Chumash represented in the project area. Linguistic data supports the division of the Salinan into two groups, the Antoniaños and the

Migueleños (Hester 1978). The boundary of the Salinan-Northern Chumash traditional territory has been contested and, as a result, numerous territorial boundaries have been suggested (Milliken and Johnson 2005). Recent work by Milliken and Johnson based on mission records and summarizing previous work proposed the Salinan-Chumash interface to be a few miles south of the Mission San Miguel, between the mission and San Marcos Creek. Relative to the Chumash, Salinan prehistory is not well understood. The ethnographic backgrounds of the Chumash and Salinan are discussed here.

Northern Chumash

Groups neighboring the Chumash included the Salinan to the north, the Southern Valley Yokuts and Tataviam to the east, and the Gabrielino (Tongva) to the south. Chumash place names in the project vicinity include Pismu (Pismo Beach), Tematatimi (along Los Berros Creek), and Tilhini (near San Luis Obispo) (Greenwood 1978). Only a general outline of the lifeways of the Obispeño Chumash is known based on the little ethnographic information available (Greenwood 1978).

Although their language was closer to Southern Chumash groups, the material culture and lifeways of the Northern Chumash appear to have been more similar to their northern neighbors, the Salinan. Accordingly, their populations in this area are thought to have been substantially lower than in the Santa Barbara Channel area, their villages smaller, and their livelihood less based on intensive use of marine fisheries (Glassow, Wilcoxen, and Erlandson 1988; Greenwood 1978).

Permanent Chumash villages included hemispherical dwellings arranged in close groups, with the chief having the largest for social obligations (Brown 2001). Each Chumash village had a formal cemetery marked by tall painted poles and often with a defined entrance area (Gamble, Walker, and Russell 2001). Archaeological studies have identified separate sections for elite versus commoner families within the cemetery grounds (King 1969).

The acorn was a dietary staple for the mainland Chumash, though its dominance varied by coastal or inland location. Chumash diet also included cattail roots, fruits and pads from cactus, and bulbs and tubers of plants such as amole (Miller 1988). On the coast, the wooden plank canoe (tomol) was employed in the pursuit of marine mammals and fish. The tomol not only facilitated marine resource procurement but also facilitated an active trade network maintained by frequent crossings between the mainland and the Channel Islands.

Chumash populations were decimated by the effects of European colonization and missionization (Johnson 1987). Traditional lifeways largely gave way to laborer jobs on ranches and farms in the Mexican and early American periods. Today, the Santa Ynez Band of Chumash Indians is the only federally recognized Chumash tribe, though many people of Chumash descent continue to live throughout their traditional territory.

Salinan

Little substantial data exists regarding the settlement patterns of the Salinan (Hester 1978). The Salinan are often separated into two groups, the northern Antoniaños, and the southern Migueleños. Twenty-one possible villages have been associated with Salinan tradition including the major Migueleños village, ťšolám or Cholami. Although no permanent sites have been identified in the coastal ranges, logistical foraging and hunting camps in these areas are likely. Houses were dome-shaped and use of communal structures and subterranean sweathouses has been recorded (Hester 1978).

Very little has survived of Salinan material culture. However, some baskets of varying shapes and sizes have been collected and represent Salinan basketry. Bone and stone tools were manufactured and have been recovered in limited amounts. The Salinan tool kit is similar to many groups in this region and includes projectile points, scrapers, stone bowl mortars, arrowshaft straighteners, and bone awls. Additionally, C-shaped fishhooks have been found at coastal sites (Hester 1978).

In July of 1771 San Antonio de Padua became the first mission established within the Salinan territory and the population at that time is estimated at around 3,000. Mission San Miguel Arcangel was later founded in 1797 and expanded rapidly, with over 1,076 Migueleños, and some neighboring groups also incorporated into the mission. By 1831, Salinan population dwindled to fewer than 700 individuals and by 1928, only 36 Salinan remained in California. Throughout this period most Salinan continued to live in the vicinity of the two missions (Hester 1978).

d. Historical Background

Post-European contact history for the state of California is generally divided into three periods: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present). The Juan Rodrigues Cabrillo expedition reached the San Luis Obispo region in 1542, possibly landed in Morro Bay, and sailed as far north as San Francisco Bay. For more than 200 years, other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Appendix B).

Spanish Period (1769–1822)

The earliest detailed descriptions of the area come from members of Gaspar de Portolá's land expedition, which passed through the region in 1769. Early travelers in the Central Coast region reported seeing no large Native American villages like those noted in the Santa Barbara Channel area. Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Portolá continued north, passing through the project vicinity and reaching San Francisco Bay in 1769. Mission San Luis Obispo de Tolosa was founded in 1772, the fifth of 21 missions established by the Spanish in Alta California (Appendix B).

Mexican Period (1822–1848)

The Mexican period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period was an era of extensive interior land grant development and exploration by American fur trappers west of the Sierra Nevada Mountains. The California missions declined in power and were ultimately secularized in 1834. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time. The secularization of the missions during the Mexican period resulted in approximately 500,000 acres of former mission lands being granted to Mexican citizens in San Luis Obispo County. The City of Morro Bay contains portions of what were once the San Bernardo and the Moro y Cayucos land grants. Rancho San Bernardo was granted in 1840 to Vincent Canet, and Rancho Moro y Cayucos was granted in 1842 to Martin Olivera and Vicente Feliz (Appendix B).

American Period (1848–present)

The American period began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California,

Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of Southern California continued to increase during the early American period. Many ranchos in the county were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns. Rancho San Bernardo was patented to Vincent Canet in 1865, and a patent was issued for Rancho Moro y Cayucos to James McKinley in 1878. The County of San Luis Obispo was founded in 1850. Roads were constructed throughout the county in the 1870s, primarily by Chinese laborers, leading to increased mobility throughout the county. In 1872, Captain John Harford began construction on the Pacific Coast Railway. In 1864, Franklin Riley visited Morro Bay while traveling the coast. Riley knew that there was a pocket of public land between Don Canet's Rancho San Bernardo and the coast, so he decided to homestead this land, and in 1870 founded it as the City of Morro Bay. Few roads led to Morro Bay, so transportation relied on steamers. Riley built the Embarcadero and planned the town next to the bay to accommodate sea trade and travel. Throughout the 1870s, the town grew rapidly because of trade along the Embarcadero. Land development became very important in Morro Bay in the early 1900s, with several real estate developers promoting the city. During the 1920s, numerous housing developments were carved out of ranches and farms. In the early twentieth century Port Harford was renamed Port San Luis and oil from the Santa Maria and Taft-Coalinga fields was shipped beginning in 1907 and 1913, respectively. The California Polytechnic School was established in 1901 as a high school and eventually became California Polytechnic State University (Cal Poly). The county's agriculture and ranching production supplied US troops during World War I and helped its residents weather the Great Depression of the 1930s. At the start of World War II, the US War Department transferred nearly 100,000 military personnel to bases at Morro Bay, Camp San Luis, Camp Roberts, and Cambria (Appendix B). The Morro Bay Power Plant was constructed in the 1950s, providing jobs and tax revenue. Morro Bay was incorporated as a general law city in 1964 and elected its first City Council.

e. Previously Identified Cultural Resources

The city does not contain any resources listed by the State Office of Historic Preservation (SHPO) as California Points of Interest, and no resources in the city are listed in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) (refer to Appendix B). Morro Rock is listed as a State Historical Landmark. Currently, the City of Morro Bay does not have a cultural resources inventory of built-environment and archaeological resources present in the city. However, the city likely contains built-environment resources over 50 years of age because development in the city dates back to the 1800s.

f. Regulatory Setting

Cultural resources, including built environment and archaeological resources, may be designated as historic by National, State, or local authorities. In order for a resource to qualify for listing in the NRHP, the CRHR, or as a locally significant resource, it must meet one or more identified criteria of significance. The resource must also retain sufficient historic integrity, defined in *National Register Bulletin 15* as the "ability of a property to convey its significance" (National Park Service [NPS] 1990). Explanations of these criteria are included in the regulatory setting discussions that follow.

State

California Environmental Quality Act

CEQA requires a lead agency to analyze whether historic and/or archaeological resources may be adversely impacted by a proposed project. Under CEQA, a "project that may cause a substantial

adverse change in the significance of a historic resource is a project that may have a significant effect on the environment" (California Public Resources Code [PRC] Section 21084.1). Evaluating significance is a two-part process: first, the determination must be made as to whether or not the project area contains cultural resources; second, if cultural resources are present, the proposed project must be analyzed for a potential "substantial adverse change in the significance" of the resource.

California Register of Historical Resources

The CRHR is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The CRHR helps government agencies identify, evaluate, and protect California's historical resources, and indicates which properties are to be protected from substantial adverse change (PRC Section 5024.1[a]). The CRHR is administered through SHPO that is part of the California State Parks system.

A cultural resource is evaluated under four CRHR criteria to determine its historical significance. A resource must be significant at the local, state, or national level in accordance with one or more of the following criteria set forth in the *CEQA Guidelines* Section 15064.5(a)(3):

1. It is associated with events that have made a significant contribution to the broad pattern of California's history and cultural heritage;
2. It is associated with the lives of persons important in our past;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. It has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, the CRHR requires that sufficient time must have passed to allow a "scholarly perspective on the events or individuals associated with the resource." Fifty years is used as a general estimate of the time needed to understand the historical importance of a resource according to SHPO publications. The CRHR also requires a resource to possess integrity, which is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association." Archaeological resources can sometimes qualify as "historical resources" (*CEQA Guidelines* Section 15064.5[c][1]).

According to CEQA, all buildings constructed over 50 years ago and that possess architectural or historical significance may be considered potential historical resources. Most resources must meet the 50-year threshold for historic significance. However, resources less than 50 years in age may be eligible for listing on the CRHR if it can be demonstrated that sufficient time has passed to understand their historical importance.

In addition, if a project can be demonstrated to cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b], and [c]).

PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; or
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Two other programs are administered by the state: California Historical Landmarks and California "Points of Historical Interest." California Historical Landmarks are buildings, sites, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value. California Points of Historical Interest are buildings, sites, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value.

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. These impacts could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired (*CEQA Guidelines* Section 15064.5 (b)(1), 2000). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR. (*CEQA Guidelines* Section 15064.5[b][2][A]).

Codes Governing Human Remains

CEQA Guidelines Section 15064.5 also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. The disposition of human remains is governed by Health and Safety Code Section 7050.5 and PRC Sections 5097.94 and 5097.98 and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to PRC Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native Americans so they can inspect the burial site and make recommendations for treatment or disposal.

Senate Bill 18 and Assembly Bill 52

California Senate Bill 18 (SB 18) (California Government Code Sections 65352.3 and 65352.4) was enacted on March 1, 2005 and requires cities and counties to notify and consult with California Native American tribal groups and individuals regarding proposed local land use planning decisions for the purpose of protecting traditional tribal cultural places (sacred sites), prior to adopting or amending a General Plan or designating land as open space. California Assembly Bill 52 of 2014 (AB 52) was enacted on July 1, 2015 and expands CEQA by defining "tribal cultural resources" as a new resource category. AB 52 establishes that "A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal

cultural resource, when feasible (PRC Section 21084.3). AB 52 also establishes a formal consultation process for California tribes regarding those resources. A more detailed discussion of the requirements of SB 18 and AB 52 is included in Section 4.15, *Tribal Cultural Resources*.

Local

Morro Bay Municipal Code

The Morro Bay Municipal Code adopts by reference the 2016 California Historical Building Code. Morro Bay Municipal Code Section 12.05.150 provides seven criteria, three of which must be met for the designation of landmark trees in the city and include native trees or groves of historical significance to local indigenous cultures. Morro Bay Municipal Code Section 14.72.060(C)(2) allows for the issuance of variances for the repair or rehabilitation of "historic structures" provided that the proposed action and variance preserve the historic nature of the structure.

Zoning Code Section 17.48.310 established regulations for the protection of archaeological and historic resources on both public and private lands in the city.

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds

Under CEQA, any project that may cause a substantial adverse change in the significance of a historical resource would also have a significant effect on the environment. According to Appendix G of the *CEQA Guidelines*, impacts related to cultural resources from the proposed project would be significant if the project would:

1. Cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5;
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;
3. Disturb any human remains, including those interred outside of dedicated cemeteries

The significance of a cultural resource and, subsequently, the significance of any impact are determined by consideration of whether that resource can increase our knowledge of the past. The determining factors are site content and degree of preservation. A finding of archaeological significance follows the criteria established in the *CEQA Guidelines*.

CEQA Guidelines Section 15064.5 (Determining the Significance of Impacts to Archaeological Resources) states:

> (3) […] Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (PRC Section 5024.1, Title 14 CCR Section 4852).
>
> (4) The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to PRC Section 5020.1[k]), or identified in an historical resources survey (meeting the criteria in PRC Section 5024.1[g]) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) and 5024.1.

(b) A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

Historical resources are "significantly" affected if there is demolition, destruction, relocation, or alteration of the resource or its surroundings. Generally, impacts to historical resources can be mitigated to below a level of significance by following the Secretary of the Interior's Guidelines for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Guidelines Section 15064.6[b]). In some circumstances, documentation of a historical resource by way of historic narrative photographs or architectural drawings will not mitigate the impact of demolition below the level of significance (Guidelines Section 15126.4[b][2]). Preservation in place is the preferred form of mitigation for archaeological resources as it retains the relationship between artifact and context and may avoid conflicts with groups associated with the site (Guidelines Section 15126.4 [b][3][A]). If an archaeological resource does not meet either the historic resource or the more specific "unique archaeological resource" definition, impacts do not need to be mitigated (Guidelines Section 15064.5[e]). Where the significance of a site is unknown, it is presumed to be significant for the purpose of the EIR investigation.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project cause a substantial adverse change in the significance of a historical resource as defined in *CEQA Guidelines* Section 15064.5?
Threshold 2:	Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5?

Impact CR-1 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE HAS THE POTENTIAL TO IMPACT HISTORICAL AND UNIQUE ARCHAEOLOGICAL RESOURCES. IMPLEMENTATION OF APPLICABLE GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES WOULD MINIMIZE OR AVOID POTENTIAL ADVERSE IMPACTS TO HISTORICAL AND ARCHAEOLOGICAL RESOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH INCORPORATION OF MITIGATION.

Based on *CEQA Guidelines* Section 15064.5, the General Plan and LCP Update, including future development activities facilitated by the General Plan and LCP Update, would have a significant impact on historical resources if it would cause a substantial adverse change in the significance of a historical resource. Historical resources include properties eligible for listing on the National Register of Historic Places, the CRHR, or the local register of historical resources. In addition, as explained in Section 15064.5, "[s]ubstantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." Although there are no specific development projects associated with the General Plan and LCP Update, implementation of the proposed General Plan and LCP Update would guide development in the planning area though the year 2040. Development facilitated by the General Plan and LCP Update could result in adverse effects to known or unknown historic resources.

Effects on archaeological resources can only be determined once a specific project has been proposed because the effects are dependent on both the individual project site conditions and the characteristics of the proposed ground-disturbing activity. Ground-disturbing activities associated

with development facilitated by the General Plan and LCP Update have the potential to damage or destroy previously unknown historic or prehistoric archaeological resources that may be present on or below the ground surface. Potential impacts to historic or prehistoric archaeological resources are most likely to occur in areas that have not previously been developed with urban uses, have not been studied through a cultural resource investigation, or when excavation extends to new depths. Consequently, damage to or destruction of previously-unknown sub-surface cultural resources could occur as a result of development under the proposed General Plan and LCP Update.

The General Plan and LCP Update Conservation Element includes Goal C-10, which is aimed at protecting cultural and historic resources, including policies requiring the identification of cultural and historic resources, the protection of cultural resources during construction, and the development of a cultural resources overlay. Applicable General Plan and LCP Update goals and policies are listed below.

Goal C-2 Cultural and historic resources are identified for protection and showcased as a vital part of Morro Bay

Policy C-2.1 **Historic and Cultural Resources Strategy.** Develop a plan to address historic and cultural resource issues in Morro Bay, which may include conducting and updating inventories, exploring certification options, and developing context statements.

Policy C-2.2 **Interagency Cooperation.** Work with the Historical Society of Morro Bay and other local groups on historic preservation objectives.

Policy C-2.3 **Protection of Cultural Resources.** Ensure the protection of cultural and archaeological resources during development, construction, and other similar activities. Development shall avoid, to the maximum extent feasible, adversely impacting cultural and/or archaeological resources, and shall include adequate BMPs to address any such resources that may be identified during construction, including mitigation measures sufficient to allow documentation, preservation, and other forms of mitigation.

Policy C-2.4 **Cultural Resources Overlay.** Develop a cultural resources overlay to protect cultural, archaeological and paleontological resources in Morro Bay.

The General Plan and LCP Update also includes the following implementation actions for Goal C-2:

C-11 Become a Certified Local Government (CLG) by developing a historic preservation ordinance, establishing a historic preservation committee, and maintaining a system to regularly update cultural resources.

C-12 Conduct inventories of historic and cultural resources in Morro Bay. Update these inventories as needed to ensure up-to-date information.

C-13 Establish a local register that mimics requirements of the California Register of Historic Resources and the National Register of Historic Places, but focuses on locally important historic themes, such as Morro Bay's legacy as a fishing village.

C-14 Identify historical themes and develop a historic context statement that is used to identify significant historical themes within a community that are often represented in the built environment, such as houses and infrastructure.

These goals, policies, and implementation actions are intended to provide a plan for developing project-level mitigation necessary to address site-specific historic and cultural resources. Additionally, future development under the General Plan and LCP Update would be subject to the provisions of applicable federal and State cultural and historic resource regulations (discussed in subsection 4.4.1(f), *Regulatory Setting*). Although compliance with applicable regulations and implementation of General Plan and LCP Update goals and policies would minimize impacts to archaeological and historic resources, the General Plan and LCP Update does not include policy language or implementation actions to address potential impacts to archaeological and historic resources on a project-by-project basis within the planning area. Therefore, impacts to archaeological and historic resources would be potentially significant and additional policy-based mitigation would be required to avoid and/or minimize these potential impacts.

Mitigation Measures

The following measures are required to address potential impacts to cultural and historic resources.

CR-1(a) Avoidance or Minimization of Historic, Cultural, and Archaeological Resources Impacts

Policy C-2.3 of the General Plan and LCP Update shall be revised to read:

Policy C-2.3 **Protection of Cultural Resources.** Ensure the protection of historic, cultural, and archeological resources during development, construction, and other similar activities. Development shall avoid, to the maximum extent feasible, adversely impacting historic, cultural, and/or archaeological resources, and shall include adequate BMPs to address any such resources that may be identified during construction, including avoidance, minimization, and mitigation measures sufficient to allow documentation, preservation, and other forms of mitigation. If the resource(s) in question are of Native American origin, develop avoidance or minimization measures in consultation with appropriate Native American tribe(s).

CR-1(b) Cultural Resources Study Implementation Action

The following implementation action for Goal C-2 shall be added to the General Plan and LCP Update:

Require all discretionary proposals within the cultural resources overlay to consider the potential to disturb cultural resources. If preliminary reconnaissance suggests that cultural resources may exist, a Phase I cultural resources study shall be performed by a qualified professional meeting the Secretary of the Interior's (SOI) Professional Qualification Standard (PQS) for archaeology and/or architectural history, as appropriate (NPS 1983).

A Phase I cultural resources study shall include a pedestrian survey of the project site and sufficient background research and field sampling to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a records search at the Central Coast Information Center (CCIC) and a Sacred Lands File (SLF) search with the Native American Heritage Commission (NAHC). Where identified or potential resources are of Native American origin, the appropriate Native American tribe(s) will participate with the qualified professional. The technical report documenting the study shall include recommendations to avoid or, if avoidance is not feasible, reduce impacts to cultural resources.

Significance After Mitigation

Impacts to cultural and historic resources would be less than significant with implementation of Measures CR-1(a) and CR-1(b), which would update the General Plan and LCP Update to include a policy and implementation action to address potential impacts to historical and unique archaeological resources on a project-by-project basis by requiring cultural resource studies for projects within the city and the implementation of further requirements to avoid or reduce impacts to those resources.

Threshold 4:	Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Impact CR-2 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE HAS THE POTENTIAL TO ADVERSELY AFFECT PREVIOUSLY UNKNOWN HUMAN BURIALS BUT WOULD BE REQUIRED TO ADHERE TO EXISTING REGULATIONS REGARDING THE TREATMENT OF HUMAN REMAINS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Human burials outside of formal cemeteries often occur in prehistoric archaeological contexts. The potential exists for these resources to be present in areas where development has not yet occurred. Excavation during construction activities in the planning area would have the potential to disturb these resources, including Native American burials.

Human burials, in addition to being potential archaeological resources, are subject to specific provisions for treatment in PRC Section 5097. The California Health and Safety Code (Sections 7050.5, 7051, and 7054) has specific provisions for the protection of human burial remains. Existing regulations prohibit interfering with human burial remains; protect human remains from disturbance, vandalism, or destruction; and establish procedures to be implemented if Native American skeletal remains are discovered. PRC Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and established the NAHC to resolve any related disputes.

All development facilitated by the General Plan and LCP Update would be required to adhere to existing regulations regarding the treatment of human remains. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

c. Cumulative Impacts

Development in the San Luis Obispo County region (the cumulative impact analysis area) would increase under buildout of the General Plan and LCP Update. The increase in growth in previously undisturbed areas would contribute to regional impacts on existing and previously undisturbed and undiscovered historical and archaeological resources. While most cultural resources are site-specific with impacts that are project-specific, other cultural resources may have regional significance (for example, a historical structure that represents the last known example of its kind). For such a resource, cumulative impacts would be potentially significant.

Implementation of the General Plan and LCP Update goals, policies, and implementation actions listed in Impact CR-1 are intended to provide a plan for developing project-level mitigation necessary to ensure protection of cultural resources during future development in the planning

area. Additionally, future development under the General Plan and LCP Update would be subject to the provisions of applicable federal and State cultural resource regulations (discussed in subsection 4.4.1(f), *Regulatory Setting*).

Although compliance with applicable regulations and implementation of General Plan and LCP Update goals and policies would minimize cumulative impacts to cultural resources, the General Plan and LCP Update does not include policy language or implementation actions to address potential impacts to cultural resources on a project-by-project basis. Therefore, the General Plan and LCP Update would contribute to potentially significant impacts to cultural resources. However, as described in Impact CR-1, implementation of Measures CR-1(a) and CR-1(b) would update the General Plan and LCP Update to include implementation actions to address potential impacts to cultural resources on a project-by-project basis by requiring cultural resource studies for projects within the city and the implementation of further requirements to avoid or reduce impacts to cultural resources. Implementation of Mitigation Measures CR-1(a) and CR-1(b) would ensure that potential impacts to cultural resources would not be cumulatively considerable, and cumulative impacts to such resources would be reduced to a less than significant level.

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4.5 Geology and Soils

This section of the EIR analyzes the potential physical environmental effects related to seismic hazards, underlying soil characteristics, slope stability, erosion, and paleontological resources from implementation of the proposed General Plan and LCP Update.

4.5.1 Setting

a. Geologic Setting

Morro Bay lies at the tectonically active southern end of the Coast Ranges geomorphic province and contains geologic units ranging in age from Jurassic to recent (CGS 2002). A list of the geologic units mapped at the surface within Morro Bay is presented in Table 4.5-1 and mapped in Figure 4.5-1.

Table 4.5-1 Geologic Units in the City of Morro Bay

Major Rock Type	Geologic Unit[1]	Description	Age
Sedimentary	(af) artificial fill	Human construction-related deposits, including engineered and nonengineered fill	Latest Holocene
Sedimentary	(Qa) Quaternary alluvial flood-plain deposits	Active and recently active floodplain deposits of cobbles, gravel, sand, and silt	Late Holocene
Sedimentary	(Qpe) Quaternary paralic estuarine deposits	Unconsolidated estuarine deposits of fine-grained sand and clay	Late Holocene
Sedimentary	(Qe, Qs) Quaternary eolian deposits	Unconsolidated, well-sorted white to brown windblown sand. Forms active dunes along west side of Morro Bay	Holocene
Sedimentary	(Qls) Quaternary landslide deposits	Highly fragmented to largely coherent landslide deposits	Holocene and Pleistocene
Sedimentary	(Qya) Quaternary young alluvial floodplain deposits, undivided	Unconsolidated sand, silt, and clay-bearing alluvium deposited on floodplains and along valley floors	Holocene and late Pleistocene
Sedimentary	(Qoa) Quaternary old alluvial floodplain deposits	Moderately consolidated, slightly dissected gravel, sand, silt and clay-bearing alluvium, capped by moderate to well-developed soils	Late to middle Pleistocene
Sedimentary	(Qoe) Quaternary old eolian deposits	Old stabilized sand dune deposits of moderately consolidated, well-sorted brown windblown sand, capped by moderately well-developed soils	Late to middle Pleistocene
Igneous	(Toi) Tertiary porphyritic dacite of Morro Rock-Islay Hill intrusive complex	Porphyritic dacite with altered plagioclase, biotite, glass, quartz, and hornblende groundmass	Oligocene
Igneous	(Toif) Tertiary fine-grained dacite of Morro Rock-Islay Hill intrusive complex	Fine-grained dacite flows, with rare phenocrysts	Oligocene
Sedimentary	(KJfm) Franciscan Complex melange	Chaotic mixture of fragmented rock and metasandstone	Cretaceous to Jurassic
Sedimentary	(KJfch) Franciscan Complex chert	Red and green radiolarian chert	Cretaceous to Jurassic

Major Rock Type	Geologic Unit[1]	Description	Age
Igneous/Metamorphic	(KJfmv) Franciscan Complex metavolcanics	Greenstone, pillow basalts	Cretaceous to Jurassic
Metamorphic	(Jos) Serpentinized ultramafic rocks	Peridotite, dunite, serpentinite	Jurassic

[1]Rock unit abbreviation depends on geologic map source.

Sources: Dibblee 2006a, 2006b; Wiegers 2009

b. Geologic and Seismic Hazards

Geologic and seismic hazards are caused by the movement of the earth's surface. The most common geologic or seismic hazards are associated with earthquakes, which cause the earth's surface to move rapidly and the ground to shake. Morro Bay has experienced the effects of several seismic events in the past 150 years. The most recent earthquake that impacted Morro Bay was the San Simeon earthquake in 2003, which resulted in building damage and small fires.

There are seven seismically active faults that have been identified in San Luis Obispo County, with potential to affect the General Plan and LCP Update planning area. These faults include the Los Osos Fault, the Hosgri fault, the Oceanic-West Huasna fault, the Rinconada fault, the East Huasna fault, the La Panza fault, and the San Andreas fault. Other faults not included in this list, including the Cambria fault as well as faults outside of the Morro Bay region, may be capable of generating earthquakes that could cause damage in the planning area. In addition, there may be unknown faults in the area that could cause significant ground shaking or fault rupture. Figure 4.5-2 identifies the location of known fault lines in the vicinity of Morro Bay.

Seismic activity can trigger other types of hazards, including surface rupture, groundshaking, liquefaction, landslides, subsidence and tsunamis. The effects of tsunamis are discussed in detail in Section 4.7, *Hydrology and Water Quality*. These effects of surface rupture, groundshaking, liquefaction, landslides, and subsidence are described below.

Fault Rupture

Fault rupture is the movement of the ground surface along a fault line when the plates slip past each other. Depending on the type of fault, the movement may be vertical, horizontal, or both. The damage can be severe, as any building or structure that straddles the fault is effectively pulled in two directions at once. However, the damage area from fault rupture is generally limited to locations on the fault itself. Some earthquakes can occur without causing fault rupture. Such earthquakes are usually small, but some can be much more substantial, such as the 2003 San Simeon earthquake. These events are known as "blind thrust earthquakes." As shown on Figure 4.5-2, the Cambria Fault runs through potential future sphere of influence area within the planning area.

Figure 4.5-1 Geologic Units in the City of Morro Bay

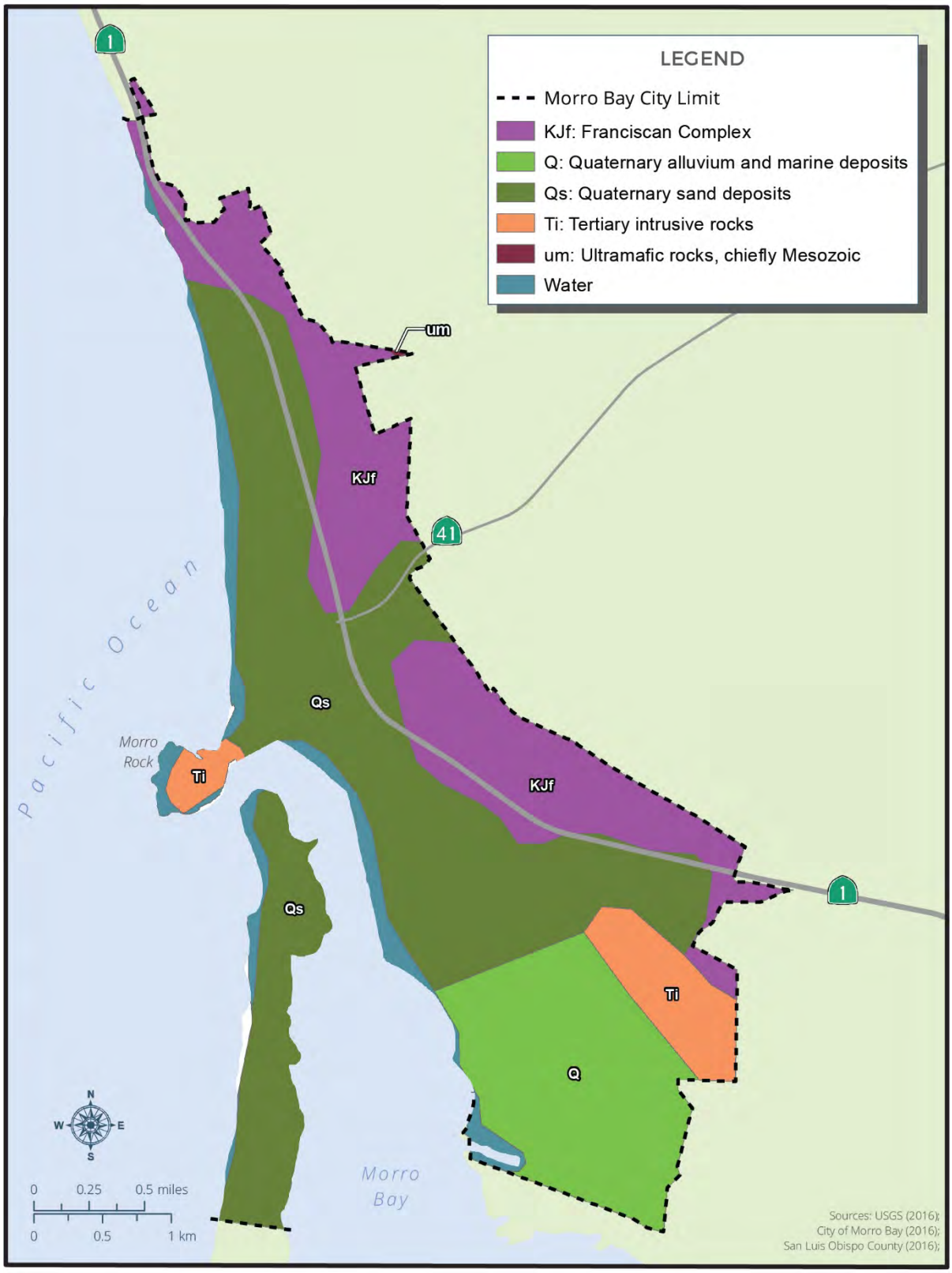
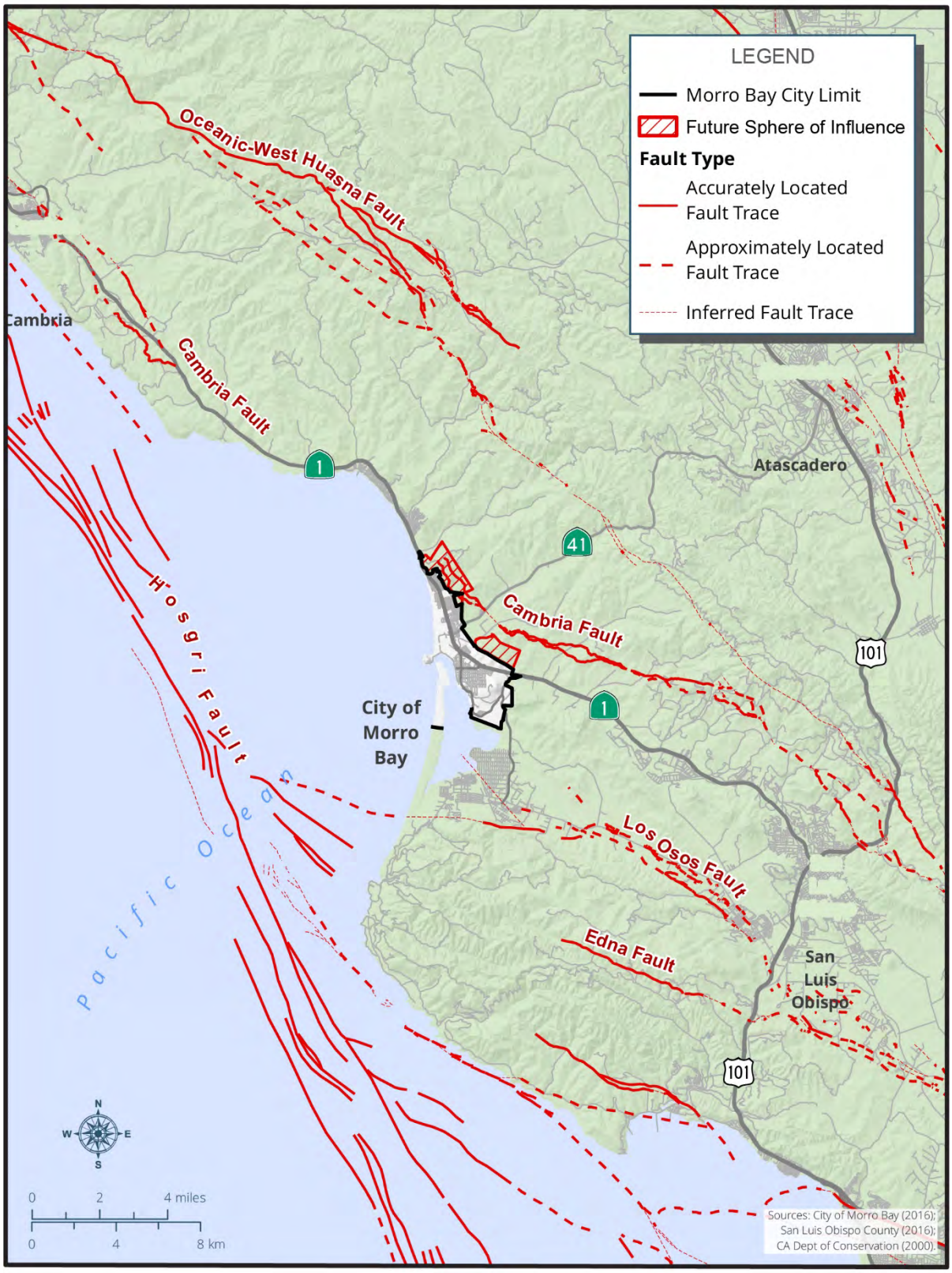


Figure 4.5-2 Regional Fault Lines



Groundshaking

Groundshaking occurs when the passage of seismic waves causes the ground to shake, resulting in damage to structures. Groundshaking is triggered by seismic activity on faults and is most likely to occur near regional fault lines shown on Figure 4.5-2.

Liquefaction

Liquefaction occurs when loose soil loses strength and behaves like a liquid during an earthquake, creating the potential for structural damage to buildings in the vicinity. Figure 4.5-3 shows the level of potential liquefaction risk in and around the planning area. As shown in Figure 4.5-3, Morro Bay's coastline is at high risk for liquefaction, with the exception of the area near Morro Rock and northernmost coastline area. The high-risk areas extend inland in southern Morro Bay, from downtown to SR 1. Inland neighborhoods in northern Morro Bay have a moderate risk for liquefaction.

Landslides

Landslides can be caused by shaking of an earthquake causing loose material to slide down a slope. Figure 4.5-4 shows the level of potential landslide risk in and around the planning area. As shown in Figure 4.5-4, landslide risks in Morro Bay are relatively low, but the risk is higher in the eastern portion of the city. Very small sections of the city near Morro Bay State Park and the estuary are considered high or very high risk. Some residential, commercial, and natural lands east of SR 1 are considered high risk for landslides. These areas include a small neighborhood framed by Downing Street and SR 1, and a portion of the neighborhood framed by SR 41 and SR 1 in northern Morro Bay.

Coastal Bluff Erosion

High tides and waves can cause erosion of beach environments, including sand dunes, at varying rates, depending of the types of geologic units in the area (refer to Figure 4.5-1). Over time, erosion can degrade coastal access, decrease beach quality, and weaken dunes that help to protect coastal structures. While erosion is driven by natural processes, human activities such as shoreline hardening, dredging, and coastal structures can alter natural processes and exacerbate erosion.

The wide beach and tall sand dunes present in southern Morro Bay protect this section of the community from substantial erosion risk, although the beach and dunes themselves may be eroded during severe storms. Northern Morro Bay, which is directly exposed to the ocean and is not protected by the bay and sandspit, has a higher erosion risk. However, northern Morro Bay also has a wide sloping beach and a series of small sand dunes which act as an erosion buffer for homes in this part of the community. The beach and dunes can be eroded by storms, but they are generally replenished during the summer through natural processes (City of Morro Bay 2006).

Figure 4.5-3 Liquefaction Susceptibility

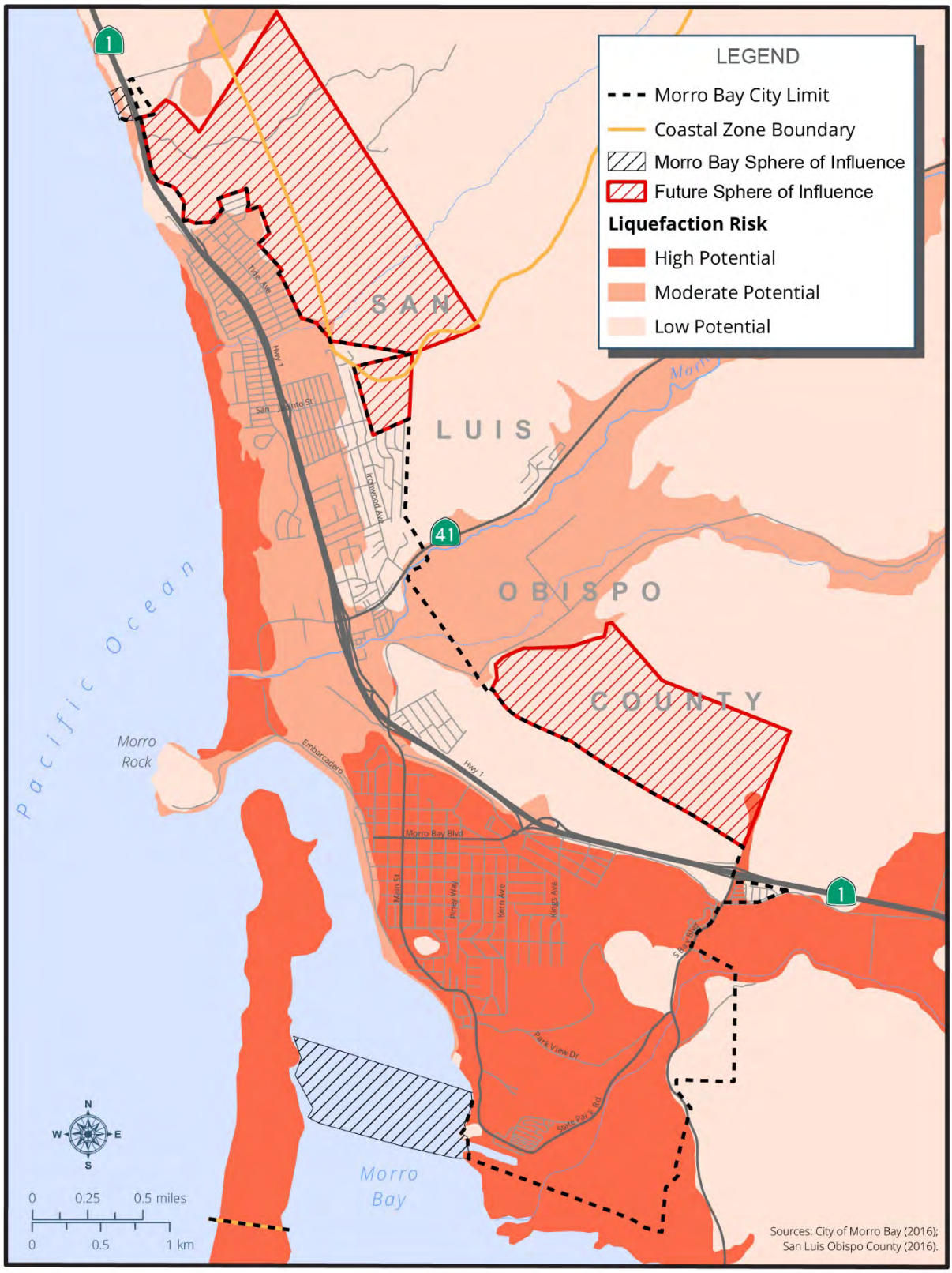
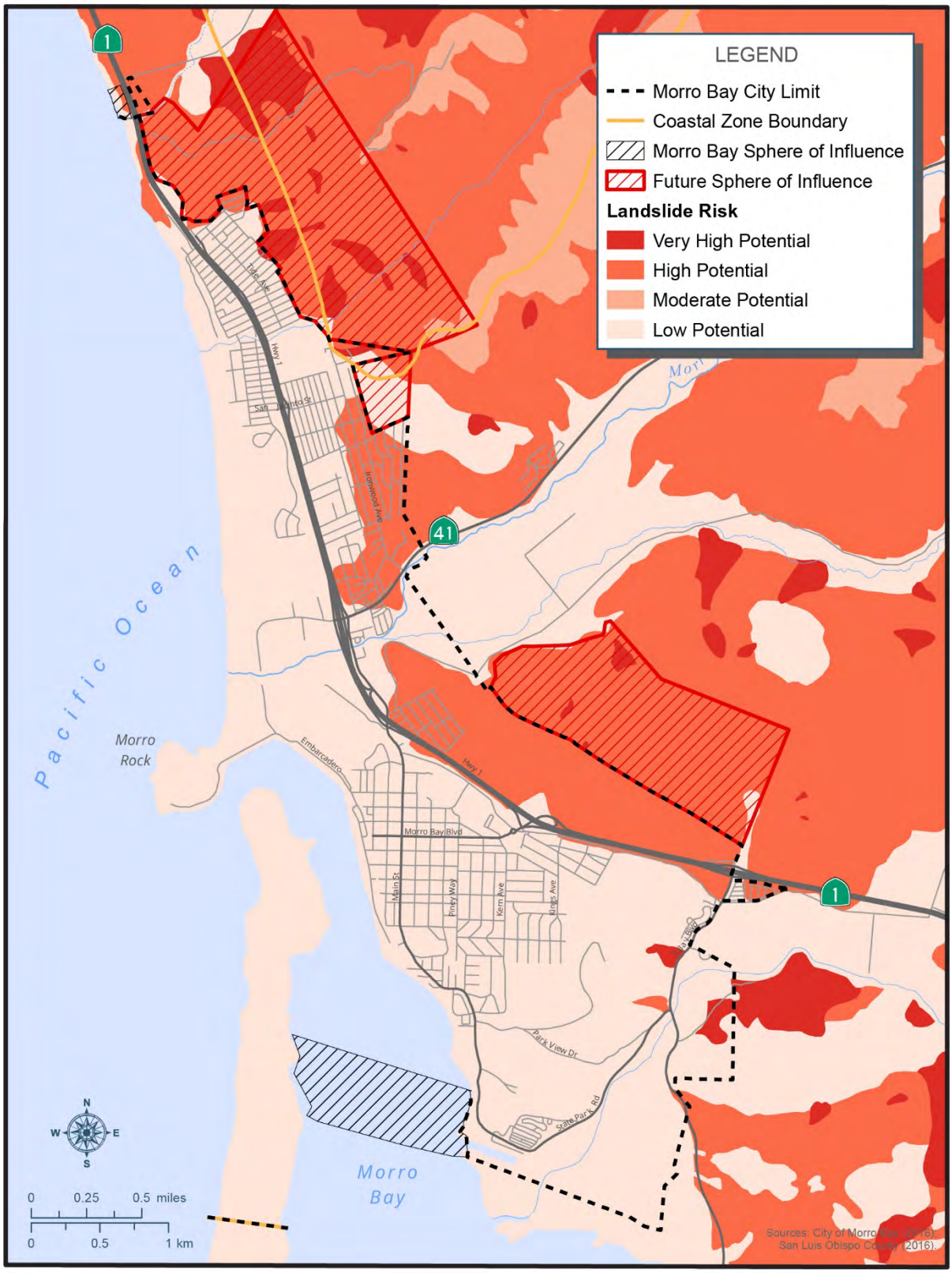


Figure 4.5-4 Landslide Susceptibility



c. Previously Identified Paleontological Resources

Most of the geologic units mapped in the city have not produced any fossils. However, the Pismo Formation and Pleistocene-aged alluvial deposit geologic units located in the vicinity of Morro Bay can contain significant paleontological resources. Six known vertebrate fossil localities have been identified near the city from the Pismo Formation, although this formation does not occur in the city itself. Quaternary older alluvium (Pleistocene-age) is highly sensitive for paleontological resources in California, but no records of fossil localities from this geologic unit have been identified in the vicinity of the city (refer to Appendix B).

d. Regulatory Setting

Federal

Clean Water Act

Congress enacted the Clean Water Act (CWA), formerly the Federal Water Pollution Control Act of 1972, with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is administered by the California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs). Morro Bay is within a watershed administered by the Central Coast RWQCB.

Individual projects within the City that disturb more than one acre would be required to obtain NPDES coverage under the California General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) describing Best Management Practices (BMPs) the discharger would use to prevent and retain storm water runoff and to prevent soil erosion.

Disaster Mitigation Act of 2000

Congress passed the Disaster Mitigation Act of 2000 to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act by invoking new and revitalized approaches to mitigation planning. Section 322 of the Act emphasized the need for state and local government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for federal mitigation grant funds. Communities with an adopted and federally-approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next declared disaster.

To implement the new Stafford Act provisions, FEMA published requirements and procedures for local hazard mitigation plans in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201.6. These regulations specify minimum standards for developing, updating, and submitting local hazard mitigation plans for FEMA review and approval at least once every five years.

State

California Building Code

The California Building Code (CBC), Title 24, Part 2 provides building codes and standards for the design and construction of structures in California. The 2019 CBC is based on the 2018 International Building Code with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 was passed into law following the destructive February 9, 1971 San Fernando earthquake. The Alquist-Priolo Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the Alquist-Priolo Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. The Alquist-Priolo Act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (the Act) of 1990 was passed into law following the destructive October 17, 1989 Loma Prieta earthquake. The Act directs the CGS to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

California Environmental Quality Act

The *CEQA Guidelines* (Article 1, Section 15002(a)(3)) state that CEQA is intended to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible. If paleontological resources are identified as being within the proposed project area, the project effects on the resources must be evaluated.

Local

Morro Bay Municipal Code

The Buildings and Construction Ordinance of the City of Morro Bay, Title 14 of the Morro Bay Municipal Code, adopts by reference the 2019 CBC (Volumes 1 and 2). Municipal Code Section 14.18.010 includes design standards for seismic safety requiring structural analysis of buildings to be conducted by a civil or structural engineer or architect licensed by the state and requires any noncomplying structures to be altered or demolished (Appendix B). Municipal Code Chapter 17.45 regulates bluff development, sets standards for development that protect coastal bluffs in Morro Bay from erosion, and establishes a bluff and bluff setback zones where projects may be required to

apply for conditional use permit and undergo review by the Community Development Department to ensure erosion and other seismic and geologic hazards are minimized. Municipal Code Section 13.12.230 regulates discharge from septic tanks in the city by prohibiting dumping or discharging septic tank cleanings or any raw or chemically treated sewage from septic tanks.

Morro Bay Local Hazard Mitigation Plan

The Morro Bay Local Hazard Mitigation Plan (LHMP) is a plan to improve resiliency in the community by identifying natural hazards present in Morro Bay, determining the community's vulnerability to each hazard, and identifying development mitigation strategies to reduce vulnerability before emergency situations develop. The LHMP identifies earthquakes (including fault rupture and liquefaction), floods, landslides, and hazardous material releases as the most significant hazards present in the community, and includes goals, objectives, and mitigation to improve resiliency to these hazards. The City is in the process of updating the LHMP and is currently developing mitigation strategies for identified hazards. The City's LHMP is part of the County of San Luis Obispo's Multi-Jurisdictional LHMP.

4.5.2 Impact Analysis

a. Methodology

This section describes the potential environmental impacts of the General Plan and LCP Update relevant to geology and soils. The impact analysis is based on conditions of the planning area outlined in the Community Baseline Assessment for the General Plan and LCP Update (Appendix B), including topography, geologic and soil conditions, and seismic hazards, as described under Section 4.5.1, *Setting*. This analysis identifies potential impacts based on the predicted interaction between the affected environment and construction, operation, and maintenance activities related to development facilitated by the project. This section describes impacts in terms of location, context, duration, and intensity.

Paleontological Resources

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits (formations) within which fossils are buried and physically destroy the fossils. Such impacts have the potential to be significant and, under the *CEQA Guidelines,* may require mitigation. Sensitivity is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. Geological units having the potential to contain vertebrate fossils are considered the most sensitive.

The Society for Vertebrate Paleontology (SVP) Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010) provide guidelines for categorizing paleontological sensitivity of geologic units within a project area. The SVP (2010) describes sedimentary rock units as having a high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. Significant paleontological resources are fossils or assemblages of fossils, which are unique, unusual, rare, uncommon, diagnostically or stratigraphically, taxonomically, or regionally. Rincon has evaluated the paleontological sensitivity of the planning area according to the following SVP (2010) categories:

High Potential (Sensitivity)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils.

Low Potential (Sensitivity)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology.

Undetermined Potential (Sensitivity)

Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials.

No Potential

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

In general, full-time monitoring is recommended during any project-related ground disturbance for geologic units with high sensitivity. Protection or salvage efforts typically are not required for geologic units with low sensitivity. Field surveys by a qualified paleontologist are usually recommended to determine the paleontological potential of the rock units present within the study area for geologic units with undetermined sensitivity. For geologic units with no sensitivity, a paleontological monitor is not required.

b. Significance Thresholds

The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. For the purposes of this EIR, implementation of the General Plan and LCP Update may have a significant adverse impact if it would do any of the following:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
    b. Strong seismic ground shaking
    c. Seismic-related ground failure, including liquefaction
    d. Landslides
2. Result in substantial soil erosion or the loss of topsoil
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse

4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides?
Threshold 3:	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Impact GEO-1 CONSTRUCTION AND OCCUPANCY OF NEW BUILDINGS UNDER THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN EXACERBATED HAZARDS ASSOCIATED WITH GEOLOGIC HAZARDS. ADHERENCE TO REQUIREMENTS OF THE CALIFORNIA BUILDING CODE AND IMPLEMENTATION OF THE GOALS AND POLICIES OF THE GENERAL PLAN AND LCP UPDATE WOULD MINIMIZE THE POTENTIAL FOR LOSS, INJURY, OR DEATH FOLLOWING A SEISMIC EVENT, LANDSLIDE, LIQUEFACTION, OR OTHER GEOLOGIC HAZARDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As discussed in Section 4.5.1, *Setting*, there are seven seismically active faults that have been identified in San Luis Obispo County, with potential to affect the General Plan and LCP Update planning area. Faults depicted in Figure 4.5-2, as well as unknown faults may also be capable of generating earthquakes.

Development under the General Plan and LCP Update would result in additional residential and nonresidential development in the city. Additional residents and employees would be exposed to the effects of seismic hazards, including fault rupture, seismic groundshaking, liquefaction, and landslides from local and regional earthquakes. New structures built in the planning area under the General Plan and LCP Update could experience damage during seismic groundshaking or fault rupture due to the faults that run through or near the planning area, as shown on Figure 4.5-2. Structures built on steep slopes could be exposed to an existing risk of landslide or if improperly constructed could exacerbate existing landslide conditions shown on Figure 4.5-4. The General Plan and LCP Update would encourage infill development and redevelopment of existing underutilized land uses, which would in some cases replace older buildings subject to seismic damage with newer structures built to current seismic standards that would better withstand the adverse effects of strong ground shaking. Potential structural damage and exposure of people to the risk of injury or death from structural failure would be minimized through required compliance with CBC engineering design and construction measures. Foundations and other structural support features are required to be designed to resist or absorb damaging forces from strong ground shaking and liquefaction.

In addition to mandatory compliance with CBC requirements, implementation of the following General Plan and LCP Update Public Safety Element goals and policies would further reduce the potential for loss, injury, or death from seismic hazards by resisting the structural effects of seismic

events and unstable geologic units, maintaining adequate resources to respond to a seismic event, and educating the public about the dangers of and appropriate response to a seismic event.

Goal PS-1 Damage from natural disasters is minimized and repaired quickly.

Policy PS-1.1 **Vulnerable Assets**. Examine all vulnerable assets and develop a plan to minimize risks and respond quickly to damage.

Policy PS-1.2 **Emergency Response**. Provide adequate warning and evacuation assistance in the event of natural disasters such as a tsunami, flood, and earthquake-related events.

Policy PS-1.3 **Education and Awareness.** Provide public information regarding natural hazard risks and resiliency strategies.

Policy PS-1.4 **Climate Change.** Consider how climate change impacts may change anticipated hazard conditions when planning for emergency response.

Goal PS-2 Development is protected from natural disasters to the greatest extent possible.

Policy PS-2.2 **New Development in High-Risk Areas.** Require new development to be located outside of areas subject to natural hazards from tsunami, geologic, flood, and wildfire conditions to the maximum feasible extent. If development must occur in such high-risk areas, including if development cannot be feasibly sited in a manner that avoids such areas entirely, ensure that such development is sited, designed, and conditioned to minimize risks to life and property while mitigating the development's impacts to coastal resources, particularly to public recreational beach access. Development shall also ensure stability and structural integrity; shall not create nor contribute significantly to erosion, geologic instability, or destruction of the site; shall not substantially alter natural landforms; and shall not include shoreline protective devices.

Policy PS-2.8 **Structural Stability.** Require new development to ensure structural stability while not creating or contributing to erosion or geologic instability or destruction of the site or surrounding area.

Policy PS-2.9 **New Development in High-Risk Areas.** Require that new development in areas subject to liquefaction and/or landslide hazards is located in a manner that will minimize risks to life and property.

Policy PS-2.10 **Building Retrofits.** Encourage building retrofits that improve resiliency to geologic and seismic hazards.

Policy PS-2.11 **New Development Proposals.** Require new development proposals in seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.

Policy PS-2.12 **Grading and Cut-and-Fill Operations.** Require new development to minimize grading and cut-and-fill operations.

Policy PS-2.13 **Additional Standards for Development Subject to Geologic and Seismic Hazards.** In addition to other hazard requirements that may apply, development in areas that are potentially subject to geologic hazards, (including Alquist-Priolo earthquake hazard zones and areas subject to landslides, liquefaction, steep slopes averaging greater than 30 percent, and unstable slopes regardless of

steepness) shall comply with the seismic safety standards of the Alquist-Priolo Act (California Public Resources Code Sections 2621. et seq.) and all applicable seismic provisions and criteria in the most recent version of State and County codes; shall incorporate siting and design techniques to mitigate any such geologic hazards; and shall not create a hazard or diminish the stability of the area.

Goal PS-4 Response to emergencies is quick, efficient, and effective.

Policy PS-4.1 **Update Emergency Response Plan.** Regularly update the Morro Bay Emergency Response Plan with updated evacuation routes and hazard information. Publicize evacuation routes and other relevant emergency procedures.

Policy PS-4.4 **Interagency Cooperation.** Work cooperatively with public agencies with responsibility for natural and environmental hazards.

Policy PS-4.5 **Transportation Requirements.** Establish minimum road widths and clearances around structures to improve transportation in the event of an emergency.

Policy PS-4.6 **Resiliency Hubs.** Work with local schools and community centers to create "resiliency hubs" that can serve as gathering places during emergencies and interruptions in services, and contain access to water, electricity, and other needed services.

Policy PS-4.7 **Passive Resiliency.** Ensure, to the greatest extent possible, that new and significantly remodeled buildings will maintain livable conditions in the event of extended loss of power or heating.

Implementation of these General Plan and LCP Update goals and policies would minimize risks associated with potential fault rupture, seismic shaking, and other geologic hazards in the planning area. Policy PS-2.9 would limit new development in areas subject to liquefaction and/or landslide hazards. A detailed review of design and construction plans and incorporation of additional structural safety features would be required on a project-by-project basis, as necessary, for structures that would be located on steep slopes or in areas subject to seismic hazards such as extreme ground shaking or high risk liquefaction areas of the city shown in Figure 4.5-3. These policies would also ensure that adequate emergency response is available during seismic events and would educate the public on earthquake preparedness. Implementation of these goals and policies, in addition to compliance with applicable laws and regulations, would minimize the potential for loss, injury, or death following a seismic event. Therefore, this impact would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 2: Would the project result in substantial soil erosion or the loss of topsoil?

Impact GEO-2 CONSTRUCTION OF NEW DEVELOPMENT UNDER THE GENERAL PLAN AND LCP UPDATE WOULD INCLUDE GROUND DISTURBANCE THAT WOULD RESULT IN LOOSE OR EXPOSED SOIL THAT COULD BE ERODED BY WIND OR DURING A STORM EVENT, RESULTING IN THE LOSS OF TOPSOIL. COMPLIANCE WITH APPLICABLE REGULATIONS, INCLUDING THE CLEAN WATER ACT, AND IMPLEMENTATION OF THE GOALS AND POLICIES OF THE GENERAL PLAN AND LCP UPDATE WOULD MINIMIZE THE POTENTIAL FOR EROSION AND LOSS OF TOPSOIL AND WOULD ENSURE THIS IMPACT WOULD REMAIN LESS THAN SIGNIFICANT.

New development in Morro Bay under the General Plan and LCP Update would involve construction activities such as stockpiling, grading, excavation, paving and other earth disturbing activities. These construction activities may result in loose and disturbed soils in the planning area, which can increase the potential for erosion and loss of topsoil.

Construction activities that disturb one or more acres of land surface are subject to the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) adopted by the State Water Resources Control Board (SWRCB) under the Clean Water Act. The City of Morro Bay is in compliance with the NPDES General Permit for the discharge of stormwater from small Municipal Separate Storm Sewer Systems (MS4). Compliance with the permit requires each qualifying development project to file a Notice of Intent with the SWRCB. Permit conditions require development of a SWPPP, which must describe the site, the facility, and BMPs to prevent and retain storm water runoff and to prevent soil erosion. More specifically, the SWPPP must describe erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of construction sediment and erosion control measures, maintenance responsibilities, and non-storm water management controls. Inspection of construction sites before and after storms is also required to identify storm water discharge from the construction activity and to identify and implement erosion controls, where necessary.

Compliance with the Construction General Permit is enforced in Section 14.48 of the Municipal Code, which regulates storm water discharge in the city and requires the development of an erosion and sediment control plan or Stormwater Control Plan (SWP) that is equivalent to the required SWPPP. The City has prepared the *Stormwater Management and Guidance Manual for Low Impact Development and Post-Construction Requirements*, and individual projects within the city that disturb more than one acre are required to obtain NPDES coverage under the Construction General Permit. Chapter 17.45 of the Municipal Code provides regulatory standards to ensure erosion associated with bluff development and other seismic and geologic hazards are minimized.

Adherence to the Clean Water Act NPDES permitting requirements and the Municipal Code requirements related to stormwater and bluff development would ensure that potential impacts associated with soil erosion and loss of topsoil would remain less than significant. Implementation of General Plan and LCP Update Public Safety Element Goal PS-2 and Policies PS-2.8 (Structural Stability) and PS-2.12 (Grading and Cut-and-Fill Operations) would reduce the potential for erosion and loss of topsoil. In addition, implementation of the following General Plan and LCP Update Public Safety Element and Conservation Element goals and policies would further reduce the potential of erosion and loss of topsoil.

Goal PS-3 Morro Bay is prepared for and responsive to the effects of sea level rise and other coastal hazards in both the short and longer term future.

Policy PS-3.3 **Monitor Beaches.** Monitor beaches for sea level rise impacts such as erosion and changes in beach widths in order to identify trigger points for various adaptation strategies.

Policy PS-3.4 **Property Owner Information.** Provide information to property owners about the risks associated with coastal erosion and flooding and encourage them to take adequate steps to prepare for these risks.

Policy PS-3.6 **Shoreline Preservation as a City Goal.** The Morro Bay shoreline is an irreplaceable resource and its preservation as a natural living shoreline is a matter of great public importance. Therefore, the intent of the Local Coastal Program is to ensure that shoreline protective devices and other shoreline altering development are only utilized in very rare situations and only when all coastal resource impacts are avoided, and where unavoidable are appropriately and proportionately mitigated, including consistent with Policies PS-3.7, PS-3.12, and PS-13.

Policy PS-3.10 **Shoreline Management Plan.** The City shall prepare a Shoreline Management Plan for approval by the Coastal Commission as an amendment to the Local Coastal Program. The plan shall function as a tool to help implement coastal protections, maximize public access, and protect coastal resources along the City's shoreline, including building upon the City's Adaptation Strategy Report. The plan shall be prepared in coordination with relevant local, regional, and/or state agencies for the purpose of protecting coastal resources, as well as ensuring the resilience of coastal public infrastructure. The plan shall conduct the following:

- Adaptation Triggers. Refining adaptation triggers for actions to address sea level rise impacts for different areas and assets in Morro Bay, including monitoring beaches for sea level rise impacts such as erosion and changes in beach widths in order to identify trigger points for various adaptation strategies.
- Site Reuse. Considering appropriate uses for sites previously occupied by relocated assets, including parks, open space/natural areas, and other predominantly passive land uses.
- Transfer of Development Rights (TDR). Considering a TDR program to restrict development in areas that are vulnerable to sea level rise and allow the transfer of development rights to parcels with less vulnerability to hazards.
- Sea Level Rise Hazard Overlay Zone. Establishing a Sea Level Rise Hazard Overlay Zone (in the potential sea level rise hazard areas established in Figure PS-8) to address safety from flood and sea level rise related hazards, and recommend remedial actions. Establishing a program to inform owners of real estate in the Sea Level Rise Hazard Overlay Zone about coastal hazards or property vulnerabilities, including information about known

current and potential future vulnerabilities to sea level rise, and disclosing permit conditions related to coastal hazards to prospective buyers prior to closing escrow.

The Shoreline Management Plan may be amended every five to ten years, as appropriate, by the City Council, and adopted by the Coastal Commission through the Local Coastal Program amendment process.

For all other areas outside of the Harbor, Marina, area immediately adjacent to the shoreline, and Working Waterfront Area, development shall be sited and designed in a manner consistent with the following policies.

Policy PS-3.17 **Resilient Buildings.** Require new and significantly renovated buildings and all public buildings to be designed and constructed to withstand severe storms, flooding, and other impacts that are expected to result from a changing climate.

Goal C-7 **Morro Bay water is safe, available, and used in an environmentally responsible manner.**

Policy C-7.13 **Drainage Technologies.** Require that new development projects employ innovative and efficient drainage technologies that comply with federal and state water quality requirements and reduce runoff and water quality impacts to downstream environments.

Implementation of these General Plan and LCP Update goals and policies would ensure that Morro Bay continues to develop policies that support erosion minimization and control loss of topsoil. Implementation of these goals and policies, in addition to compliance with applicable laws and regulations related to stormwater, would minimize the potential for erosion and loss of topsoil. Therefore, this impact would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to reduce this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Impact GEO-3 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN CONSTRUCTION OF STRUCTURES ON EXPANSIVE SOILS. COMPLIANCE WITH THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, AS WELL AS APPLICABLE MUNICIPAL CODE REQUIREMENTS AND GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES, WOULD ENSURE THAT POTENTIAL IMPACTS ASSOCIATED WITH EXPANSIVE SOILS WOULD REMAIN LESS THAN SIGNIFICANT.

As shown in Figure 4.5-1, the majority of soil in the city is composed of sand soil types, which are not expansive. However, new development facilitated by the General Plan and LCP Update constructed on expansive soils could be subject to damage or could become unstable when the underlying soil shrinks or swells. The CBC includes requirements to address soil-related hazards. Typical measures to treat hazardous soil conditions involve removal, proper fill selection, and compaction. In cases where soil remediation is not feasible, the CBC requires structural

reinforcement of foundations to resist the forces of expansive soils. Compliance with the soil-related hazard requirements of the CBC as well as Section 14.18.010 of the Morro Bay Municipal Code, requiring structural analysis of buildings to be conducted by a civil or structural engineer or architect licensed by the state, would ensure that impacts related to expansive soils would remain less than significant.

In addition to compliance with mandatory CBC requirements and local regulations, implementation of General Plan and LCP Update Public Safety Element Goal PS-2 and Policies PS-2.8 (Structural Stability) and PS-2.10 (Building Retrofits) would further reduce the potential substantial risk to life and property from expansive soils. Implementation of these goals and policies, in addition to compliance with applicable laws and regulations for structural development to address soil-related hazards, would minimize the potential for risks to life or property associated with soil expansion. Therefore, this impact would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures.

Threshold 5:	Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Impact GEO-4 NEW DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD OCCUR WHERE EXISTING SEWER SYSTEMS ARE IN PLACE, MINIMIZING THE NEED FOR DEVELOPMENT OF NEW WASTEWATER DISPOSAL SYSTEMS. THE MUNICIPAL CODE PROHIBITS DUMPING OR DISCHARGING FROM SEPTIC TANKS. THEREFORE, THE PROJECT WOULD NOT RESULT IN A SIGNIFICANT IMPACT TO SOILS THAT ARE INCAPABLE OF SUPPORTING SEPTIC TANKS OR ALTERNATIVE WASTEWATER DISPOSAL SYSTEMS.

The General Plan and LCP Update encourages growth management and development within city limits, specifically on the Morro Bay Power Plant and City wastewater treatment plant sites, as well as parts of downtown and the adjacent SR 1 corridor, North Main Street, and SR 41 areas. Focusing development in these areas would minimize encroachment into open space areas where wastewater infrastructure does not currently exist. In general, new development under the General Plan and LCP Update would occur where existing roads, water, and sewer systems are in place, minimizing the need to develop new wastewater disposal systems. Section 13.12.230 of the Morro Bay Municipal Code prohibits dumping or discharging from septic tanks, avoiding impacts to soils from such systems. Therefore, the project would not result in a significant impact associated with soils that are incapable of supporting septic tanks or alternative wastewater disposal systems.

Mitigation Measures

No mitigation measures are required.

Threshold 6:	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact GEO-5 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE HAS THE POTENTIAL TO IMPACT PALEONTOLOGICAL RESOURCES. FOSSIL-BEARING SEDIMENTS IN THE MORRO BAY AREA ARE PREDOMINANTLY LOCATED ON STATE PARKS LAND AND OFFSHORE. IMPLEMENTATION OF APPLICABLE GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES WOULD MINIMIZE OR AVOID POTENTIAL ADVERSE IMPACTS TO PALEONTOLOGICAL RESOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Paleontological resources may be present in fossil-bearing sediments and geologic units either at or below the ground surface. Ground-disturbing activities associated with development in geologic units with high paleontological sensitivity have the potential to damage or destroy paleontological resources that may be present on or below the ground surface, especially in areas with high paleontological sensitivity. Potential impacts to paleontological resources are most likely to occur in areas that have not previously been developed with urban uses, have not been studied through a paleontological resource investigation, or when excavation extends to new depths.

The Pismo Formation and Pleistocene-aged alluvial deposit geologic units in the vicinity of Morro Bay are known to contain substantial paleontological resources. Additionally, quaternary older alluvium (Pleistocene-age), mapped in the city, is highly sensitive for paleontological resources in California. Consequently, damage to or destruction of fossils could occur as a result of development under the proposed General Plan and LCP Update. However, there is no mapped Pismo Formation within city limits, and fossil-bearing sediments in the Morro Bay area are predominantly located on State parks land and offshore.

The General Plan and LCP Update does not include goals, policies, or implementation actions that specifically address paleontological resources. However, implementation of the General Plan and LCP Update goals and policies described in Section 4.4, *Cultural Resources*, would reduce potential adverse impacts to paleontological resources in the planning area. Therefore, impacts to paleontological resources would be less than significant.

Mitigation Measures

No mitigation measures are required.

d. Cumulative Impacts

Cumulative geology, soils, seismicity, and paleontological impacts may be related to increased exposure to seismic hazards, increased erosion and/or loss of topsoil, the presence of unstable/expansive soils and alternative waste disposal or septic systems. These effects occur independently of one another and result from site-specific and project-specific characteristics and conditions. In addition, existing regulations, such as the CBC, specify mandatory actions that must occur during project development, which minimize effects from construction and operation of new structures related to geology, soils, and seismicity as discussed above. Therefore, cumulative impacts related to geology, soils, and seismicity would be less than significant, and the General Plan and LCP Update would not make a cumulatively considerable contribution to cumulative geology, soils, or seismicity impacts.

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4.6 Greenhouse Gas Emissions

This section discusses the potential for the General Plan and LCP Update to result in impacts related to climate change. The analysis in this section includes a qualitative analysis of potential GHG emissions generated by the General Plan and LCP Update and evaluates the General Plan and LCP Update's consistency with applicable GHG reduction plans, policies, and regulations, including the City's Climate Action Plan. Potential flooding effects associated with sea level rise are discussed in Section 4.8, *Hydrology and Water Quality*.

4.6.1 Setting

a. Climate Change and Greenhouse Gases

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH4 results from off-gassing associated with agricultural practices and landfills.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (California Environmental Protection Agency [CalEPA] 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC 2007).

b. Greenhouse Gas Emissions Inventory

California Emissions Inventory

Based on the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2014, California produced 440.4 MMT CO_2e in 2015 (ARB 2017a). The largest single source of GHG in California is transportation, contributing 39 percent of the state's total GHG emissions. Industrial sources are the second largest source of the State's GHG emissions, contributing 23 percent of the State's GHG emissions (ARB 2017a). California emissions are due in part to its large size and large population compared to other states. However, the state's mild climate reduces California's per capita fuel use and GHG emissions as compared to other states. ARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT CO_2e (ARB 2017b). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Local Emissions Inventory

In January 2014, Morro Bay adopted a Climate Action Plan (CAP), which includes a 2005 baseline inventory of GHG emissions resulting from community-wide activities and City government facilities and operations within Morro Bay. It also includes a 2020 business-as-usual forecast of how emissions would change over time as a result of population and job growth if consumption trends and efficiencies remained at their 2005 levels, absent of any new policies or actions that would reduce emissions. Since 2005, several State regulations and local initiatives have been implemented that would reduce Morro Bay's GHG emissions in comparison to the 2020 business-as-usual forecast. Therefore, the CAP GHG emissions inventory also included a 2020 adjusted forecast to account for the impact of these measures to provide a more accurate picture of future emissions growth in 2020.

The community-wide GHG emissions inventory identified that the City's 2005 GHG emissions were 55,677 MT CO_2e. The 2020 adjusted forecast, which accounted for growth from 2005 to 2020, but also anticipated GHG reductions from State and local emissions reduction measures, estimated that the City's 2020 GHG emissions would be 51,258 MT CO_2e (Morro Bay 2014).

c. Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

Potential impacts of climate change in California may include loss of snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC] 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; CCCC 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based on historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (CCCC 2009), climate change has the potential to induce substantial sea level rise this century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO 2013). The most recent IPCC report predicts a mean sea-level rise of 11-38 inches by 2100 (IPCC 2013). This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could

change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

Local Effects

Rising temperatures affect local and global climate patterns, and these changes are forecasted to manifest themselves in a number of ways that may impact the central coast region. Potential climate changes that could occur in Morro Bay by the end of this century are discussed in detail in the Morro Bay CAP (Morro Bay 2014) and the Community Vulnerability and Resilience Assessment (CVRA) prepared in conjunction with the Community Baseline Assessment for the General Plan and LCP Update (Appendix B), and include:

- Increased temperatures – Average temperatures in San Luis Obispo County may increase by 2 to 4 degrees by mid-century and up to 4 to 8 degrees by late century. Greater warming is expected to occur in the summer months compared to winter.
- Sea level rise – Using the 2012 National Research Council report Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, sea level is projected to rise between six inches to just over three feet above current levels by 2100 in Morro Bay. Coastal resources in Morro Bay vulnerable to sea level rise in year 2100 are summarized as follows:
    - Transportation – State Route (SR) 1, south of Toro Creek, vulnerable to flooding and erosion in 2030. Coleman Drive and the Morro Rock parking lot are vulnerable to flooding in 2050. Main Street/State Park Road vulnerable to flooding in 2100.
    - Environmentally Sensitive Lands – Wetlands, intertidal, and subtidal habitats impacted by increased tidal inundation in 2030. Impacts more substantial in 2050 and beyond as steep topography and development limit the ability of habitats to adapt.
    - State Parks – Dune system and Morro Strand campground vulnerable to flooding and erosion in 2030, more so in 2050 and 2100.
    - Beaches – Flooding, erosion, and inundation of sandy beaches, dunes, and bluffs. Substantial loss of beach area expected for 2050 and 2100.
    - Coastal Development – Moderate vulnerability to coastal development in 2050 due to storm-related flooding. Increased vulnerability in 2100 as flooding, dune erosion, and bluff erosion impact oceanfront parcels.
    - Utilities – The wastewater treatment plant site was found to be vulnerable to coastal flooding by the 2100 time horizon.

- Storm surges – Sea level rise combined with the tidal effect of larger and more intense oceanic storms is expected to create higher periodic storm surges. These storm surges can cause impacts over and above those predicted to occur as a result of sea level rise.
- Erosion – Beaches and bluffs are subject to gradual wave-driven erosion, and naturally move landward over time. Projected sea level rise and larger storm events would accelerate the rate and extent of erosion and retreat as higher water levels create greater wave energy reaching the shoreline. Beach erosion will be greatest along Morro Strand Beach, the Morro Bay State Park beach, and the seaward sides of Morro Rock.
- Changed precipitation – Climate models forecast drier conditions throughout San Luis Obispo County by 2075. As a result, droughts may become more frequent, longer and more severe.

d. Regulatory Setting

Federal

In *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120), the U.S. Supreme Court held that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. In 2012, the U.S. EPA issued a Final Rule that establishes the GHG permitting thresholds that determine when Clean Air Act (CAA) permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In 2014, the U.S. Supreme Court held that U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit (Utility Air Regulatory Group v. EPA [134 S. Ct. 2427]). The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT).

State

ARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has numerous regulations aimed at reducing the State's GHG emissions. These initiatives are summarized below.

California Advanced Clean Car Standards

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, the U.S. EPA granted the waiver of CAA preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I regulates model years from 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" regulates model years from 2017 to 2025. The clean car standards are now grouped under the ARB's Advanced Clean Cars program, which was adopted by ARB in 2012 (ARB 2017c). The program, developed in coordination with the U.S. EPA and National Highway Traffic Safety Administration (NHTSA), establishes emission requirements for passenger vehicles, model years 2015 through 2025, and manufacturer requirements to provide Zero Emissions Vehicles (ZEV).

Executive Order S-3-05

In 2005, the Governor issued Executive Order (EO) S-3-05, which identifies Statewide GHG emission reduction targets to achieve long-term climate stabilization as follows:

- Reduce GHG emissions to 1990 levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

In response to EO S-3-05, the CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA 2006). The 2006 CAT Report identified a recommended list of strategies that the State could pursue to reduce GHG emissions. These are strategies that could be implemented by various State agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the State agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc.

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations that require reporting and verification of statewide GHG emissions. The Scoping Plan was approved by ARB on December 11, 2008, and included GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 statewide goals. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB 2014).

Executive Order B-30-15

In April 2015, the Governor issued EO B-30-15, establishing the State's most aggressive greenhouse gas reduction target of 40 percent below 1990 levels by 2030. This target is aimed at meeting the State's ultimate goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 set in EO S-3-05.

Senate Bill 32

Senate Bill 32 (SB 32) became effective on January 1, 2017 and requires ARB to develop technologically feasible and cost effective regulations to achieve the targeted 40 percent GHG emission reduction by 2030 set in EO B-30-15. On December 14, 2017, ARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. To meet reduction targets,

the 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (ARB 2017d). As stated in the 2017 Scoping Plan, these goals are appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State.

Senate Bill X1 2 and Senate Bill 350

In April 2011, the governor signed SB 2X requiring California to generate 33 percent of its electricity from renewable energy by 2020. SB 350, the Clean Energy and Pollution Reduction Act of 2015, builds on the target set in 2020 and was approved in October 2015. SB 350 has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The reduction targets designated from the San Luis Obispo Council of Governments (SLOCOG) region are 8% per capita by 2020 (compared to 2005), and 8% per capita by 2035.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires ARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane: 40% below 2013 levels
- Hydrofluorocarbons: 40% below 2013 levels
- Anthropogenic black carbon: 50% below 2013 levels

The bill also requires CalRecycle, in consultation with the State board, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

Local

Morro Bay Climate Action Plan

In 2014, the City of Morro Bay adopted a CAP to guide the reduction of GHG emissions, in accordance with AB 32. The CAP describes community and municipal GHG emissions, compares future emissions to state-designated targets, and defines actions and strategies the City will take to meet both state and local GHG reduction goals. Both community-wide and government operations emissions were inventoried for the CAP, studying emissions from energy use, transportation, waste, water, and off-road emissions, resulting in specific and attainable goals for GHG reductions. The City's CAP was developed to be consistent with *CEQA Guidelines* Section 15183.5 and SLOAPCD's *CEQA Air Quality Handbook* to mitigate emissions and climate change impacts and serves as a Qualified GHG Reduction Strategy for the City of Morro Bay. The CAP's target mirrors that of AB 32, setting a goal of 15 percent below baseline (2005) levels by 2020.

4.6.2 Impact Analysis

a. Methodology

Operational emissions for buildout of the General Plan and LCP Update were modeled based on the potential development capacity in 2040 relative to existing conditions using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 (i.e., the project comprises the net change between existing and 2040 conditions). Information presented in Table 2-4 in Section 2.0, *Project Description*, was used to determine the proposed project's land uses, number of residential units, and non-residential areas, which were entered into CalEEMod. A detailed accounting of the methods and assumptions used to derive these inputs, along with the CalEEMod outputs, are provided in Appendix C.

Because project-level details are not currently known and it was assumed that full buildout of the updated General Plan land use plan would occur, the operational emissions as modeled provide a conservative estimate of future GHG emissions in Morro Bay and are included in this EIR for informational purposes. Construction emissions were not modeled due to the high dependence of emission estimates on project-level construction details, which are not known at this time.

Electricity

Building energy use is typically divided into energy consumed by the built environment and energy consumed by uses that are independent of the building, such as plug-in appliances. Non-building energy use, or "plug-in energy use," can be further subdivided by specific end-use (refrigeration,

cooking, office equipment, etc.). In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Energy usage from single-family residential usage was reduced by 7 percent and non-residential energy usage was reduced by 30 percent to account for the requirements of 2019 Title 24 standards (CEC 2019). This analysis also accounts for the fact that the proposed project would include solar photovoltaic systems on all low-rise residential buildings (single-family residential buildings and multi-family residential buildings that are three stories or less) with annual electrical output equal to or greater than the dwellings' annual electrical usage in compliance with Section 150.1(c)14 of the 2019 Building Energy Efficiency Standards. Therefore, based on the calculation method contained in Section 150.1(b)14, new development planned under the General Plan and LCP Update would be required to include a minimum of 487 kW of PV solar panels, which would generate approximately 924,622 kWh per year (see Appendix C).

Monterey Bay Community Power (MBCP), which provides carbon-free electricity, is the default energy provider in the planning area. However, future residents and tenants of Morro Bay could opt out of MBCP and connect to Pacific Gas and Electric (PG&E), which does not provide carbon-free electricity. According to MBCP, approximately 97 percent of accounts in the MBCP service area maintain enrollment in MBCP; the remaining 3 percent of accounts opt out and connect to PG&E (MPCP 2019). Because MBCP procures a greater percentage of its electricity from renewable sources, electricity generated by MBCP produces fewer GHG emissions than electricity generated by PG&E. Therefore, to account for the possibility of dual electricity providers with the planning area, this analysis assumes that 97 percent of electricity demand generated by the proposed project would be supplied by MBCP and the remaining 3 percent of electricity demand would be supplied by PG&E (MBCP 2019). Because CalEEMod cannot account for dual electricity providers, CalEEMod was utilized to estimate the amount of electricity demand from the proposed project, and the resultant GHG emissions were calculated separately in a standalone document included in Appendix C based on the emission calculation methodology used in CalEEMod (CAPCOA 2017, Appendix A).

MBCP's energy intensity factor for CO_2 (i.e., the amount of CO_2 per megawatt-hour [MWh]) is approximately 2 pounds per MWh (Monterey Bay Community Power 2018). Due to a lack of available data, it was conservatively assumed that the energy intensity factors for CH_4 and N_2O would be the same as those for PG&E in 2040, which are further detailed below and in Table 4.6-1.[1] Because MBCP has already achieved carbon-free electricity, it has already met its mandated RPS targets. Therefore, this analysis assumes that MBCP's current energy intensity factors will remain the same through 2040. PG&E's estimated energy intensity factors (i.e., the amount of CO_2, CH_4, and N_2O per MWh) for 2040 are based on the CalEEMod default factors and the regulatory requirements of the RPS. The default energy intensity factors included in CalEEMod are based on data from 2009 at which time PG&E had only achieved a 14 percent procurement of renewable energy. However, per SB 100, the statewide Renewable Portfolio Standard (RPS) Program requires electricity providers to increase procurement from eligible renewable energy sources to 60 percent by 2030 and 100 percent by 2045. Therefore, because full buildout of the General Plan would occur in 2040, the estimated renewables portfolio and corresponding energy intensity factors for PG&E in 2040 were

[1] This assumption is conservative because MBCP currently has a greater percentage of renewables procurement than is assumed for PG&E in 2040; therefore, its energy intensity factors for CH_4 and N_2O are likely lower.

reduced using linear interpolation between the mandated RPS targets for 2030 and 2045.[2] PG&E energy intensity factors that include this reduction are shown in Table 4.6-1.

Table 4.6-1 Pacific Gas & Electric Energy Intensity Factors

	2009 (lbs/MWh)[1]	2030 (lbs/MWh)[2]	2040 (lbs/MWh)[3]	2045 (lbs/MWh)[2]
Percent procurement	14%	60%	86.67%	100%
Carbon dioxide (CO_2)	641.35	298.30	117.88	0
Methane (CH_4)	0.029	0.013	0.005	0
Nitrous oxide (N_2O)	0.006	0.003	0.001	0

[1] Source: California Public Utilities Commission 2011

[2] RPS goals established by SB 100

[3] Linear interpolation of RPS goals for 2030 and 2045

Water

CalEEMod does not incorporate water use reductions achieved by 2016 CALGreen (Part 11 of Title 24). New development would be subject to CALGreen, which requires a 20 percent increase in indoor water use efficiency. Thus, in order to account for compliance with CALGreen, a 20 percent reduction in indoor water use was included in the water consumption calculations for new development.

Transportation

Trip generation rates for new residential and non-residential land uses were estimated using default values for the local air basin available in CalEEMod, which are recommended by SLOAPCD. Vehicle miles traveled (VMT) associated with new development are based on trip generation rates and trip length and characteristics associated with the local transportation network. Estimates of local development population and employment density incorporated into the CalEEMod tool to account for local trip characteristics are described in Appendix C. CalEEMod does not estimate N_2O emissions from mobile combustion; therefore, mobile N_2O emissions estimated using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix C for calculations).

b. Significance Thresholds

Based on Appendix G of the *CEQA Guidelines*, impacts related to GHG emissions would be significant if the project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

[2] Linear interpolation estimates an interim value between two known values by assuming a steady rate of growth between the two known values. In this instance, it was assumed that PG&E's renewable energy percent procurement would increase by approximately 2.67 percent each year from 2030 to 2045 in order to increase its renewable energy percent procurement from 60 percent in 2030 to 100 percent in 2045.

The significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan, such as the CAP. As stated above, the 2017 Scoping Plan does not provide specific guidance to local jurisdictions for determining the amount of emission reductions to be achieved from land use plans or projects. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six MT CO_2e by 2030 and two MT CO_2e by 2050 (ARB 2017c).

SLOAPCD has adopted an annual efficiency threshold of 4.9 MT per service population (service population = number of residents + employees) to achieve consistency with the 2020 target set by AB 32 (SLOAPCD 2012) and has not yet updated this threshold to achieve consistency with the 2030 target set by SB 32. In the absence of an updated threshold, the City of Morro Bay has determined that the SLOAPCD efficiency threshold remains an appropriate threshold for evaluating the significance of project-level GHG emissions. SLOAPCD has not adopted a quantitative emissions threshold that is intended to be applied to programmatic air quality analysis.

The CAP provides qualitative thresholds consistent with AB 32 Scoping Plan measures and goals. As identified in SLOAPCD's *CEQA Air Quality Handbook*, if a project is consistent with an adopted Qualified GHG Reduction Strategy, such as a CAP, that addresses the project's GHG emissions, it can be presumed that the potential climate change impact of the project's GHG emissions would be less than significant. This approach is consistent with *CEQA Guidelines* Section 15064(h) and 15183.5(b). The CAP was developed to be consistent with *CEQA Guidelines* Section 15183.5 and SLOAPCD's *CEQA Air Quality Handbook* to mitigate emissions and climate change impacts and serves as a Qualified GHG Reduction Strategy for the City of Morro Bay.

The General Plan and LCP Update would update the Morro Bay's land use designations to provide parameters for future development in the city. Because project-level details associated with buildout of the envisioned land uses are not known at this time, quantification of General Plan and LCP Update emissions are provided primarily for informational purposes. Therefore, the General Plan and LCP Update's GHG emission impacts are addressed based on the following approach: potential sources of GHG emissions associated with buildout of the General Plan and LCP Update are identified and policies included in the General Plan and LCP Update are evaluated to determine whether they would be sufficient to reduce GHG emissions from implementation of the General Plan and LCP Update to a less than significant level.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
Threshold 2:	Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact GHG-1 BUILDOUT OF THE GENERAL PLAN AND LCP UPDATE UNDER BUSINESS AS USUAL CONDITIONS WOULD RESULT IN NEW GHG EMISSIONS THAT MAY EXCEED APPLICABLE GHG THRESHOLDS ON A PROJECT-BY-PROJECT BASIS. THE GENERAL PLAN AND LCP UPDATE ESTABLISHES POLICIES TO REDUCE GHG EMISSIONS, INCLUDING SETTING REDUCTION TARGETS CONSISTENT WITH STATEWIDE GHG REDUCTION GOALS, AND UPDATING THE CLIMATE ACTION PLAN TO ENSURE FUTURE DEVELOPMENT IS CONSISTENT WITH STATEWIDE TARGETS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

General Plan and LCP Update Emissions Inventory

Table 4.6-2 provides an estimate of the annual GHG emissions associated with potential new development under the General Plan and LCP Update, which were modeled using CalEEMod based on methods described in Section 4.6.2(a).

Table 4.6-2 General Plan and LCP Update Greenhouse Gas Emissions (New Development)

Emission Source	CO_2	CH_4	N_2O	CO_2e
Annual Emissions (metric tons/year)				
Area	19.5	<0.1	0.0	20.0
Energy[1]	339.7	7.8	18.5	366.0
Mobile[2]	53,145.0	1.5	7.7	55,572.7
Waste	2,002.1	118.3	0.0	4,960.2
Wastewater	448.2	1.5	1.0	777.3
Project Total	**65,142.8**	**121.5**	**8.9**	**61,696.2**
GHG Emissions Efficiency Estimates				
New Service Population (New Residential Population + New Employment)[3]				15,534
General Plan and LCP Update 2040 MT CO_2e per Service Population				**4.0**
SLOAPCD 2020 per-Service Population GHG threshold				4.6
Morro Bay 2040 Population				12,062
General Plan and LCP Update 2040 MT CO_2e per Capita				**5.1**
2017 Scoping Plan Statewide 2030 per Capita GHG goal				6.0
2040 per Capita Trajectory Consistent with 2017 Scoping Plan 2050 goal				4.0
2017 Scoping Plan Statewide 2050 per Capita GHG goal				2.0

Emission Source	CO_2	CH_4	N_2O	CO_2e

Notes: Emissions were modeled in CalEEMod. See Appendix C for modeling worksheets. Some numbers may not sum exactly due to rounding. Emission data is from "mitigated" results, which account for compliance with applicable regulations (Title 24, CALGreen) and project design features (circulation plan and VMT-reducing bicycle, pedestrian, and transit amenities).
[1] Assumes 97 percent of electricity provided by MBCP and 3 percent provided by PG&E. MBCP and PG&E energy intensity factors discussed in Section 4.6.2(a).
[2] CalEEMod does not estimate N_2O emissions from mobile combustion; therefore, mobile N_2O emissions estimated using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix C for calculations).
[3] Sum of projected 2040 population minus existing (2016) population (12,062 – 10,714 = 1,348 new residents) and projected future employment (14,168) estimated based on median sf/employee for Other Retail/Svc from Southern California Association of Governments (SCAG) *Employee Density Study* (SCAG 2001).

The GHG emissions estimate in Table 4.6-2 provides an approximate, conservative inventory of potential new GHG emissions associated with building of the planning area under the General Plan and LCP Update. Individual project details are not known at this time and this analysis assumes that maximum build-out of the proposed land use plan would occur by 2040. Thus, these estimates should be considered conservative, and are provided for informational purposes only.

SLOAPCD has not adopted quantitative emissions thresholds that are intended to be applied to programmatic air quality analysis. However, as discussed in Section 4.6.2(b), SLOAPCD has adopted an annual efficiency threshold of 4.9 MT per service population. New GHG emissions under buildout of the General Plan and LCP Update would be consistent with this adopted threshold.

The 2017 Scoping Plan recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six MT CO_2e by 2030 and two MT CO_2e by 2050. New GHG emissions under buildout of the General Plan in 2040 emissions would not exceed the 2030 statewide goal but would not be on a trajectory consistent with the 2050 goal (four MT CO_2e per capita by 2040). Because individual project details are not known at this time, new individual development projects in Morro Bay could result in GHG emissions that would be inconsistent with statewide per capita emissions goals established in the 2017 Scoping Plan and may exceed applicable SLOAPCD or City thresholds on a project-by-project basis.

Morro Bay Climate Action Plan Consistency

Appendix C of the Morro Bay CAP contains a CAP Compliance Worksheet, which includes mandatory and voluntary emissions reduction measures used by the City to demonstrate project-level compliance with the CAP. The City requires applicants for new development to comply with mandatory measures from Appendix C of the CAP through Conditions of Approval to be found consistent with the CAP. Mandatory measures in the CAP Compliance Worksheet include:

- Bicycle connectivity and parking;
- Pedestrian linkages and interconnectivity;
- Traffic calming improvements (e.g., marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, median islands, mini-circles, tight corner radii, etc.);
- Consistency with adopted land use and zoning requirements; and
- Construction equipment energy-efficiency requirements and idling restrictions.

In addition, the City tracks compliance with voluntary measures, which include:

- Exceeding Title 24 Building Energy Efficiency Standards;
- Installation of small-scale on-site solar PV systems and/or solar hot water heaters;
- Reduced parking requirements;
- Electric or other alternative fueling stations;
- Traffic calming improvements (e.g., marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, median islands, mini-circles, tight corner radii, etc.);
- "Smart growth" techniques, including mixed-use, higher density, and/or infill development near transit routes and community centers; and
- Planting of drought-tolerant trees.

For projects that are not found consistent with the CAP, project applicants are required to demonstrate that the project's GHG emissions fall below SLOAPCD's adopted GHG significance thresholds, and that the project would not substantially interfere with implementation of the CAP.

The General Plan and LCP Update would revise and update the General Plan land use designations and policy provisions of the City's General Plan, and would result in new infill development, located in close proximity to transit, City services, and employment centers. The Morro Bay CAP Climate Action Measure TL-6 recognizes that energy-efficient designs or growth that facilitates mixed-use, higher density, and infill development near transit stops, in existing community centers, allows for more efficient use of existing infrastructure and improves city-wide efforts to reduce GHG emissions (City of Morro Bay 2014). Therefore, the General Plan and LCP Update would facilitate the consistency of future development projects with both mandatory and voluntary measures of the CAP.

General Plan and LCP Update Policies to Reduce GHG Emissions

The General Plan and LCP Update includes goals and policies intended to reduce GHG emissions from future development in Morro Bay. These include policies previously listed in Section 4.2, *Air Quality*, which would reduce energy consumption and mobile source emissions by promoting mixed-use and infill development and supporting bike, pedestrian, and mass transit. Implementation of the goals and policies in the General Plan and LCP Update Land Use, Economic Development, and Circulation Elements listed below would minimize adverse effects associated with GHG emissions. These include:

Policy LU-1.3 **Access to Daily Needs**. Create sustainable development patterns characterized by mixed uses, walkable neighborhoods, and multimodal connections that allow residents to meet their daily needs for food, goods and services, employment, and other resources.

Policy LU-3.1 **Growth Limits**. Continue to limit the amount of development, including future population growth accommodated by Plan Morro Bay, to a level supported by adequate and long-term sustainable available land, water supply, and other infrastructure and service capacity.

Policy LU-3.3 **Future Growth**. Accommodate future growth of housing and jobs in Morro Bay that is consistent with the vision, values, policies, and actions of the plan through both infill and potential limited expansion of the sphere of influence.

Policy LU-3.5 **Jobs/Housing Ratio**. At buildout of Plan Morro Bay, the jobs/housing ratio should be as close to balanced (1.0) as possible.

Policy LU-3.6 **Infill Development**. Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay.

Policy ED-1.4 **Technology Resources**. Make needed and desired renewable energy and modern technology resources readily available to businesses.

Policy ED-3.2 **Environmental Guidelines**. Develop guidelines that describe desired environmentally conscious building landscapes, designs, features, and practices that will be used to give recommendations to businesses and to provide City staff with suggested conditions of approval for permitting new or significantly renovated homes and businesses.

Policy CIR-1.1 **Balanced Transportation**. Work to complete a balanced multimodal transportation system that meets the needs of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities.

Policy CIR-1.3 **System Connectivity**. Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.

Policy CIR-1.4 **Future Enhancements**. Identify streets in the city that can be made "complete," and plan for new bikeways, sidewalks, and crosswalks on these streets by reallocating how space within the public right-of-way is used.

Policy CIR-1.5 **Regional Transit**. Coordinate with the San Luis Obispo Regional Transit Authority to ensure local transit connects smoothly with regional transit and possible future route and schedule expansions.

Policy CIR-1.6 **Local Transit Improvement**. Continue to improve the local Morro Bay Transit Deviated Fixed Route and Call-A-Ride services and ensure connections to regional transit and active transportation facilities.

Policy CIR-1.12 **Climate Change Impacts on Transportation**. Require ongoing evaluation of the transportation infrastructure system and its ability to withstand future effects of climate change. Identify future points to begin incorporating resilient strategies and materials into design, using the most up-to-date guidance from the Federal Highway Administration.

Policy CIR-2.1 **Compact Development**. Support mixed-use, compact-style, and other land use development patterns within existing developed areas so as to facilitate easy active transportation and transit use. (see also Policies LU-3.1, LU-3.3, LU-3.6, and LU-3.7)

Policy CIR-2.4 **Active Transportation Amenities**. Provide facilities and amenities for active transportation users at public facilities, including bicycle storage and seating areas. (See also Policies LU-8.4 and OS-1.8.)

Policy CIR-2.5 **Prioritizing Improvements**. Prioritize infrastructure improvements that benefit bicycle and pedestrian safety and convenience around community facilities and locations in pedestrian-oriented areas. (See also Policy OS-1.8 and Implementation Action OS-1.)

Policy CIR-2.6 **Destination Facilities**. Require and place access areas and facilities for bicycle, pedestrian, and transit travel in front of major destinations, such as shopping centers, parks, and schools. Facilities may include any or a combination of the following: designated passenger drop-off and pickup zones, benches, lighting, secure bike parking, shelters, and street trees. (See also Policies LU-2.3 and PS-2.1.)

Policy CIR-3.2 **VMT Thresholds**. Achieve State-mandated reductions in VMT by establishing a VMT standard. This standard will be for roadway segments and intersections during PM peak hour.

In addition to these policies to directly reduce energy and mobile GHG emissions from future development in the planning area, the General Plan and LCP Update Conservation Element and Environmental Justice Element also includes goals and policies that require the city to update and refine existing GHG planning efforts and thresholds. These include:

Policy C-4.1 **Emissions Reduction Target**. By 2020, reduce community-wide greenhouse gas emissions to 15 percent below 2005 levels. By 2040, reduce greenhouse gas emissions by 53.33 percent below the 2020 target, placing the community on a path to meet the state's 2050 greenhouse gas emissions reduction goals.

Policy C-4.2 **Climate Action Plan**. Continue to implement and regularly evaluate the Morro Bay Climate Action Plan and greenhouse gas inventory to evaluate progress, celebrate successes, and adjust strategies as needed to meet emissions goals.

Policy C-4.3 **Greenhouse Gas Inventory**. Continue to update the greenhouse gas inventory to determine whether emissions are within recommended levels.

Policy C-4.4 **Greenhouse Gas Reduction Strategies**. Pursue a variety of greenhouse gas reduction strategies across the transportation, residential, waste, and commercial sectors, commensurate with their share of the community's greenhouse gas emissions.

Policy C-5.2 **Energy Efficiency Standards**. Construct all new City facilities to be more energy efficient than the minimum energy efficiency standards in the California Building Standards Code, and achieve zero net energy performance for new City facilities when possible.

Policy C-6.1 **Renewable Energy Incentive Programs**. Create incentives that promote renewable energy systems as a component of new development or reuse projects.

Policy C-6.2 **Renewable Energy in Home and Commercial Uses**. Encourage the use of solar energy systems in homes and commercial businesses as a form of renewable energy, including in support of zero net energy goals.

Policy C-6.3 **Renewable Energy in Municipal Uses**. Maximize renewable energy capacity on municipal property and renewable energy use in City-sponsored projects and activities.

Policy EJ-4.1 **Plan Updates.** Recognize and address the health effects of climate change when updating local hazard mitigation plans, hazard emergency plans, specific plans, and other policies and ordinances.

Policy EJ-4.3 **Climate Change Response Plan.** Prepare a response plan to be used in the implementation of Measure A-2 of the CAP to ensure the protection of vulnerable

populations during times of high heat, extended drought, flooding, or other extreme weather events.

Implementation of General Plan and LCP Update Conservation Element Policy C-4.1 would establish GHG reduction goals consistent with the State's 2030 and 2050 greenhouse gas emissions reduction goals. Conservation Element Policies C-4.2, C-4.3, and C-4.4 would require the City to update the CAP to comply with evolving state goals and requirements and would ensure that the CAP continues to provide measures for future development projects in the planning area to assess their consistency with City GHG reduction goals. Therefore, the General Plan and LCP Update would be consistent with regional and State plans, policies, and regulations adopted for the purpose of reducing GHG emissions, and this impact would be less than significant.

Mitigation Measures

No mitigation would be required. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce GHG emissions.

d. Cumulative Impacts

GHG emissions are, by definition, cumulative impacts, as they add to the global accumulation of greenhouse gases in the atmosphere. As discussed in Impact GHG-1, new individual development projects in Morro Bay could result in GHG emissions that would be inconsistent with statewide per capita emissions goals established in the 2017 Scoping Plan and may exceed applicable SLOAPCD or City thresholds on a project-by-project basis. However, the General Plan and LCP Update would establish GHG reduction goals consistent with the State's 2030 and 2050 greenhouse gas emissions reduction goals, and the General Plan and LCP Update would be consistent with regional and State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. Therefore, the project's contribution to cumulative GHG and climate change impacts would be less than significant.

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4.7 Hazards and Hazardous Materials

This section addresses impacts associated with hazardous materials use and transportation, the accidental release of hazardous materials, new development or re-development on contaminated sites, air traffic hazards, interference with emergency response and evacuation plans, and the risk of exposure to wildland fires.

4.7.1 Setting

a. Definition of Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations as follows:

> A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (California Code of Regulations, Title 22, Section 66261.10).

Chemical and physical properties cause a substance to be considered hazardous. Such properties include toxicity, ignitability, corrosiveness, and reactivity. California Code of Regulations, Title 22, Sections 66261.20 through 66261.24 defines the aforementioned properties. The release of hazardous materials into the environment can contaminate soils, surface water, and groundwater supplies.

b. Land Use Patterns

Past and present land use patterns are good predictors of the potential for past contamination by hazardous materials and the current use and storage of hazardous materials. Military, industrial, and certain commercial land uses, such as dry cleaners and auto service, are more likely to use and store large quantities of hazardous materials than residential land uses. Small quantities of hazardous materials are also routinely used and stored in other commercial and retail businesses, educational facilities, medical facilities, and households. Commercial land uses in the city are concentrated along major transportation corridors, such as SR 1, Main Street, and Morro Bay Blvd. Light industrial and warehousing uses are located mainly along the north end of Embarcadero Boulevard.

Land use patterns are also useful for identifying the location of sensitive receptors, such as schools, day-care facilities, hospitals, and nursing homes. Figure 2-3 in Section 2, *Project Description*, shows the existing location of school land uses in Morro Bay.

c. Existing Hazardous Material Contamination

Hazardous waste sites in the planning area are primarily located in the Embarcadero area of the city, with two military cleanup sites located in the southern and western parts of the city. Of the hazardous waste sites in the planning area, there are no Federal Superfund sites. Federal Superfund sites are sites that are contaminated from dumping, exposed, or otherwise improperly managed

hazardous waste (United State Environmental Protection Agency [USEPA] 2018). According to the California State Water Resources Control Board (SWRCB) GeoTracker database and the California Department of Toxic Substances Control (DTSC) EnviroStor database, the planning area has four open or active cleanup sites, in addition to 16 closed cleanup sites. These cleanup sites are identified by DTSC as sites where hazardous materials are present and cleanup activities are necessary. Table 4.7-1 shows the status of each of the four open or active hazardous waste sites identified in the planning area.

Table 4.7-1 Hazardous Materials Sites in the Planning Area

Site Name/Site ID	Address	Potential Contaminants of Concern	Site Type	Status/Date Recorded
Texaco Bulk Plant (former)	3072 Main Street Morro Bay, CA	Petroleum Fuels/Oils		Open-Inactive 12/31/2015
Morro Bay Power Plant – PG&E	1290 Embarcadero Morro Bay, CA	Metals/Heavy Metals, Arsenic, other spill		Open Verification Monitoring as of 12/27/2012*
Estero Bay Defense Fuel Supply Point	3300 Panorama Drive Morro Bay, CA	TPH-Jet Fuel	Military Evaluation	No Further Action 6/30/1997

Sources: SWRCB 2016a, DTSC, 2018.

* The Morro Bay Power Plant was constructed by PG&E in the early 1950s. Ownership of plant has changed over the years, and the facility is currently owned by Vistra Energy. As of November 2014, the power plant is no longer active.

DTSC maintains a list known as the Cortese List, which identifies sites where hazardous materials are present and cleanup activities are necessary. There are no facilities in Morro Bay on the Cortese List. The nearest hazardous materials sites documented on the Cortese List include:

- The Baywood Park Training Area (also listed in Table 4.7-1), now partially included in Montana de Oro State Park, is a 9,100-acre former Department of Defense site located approximately 1 mile west of the planning area, was previously used as a National Guard post and an army camp, and may also have leftover munitions and unexploded ordnance (DTSC 2005a).
- Camp San Luis, located approximately six miles east of the planning area, was previously used as a National Guard post and an army camp, and may possibly contain leftover munitions and unexploded ordnances (DTSC 2005a).

As described in the Community Baseline Assessment for the General Plan and LCP Update, there are four known facilities that are not currently subject to state or federal response activities where hazardous materials are still present or may be present in the city. The closed Morro Bay Power Plant has undergone extensive remediation activities to remove hazardous materials. DTSC declared in 2014 that the site poses no significant health or environmental hazard (DTSC 2014). In March 2020 DTSC released a Statement of Basis for managing impacts by implementing a land use covenant that restricts select areas of the site to future commercial/industrial uses and restricting use of groundwater across the site. Two additional former military sites (one near the intersection of Panorama Drive and Nevis Street, the other near the intersection of Embarcadero and Coleman Street) require additional evaluation according to DTSC, and one additional site (in the foothills near Little Morro Creek Road) has been remediated such that no further action is recommended by DTSC (DTSC 1997, 2005b, 2005c).

The SWRCB maintains a separate list of sites with hazardous materials that may contaminate groundwater supplies. There are 21 of these facilities located in Morro Bay, some of which are also listed by DTSC. Of these 21 facilities, 18 have completed all cleanup activities and formal case closure decisions have been issued, although any future development activities on these sites may require remediation activities and special permitting to ensure that people and the environment are not exposed to a newly unearthed contaminated material. Cases for three facilities are still open: the Morro Bay Power Plant, where cleanup actions have finished and monitoring activities are ongoing to ensure the cleanup was successful; the former Texaco facility near Del Mar Park, now owned by Chevron, which is subject to evaluation activities; and the Chevron Estero Bay Marine Terminal at SR 1 and Morro Road, where remediation activities are ongoing (SWRCB 2016a). There are 15 permitted underground storage tanks (USTs) in Morro Bay, which may store hazardous or potentially hazardous materials (SWRCB 2016b).

The risk from pipelines in Morro Bay involves existing in-service natural gas pipelines and abandoned pipelines once use for petroleum and related products. The Southern California Gas Company (SoCalGas), which provides natural gas service to Morro Bay, operates pipelines in the community. A large transmission line intended to transport natural gas across significant distances enters Morro Bay from the east along SR 1, running alongside SR 1 until it terminates near where Main Street crosses under SR 1. Two high-volume distribution lines run north from this point: one continuing along SR 1 north to Cambria, the other running northeast toward Atascadero (Appendix B). The City designates these pipelines as very low risk. There are a number of abandoned pipelines in the community, some of which have been fully decontaminated and decommissioned. The other abandoned pipelines are generally not expected to pose a threat to human health and safety, although they may threaten ecological health (City of Morro Bay 2006).

As discussed in the Community Baseline Assessment for the General Plan and LCP Update, one other facility in the vicinity which may pose a hazardous materials risk is the Diablo Canyon Power Plant located about 10 miles south of Morro Bay. Diablo Canyon is the one remaining operational nuclear power plant in California and is expected to remain in operation until its license expires in 2025. The facility is built on a fault line and is located on the coast, exposing it to seismic hazards and coastal hazards such as tsunamis, although Diablo Canyon is designed to be highly resilient to these emergency situations (Appendix B).

d. Airports and Airport Hazards

Airport-related hazards can occur if departing or landing aircraft pose a safety risk to nearby development, or vice versa. The nearest airport to the planning area is the San Luis Obispo County Regional Airport which is 17 miles away from the City of Morro Bay. The planning area is located outside of the existing and proposed safety zones associated with runway activities at this airport (San Luis Obispo County Airport Land Use Commission 2018).

e. Emergency Response Plans

The City of Morro Bay developed its own Local Hazard Mitigation Plan (LHMP) in 2006. Although the plan is meant to be a multi-hazard plan, its primary function is to address mitigation for natural hazards and other environmentally related, human caused events or incidents (Morro Bay 2006). One of the main goals of the LHMP is to speed recovery and redevelopment following future disaster events. The LHMP incorporates all applicable operations plans and geo-technical reports in relevant hazard mitigation ordinances, regulations, and plans. The LHMP coordinates activities between agencies, provides safety information and establishes training and exercise goals related to

emergency management. The City is in the process of updating the LHMP and is currently developing the mitigation strategies for identified hazards. The City's LHMP is part of the County of San Luis Obispo's Multi-Jurisdictional LHMP.

In addition, the City of Morro Bay has a Comprehensive Emergency Response Plan revised in 2019 and developed by the Morro Bay Fire Department. The Emergency Response Plan covers policies and concepts for responding to any and all emergencies that could affect the health, safety, and property of the public within city limits, including earthquakes, hazardous materials, multi-casualty events, storms and floods, wildland fires, terrorism, nuclear power plant events, and tsunamis (City of Morro Bay 2019.

f. Wildland Fire Hazards

Fires in wildland areas can destroy vegetation and wildlife, and threaten urban areas located on the fringe of wildland areas. Wildland fires can also have serious impacts on downstream development and water supplies. When vegetation is burned away, erosion becomes a more serious problem, especially during the rainy season. Consequently, mudslides and landslides can threaten downhill development as a result of wildland fires.

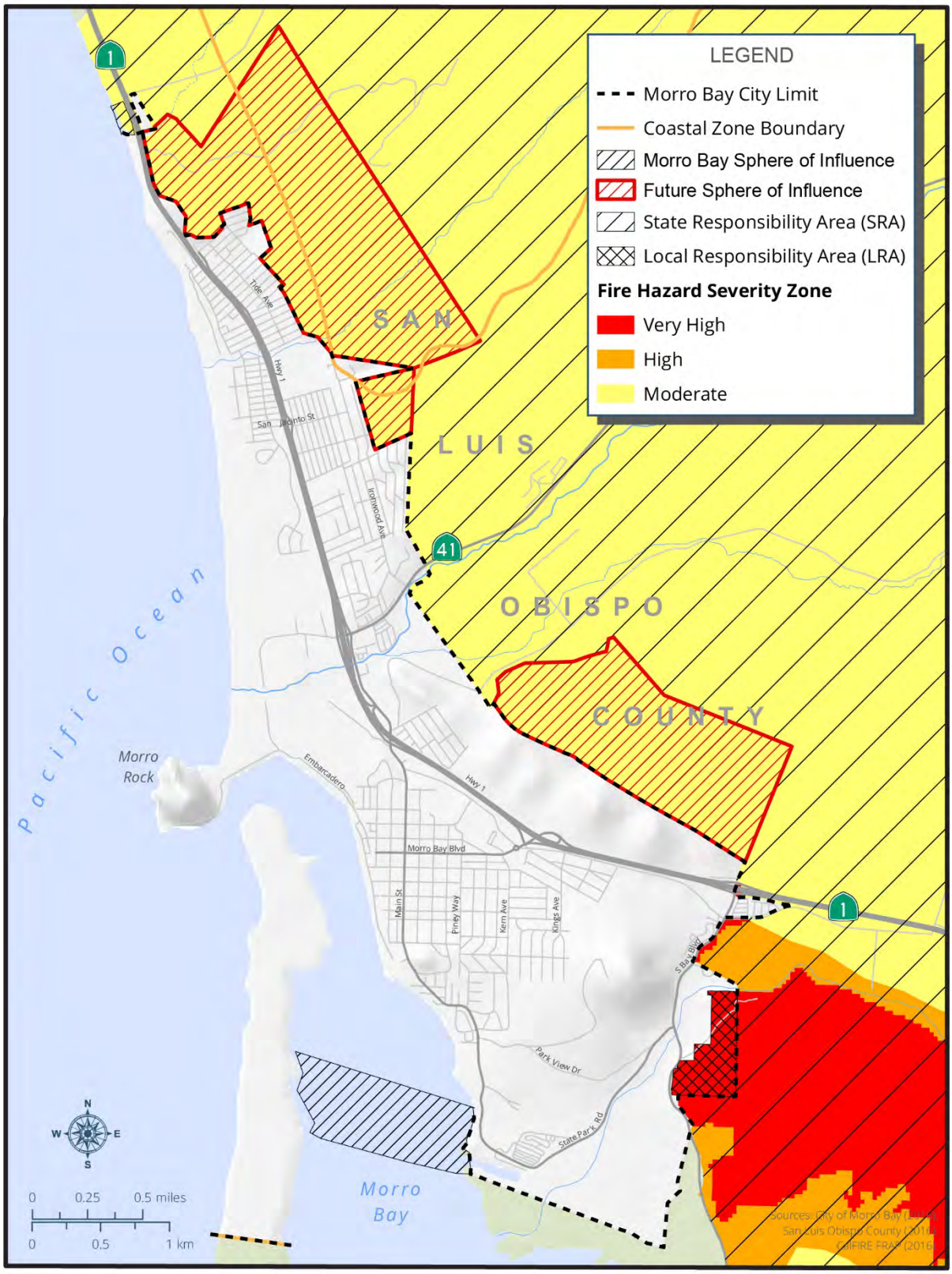
Wildland fire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions. Based on these factors, Morro Bay has been identified by the California Department of Forestry and Fire Protection (CAL FIRE) as being within a wildland-urban interface (CAL FIRE 2018a), which includes areas where homes or other structures are built near or among lands prone to wildland fire. Morro Bay's proximity to undeveloped natural areas increases the potential for exposure to wildland fire.

CAL FIRE determines fire hazard severity zones based on the potential fire hazard that is expected to prevail there. Factors in determining fire hazard severity zones include fuel (material that can burn), slope, and weather. CAL FIRE identifies three zones, based on increasing hazard severity: moderate, high, and very high. Moderate hazard zones are typically identified as either wildland areas supporting areas of typically low fire frequency and relatively modest fire behavior, or are developed/urbanized areas with a very high density of inflammable surfaces including roadways, irrigated lawn/parks, and low total vegetation cover (less than 30 percent) that is highly fragmented and low in flammability (e.g., irrigated, manicured, managed vegetation). There is one area within the limits of the City of Morro Bay with very-high fire hazard. The majority of the developed portion of Morro Bay is located outside of a mapped fire hazard severity zone. Figure 4.7-1 below illustrates Fire Hazard Severity zones in the planning area.

Development within very high fire hazard areas is unsafe where fire suppression is impeded by lack of water, rugged terrain, and delayed response times. The city is designated as a Local Responsibility Area (LRA), wherein the local government has responsibility for fire protection (CAL FIRE 2018b).

Climate change is expected to exacerbate periodic drought conditions, potentially increasing the frequency of wildfires and altering the distribution and character of natural vegetation. The California Climate Change Center reported a projected increase wildfire frequency, statewide, between 11 percent under a lower-range warming scenario and 55 percent under a medium-range warming scenario (California Climate Change Center 2006).

Figure 4.7-1 Fire Hazard Severity Zones



CAL FIRE works in cooperation with the Governor's Office of Emergency Services (CalOES, formerly California Emergency Management Agency [CalEMA]), as well as neighboring state governments through a network of mutual aid agreements to fight wildland fires. CAL FIRE is also a dedicated firefighting partner to the federal government, with experience contributing to firefighting efforts on the 45 million acres of federal lands in California. CAL FIRE is the largest multipurpose fire protection agency in the United States, responsible for wildland fire protection of over 31 million acres of California's privately owned watershed lands, as well as services in 150 counties, cities, and districts via contracts with local governments.

g. Coastal Hazards

Coastal hazards in Morro Bay pose a threat due to risk of coastal flooding. Coastal flooding has occurred on occasion in the past and strong storm events may become more frequent and/or more severe in Morro Bay (Oskin 2014). Additionally, tsunamis may also occur along the shore, although the risk of a serious tsunami for Morro Bay remains low.

Sea level rise is a future hazard. Although sea levels have generally not risen enough to pose a substantial threat to Morro Bay, future sea level rise may be great enough to create hazardous conditions. Projections of future sea level rise vary, but some studies indicate that by 2100, ocean levels may have increased by as much as 66 inches, or 5.5 feet (Appendix B). At 5 feet of sea level rise, projections show that the marina, parts of the Morro Bay Golf Course, and the inlets of Morro and Toro Creeks would be inundated. Additionally, large sections of the beach north of Morro Rock would be underwater. At six or more feet of sea level rise, the Embarcadero area may be inundated (Appendix B). Sea level rise also increases the risk of coastal flooding and erosion by moving the ocean level closer to existing structures decreasing the required severity of a flood or erosion event before it begins to have an impact on homes, businesses, or infrastructure (Appendix B). For more information on flood hazards related to tsunami and seiches, refer to Section 4.7, *Hydrology and Water Quality*.

h. Regulatory Setting

The management of hazardous materials and hazardous wastes is regulated at the federal, state, and local levels, including through programs administered by the USEPA; agencies within the California Environmental Protection Agency (CalEPA), such as the DTSC; Federal and State occupational safety agencies; and the San Luis Obispo County Environmental Health Services (EHS), Hazardous Materials Program, which is designated as the local Certified Unified Program Agency (CUPA).

Federal

The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA)

These acts established a program administered by the USEPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. Among other things, the use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by HSWA.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (enacted 1980), amended by the Superfund Amendments and Reauthorization Act (SARA) (1986)

This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Among other things, CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled revision of the National Contingency Plan (NCP), which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List (NPL).

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA (7 USC 136 et seq.) provides Federal control of pesticide distribution, sale, and use. USEPA was given authority under FIFRA not only to study the consequences of pesticide usage, but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Later amendments to the law required users to take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by USEPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment.

Lead-Based Paint Elimination Final Rule 24 Code of Federal Regulations

Regulations for Lead-Based Paint (LBP) are contained in the Lead-Based Paint Elimination Final Rule 24 Code of Federal Regulations (CFR) 33, governed by the U.S. Housing and Urban Development (HUD), which requires sellers and lessors to disclose known LBP and LBP hazards to perspective purchasers and lessees. Additionally, all LBP abatement activities must be in compliance with California and Federal OSHA and with the State of California Department of Health Services requirements. Only LBP-trained and -certified abatement personnel are allowed to perform abatement activities. All LBP removed from structures must be hauled and disposed of by a transportation company licensed to transport this type of material at a landfill or receiving facility licensed to accept the waste.

U.S. Environmental Protection Agency

USEPA is the agency primarily responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. Applicable Federal regulations pertaining to hazardous materials are contained in the Code of Federal Regulations (CFR) Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. The management of hazardous materials is governed by the following laws:

- Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.);
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et. Seq.); and
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99 499).

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. USEPA provides oversight and supervision for Federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

National Fire Plan

The National Fire Plan was developed under Executive Order 11246 in August 2000, following a historic wildland fire season. Its intent is to establish plans for active response to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity. The plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

State

Department of Toxic Substances Control

As a department of the CalEPA, the DTSC is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code.

DTSC also administers the California Hazardous Waste Control Law (HWCL) to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until USEPA approves the California program, both state and federal laws apply in California. The HWCL lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

Government Code Section 65962.5 requires the DTSC, the State Department of Health Services, the SWRCB, and CalRecycle to compile and annually update lists of hazardous waste sites and land designated as hazardous waste sites throughout the state. The Secretary for Environmental Protection consolidates the information submitted by these agencies and distributes it to each city and county where sites on the lists are located. Before the lead agency accepts an application for any development project as complete, the applicant must consult these lists to determine if the site at issue is included.

If any soil is excavated from a site containing hazardous materials, it would be considered a hazardous waste if it exceeded specific criteria in Title 22 of the California Code of Regulations. Remediation of hazardous wastes found at a site may be required if excavation of these materials is performed, or if certain other soil disturbing activities would occur. Even if soil or groundwater at a contaminated site does not have the characteristics required to be defined as hazardous waste, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking jurisdiction.

Hazardous Waste Control Act

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The State program is similar to, but more stringent than, the

Federal program under RCRA. The regulations list materials that may be hazardous, and establish criteria for their identification, packaging, and disposal. Environmental health standards for management of hazardous waste are contained in California Code of Regulations (CCR) Title 22, Division 4.5. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the State called the Cortese List.

California Department of Pesticide Regulation, Department of Food and Agriculture, and the Department of Public Health

The California Department of Pesticide Regulations (DPR), a division of CalEPA, in coordination with the California Department of Food and Agriculture (CDFA), a division of Measurement Standards and the California Department of Public Health (CDPH) have the primary responsibility to regulate pesticide use, vector control, food, and drinking water safety. CCR Title 3 requires the coordinated response between the County Agricultural Commissioner and SBDEH to address the use of pesticides used in vector control for animal and human health on a local level. DPR registers pesticides, and pesticide use is tracked by the County. Title 22 is used also to regulate both small and large CDPH water systems.

California Fire Code (2019)

The 2019 California Fire Code is based on the 2018 International Fire Code. The California Fire Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare for the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California.

The California Fire Plan

The Strategic Fire Plan for California is the State's road map for reducing the risk of wildfire. The most recent version of the Plan was finalized in August 2018 and directs each CAL FIRE Unit to prepare a locally specific Fire Management Plan (CAL FIRE 2018c). In compliance with the California Fire Plan, individual CAL FIRE units are required to develop Fire Management Plans for their areas of responsibility. These documents assess the fire situation within each of the 21 CAL FIRE units and six contract counties. The plans include stakeholder contributions and priorities and identify strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work with the local fire problem. The plans are required to be updated annually.

Wildland Urban Interface Building Standard

On September 20, 2007 the Building Standards Commission approved the Office of the State Fire Marshal emergency regulations amending the California Code of Regulations, Title 24, Part 2, known as the 2007 California Building Code. These codes include provisions for ignition-resistant construction standards in the wildland urban interface.

State Emergency Plan

The foundation of California's emergency planning and response is a statewide mutual aid system which is designed to ensure that adequate resources, facilities, and other support is provided to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation.

The California Disaster and Civil Defense Master Mutual Aid Agreement (California Government Code Sections 8555–8561) requires signatories to the agreement to prepare operational plans to use within their jurisdiction, and outside their area. These plans include fire and non-fire emergencies related to natural, technological, and war contingencies. The State of California, all state agencies, all political subdivisions, and all fire districts signed this agreement in 1950.

Section 8568 of the California Government Code, the "California Emergency Services Act," states that "the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof." The Act provides the basic authorities for conducting emergency operations following the proclamations of emergencies by the Governor or appropriate local authority, such as a City Manager. The provisions of the act are further reflected and expanded on by appropriate local emergency ordinances. The Act further describes the function and operations of government at all levels during extraordinary emergencies, including war.

All local emergency plans are extensions of the State of California Emergency Plan. The State Emergency Plan conforms to the requirements of California's Standardized Emergency Management System (SEMS), which is the system required by Government Code 8607(a) for managing emergencies involving multiple jurisdictions and agencies (California Emergency Management Agency [CalEMA][1] 2009). The SEMS incorporates the functions and principles of the Incident Command System (ICS), the Master Mutual Aid Agreement (MMAA), existing mutual aid systems, the operational area concept, and multi-agency or inter-agency coordination. Local governments must use SEMS to be eligible for funding of their response-related personnel costs under state disaster assistance programs. The SEMS consists of five organizational levels that are activated as necessary, including: field response, local government, operational area, regional, and state. CalOES divides the state into several mutual aid regions. The City of Morro Bay is located in Mutual Aid Region I, which includes San Luis Obispo, Santa Barbara, Ventura, Los Angeles and Orange Counties (CalEMA 2011).

Regional

County of San Luis Obispo Environmental Health Services Hazardous Materials Program

San Luis Obispo County EHS's, Hazardous Materials Program is designated as the local CUPA. This agency is responsible for inspecting facilities in the County to verify proper storage, handling and disposal of hazardous materials and hazardous wastes. The Hazardous Materials Program administers programs for Hazardous Materials Business Plans, hazardous waste generator requirements, USTs, above ground petroleum storage, prevention of accidental releases (California Accidental Release Prevention program), and hazardous materials management plans.

[1] California Emergency Management Agency is now called the California Governor's Office of Emergency Services (CalOES).

Local

Airport Land Use Compatibility Plans

The Section 65302.3 of the Government Code requires general plans and applicable specific plans to be consistent with amended Comprehensive Airport Land Use Plans (CALUP). The nearest airports to the planning area include the San Luis Obispo County Regional Airport, located approximately 17 miles to the southeast, and the Paso Robles Municipal Airport located 32 miles to the northeast. The planning area is not located in the airport land use plan area for either of these airports.

Morro Bay Local Hazard Mitigation Plan

The Morro Bay LHMP is a plan to improve the resiliency in the community by identifying natural hazards present in Morro Bay, determining the community's vulnerability to each hazard, and identifying development mitigation strategies to reduce vulnerability before emergency situations develop. Morro Bay's LHMP was adopted in 2006 and addresses nine hazards. The LMHP also contains nine goals to improve resiliency. Objectives and mitigation actions are associated with each goal. Morro Bay's LHMP identifies earthquakes (including fault rupture and liquefaction), floods, landslides, and hazardous materials releases as the most significant hazards present in the community. The City is in the process of updating the LHMP and is currently developing the mitigation strategies for identified hazards. The City's LHMP is part of the County of San Luis Obispo's Multi-Jurisdictional LHMP.

Morro Bay Comprehensive Emergency Response Plan

The Comprehensive Emergency Response Plan contains City Policies and operational concepts for responding to emergency situations and is generally only consulted when an emergency occurs. Most of the hazards in the response plan are also contained in the LHMP. The policies and general approach to emergency situations delineated in the plan follow a number of widely adopted emergency response standards and operations protocols, including the National Incident Management System, the State Emergency Management System, and the Incident Command System.

Impact Analysis

a. Methodology

This section describes the potential environmental impacts of the proposed project relevant to hazards and hazardous materials. The impact analysis is based on an assessment of baseline conditions for the General Plan and LCP Update planning area, including locations of hazardous materials use and storage, existing contaminated sites, air traffic hazards, emergency response and evacuation plan requirements, and the risk of exposure to wildland fires. This analysis identifies potential impacts based on the predicted interaction between the affected environment and construction, operation, and maintenance activities related to the predicted development that would occur under the proposed project. This section describes impacts in terms of location, context, duration, and intensity.

b. Significance Thresholds

The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. For the purposes of this EIR, implementation of the proposed project may have a significant adverse impact related to hazards or hazardous materials if it would do any of the following:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area;
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Additional hazard related issues are addressed in other sections of this EIR. Hazards associated with tsunamis, seiches, and floods are addressed in Section 4.7, *Hydrology and Water Quality*.

According to Appendix G to the *CEQA Guidelines*, impacts related to wildfire hazards may significant if the project is located in or near state responsibility areas or lands classified as very high fire hazard severity zones and:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan;
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment;
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes; and/or
5. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
Threshold 2:	Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Impact HAZ-1 IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN AN INCREMENTAL INCREASE IN THE OVERALL ROUTINE TRANSPORT, USE, STORAGE, AND DISPOSAL OF HAZARDOUS MATERIALS IN THE PLANNING AREA, AND INCREASE THE RISK OF RELEASE OF HAZARDOUS MATERIALS. COMPLIANCE WITH APPLICABLE REGULATIONS RELATED TO THE HANDLING, TRANSPORT, DISPOSAL, AND STORAGE OF HAZARDOUS MATERIALS AND ADHERENCE TO PROPOSED GENERAL PLAN AND LCP UPDATE POLICIES WOULD MINIMIZE THE RISK OF SPILLS AND THE PUBLIC'S POTENTIAL EXPOSURE TO THESE SUBSTANCES AND REDUCE THE RISK OF ADVERSE IMPACTS OF HAZARDOUS MATERIALS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Implementation of the General Plan and LCP Update would facilitate new development in the planning area, increasing the number of residents and workers in Morro Bay who could be exposed to hazardous materials from routine transport, use, storage, and disposal. New development would result from conversion of uses in response to market demand and would change land use patterns in the planning area. Additional residents and workers in the planning area would increase the number of people and residents near transportation corridors where hazardous materials may be transported. Commercial land uses in the planning area are concentrated along major transportation corridors, such as SR 1, Main Street, and Morro Bay Boulevard. Light industrial and warehousing uses are located mainly along Embarcadero Boulevard and Quintana Road. An additional 1,348 residents may be added to the planning area by the year 2040, resulting in increased risk of an accidental release of hazardous materials on a transportation route and exposure to hazardous materials.

New residential, industrial, and commercial development may involve the routine use, storage, and disposal of hazardous materials. Buildout of the planning area envisioned in the General Plan and LCP Update would facilitate up to 8.3 million new square feet of non-residential land uses by the year 2040. Commercial and industrial land uses could use and store hazardous materials in proximity to residential uses. Specifically, mixed use areas that are identified in the planning area may result in new residential units adjacent to commercial and industrial land uses. Mixed uses would be focused at the edge of downtown and in locations where downtown transitions to residential areas. Mixed uses may also be located adjacent to the light industrial area behind Quintana Road near the southeastern edge of the city. The General Plan and LCP Update identifies 17.6 acres of mixed use development by 2040 in the planning area, which could potentially increase hazardous materials exposure for residents as mixed use sites may be located adjacent to commercial and industrial areas.

Hazardous Materials Storage and Disposal

Although the overall quantity of hazardous materials and waste generated in the planning area could incrementally increase as a result of implementation of the General Plan and LCP Update, all new developments that handle or use hazardous materials would be required to comply with the regulations, standards, and guidelines established by the USEPA, the State of California, San Luis

Obispo County, and the City of Morro Bay related to storage, use, and disposal of hazardous materials. The San Luis Obispo County EHS is designated as the local CUPA and performs inspections to prevent exposure to environmental health hazards for businesses and residents in San Luis Obispo County, including in the City of Morro Bay.

CBC requirements prescribe safe accommodations for materials that present a moderate explosion hazard, high fire or physical hazard, or health hazards. Compliance with all applicable federal and State laws related to the storage of hazardous materials would maximize containment (through safe handling and storage practices described above) and provide for prompt and effective cleanup if an accidental release occurs.

CalEPA requires all businesses that handle more than specified amounts of hazardous materials to submit business plans through the California Environmental Reporting System (CERS). Specifically, any new business that meets the specified criteria must submit a full hazardous materials disclosure report that includes an inventory of the hazardous materials generated, used, stored, handled, or emitted; and emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. The report must identify the procedures to follow for immediate notification to all appropriate agencies and personnel in the event of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators of the business, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel.

For those employees that would work with hazardous materials, the amounts of hazardous materials that are handled at any one time are generally relatively small, reducing the potential consequences of an accident during handling. Business-specific practices would be required to comply with federal and State laws to eliminate or minimize the potential consequence of hazardous materials accidents. For example, employees who would work around hazardous materials are required to wear appropriate protective equipment, and safety equipment is routinely available in all areas where hazardous materials are used.

The San Luis Obispo County EHS allows businesses that handle and store hazardous materials above threshold quantities and are regulated by EHS through certification of Hazardous Materials Handler Annual Business Plan (San Luis Obispo County EHS 2018). CalOES provides emergency response to hazardous materials incidents in the planning area. Additional emergency response capabilities are not anticipated to be necessary to respond to the potential incremental increase in the number of incidents that could result from implementation of the General Plan and LCP Update. Further, adherence to applicable regulations as discussed above would be required to reduce any potential consequences of a hazardous materials operational accident.

Demolition Activities

Demolition activities related to future development and re-development projects in Morro Bay would potentially result in emission of lead and asbestos. Lead-based materials and asbestos exposure are regulated by the California Occupational Safety and Health Administration (Cal OSHA). The California Code of Regulations (CCR), §1532.1, requires testing, monitoring, containment, and disposal of lead-based materials such that exposure levels do not exceed Cal OSHA standards. Under this rule, construction workers may not be exposed to lead at concentrations greater than fifty micrograms per cubic meter of air averaged over an eight-hour period and exposure must be reduced to lower concentrations if the workday exceeds eight hours. Similarly, CCR §1529 sets requirements for asbestos exposure assessments and monitoring, methods of complying with

exposure requirements, safety wear, communication of hazards, and medical examination of workers.

The San Luis Obispo Air Pollution Control District (SLOAPCD) enforces Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), which regulate the control of asbestos during the renovation and demolition of buildings under the Federal Clean Air Act (FCCA; SLOAPCD 2018a; SLOAPCD 2018b). The FCAA requires a thorough inspection for asbestos where demolition will occur and specifies work practices to control emissions, such as removing all asbestos-containing materials, adequately wetting all regulated asbestos-containing materials, sealing the material in leak tight containers and disposing of the asbestos-containing waste material as expediently as practicable (USEPA 2016).

Hazardous Materials Transport

Hazardous materials may be transported into and throughout the planning area on SR 1 and SR 41, and accidents on these roadways could result in the release of hazardous materials. Additionally, hazardous materials may be transported via aircraft or watercraft in the planning area, resulting in potential for hazardous materials release from accidents involving such vessels.

The U.S. Department of Transportation's Office of Hazardous Materials Safety regulates the transportation of hazardous materials, as described in Title 49 of the Code of Federal Regulations and implemented by Title 13 of the CCR. Documentation of compliance with hazardous materials regulations codified in Titles 8, 22, and 26 of the California Code of Regulations, and their enabling legislation set forth in Chapter 6.95 of the California Health and Safety Code, is required for all hazardous waste transport. In addition, individual contractors and property owners are required to comply with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste, including but not limited to, Title 49 of the Code of Federal Regulations. The provision of designated truck routes in the General Plan and LCP Update would, as outlined in General Plan and LCP Update Public Safety Element Policy PS-4.2, discourage truck travel through residential areas, reducing the risk of accidental release of hazardous materials in transport.

The Morro Bay Fire Department provides emergency response to hazardous materials incidents in the planning area. Major hazardous materials accidents associated with residential, industrial, and retail-commercial uses are infrequent, and additional emergency response capabilities are not anticipated due to implementation of the General Plan and LCP Update.

The goals and policies in the General Plan and LCP Update Public Safety Element listed below would minimize any impacts related to the use, storage, transport, and release of hazardous materials in the planning area. These policies direct the City to identify hazardous waste transportation routes, work cooperatively with other public agencies in emergency response, update the Emergency Response Plan and require businesses to take appropriate measures to protect public health and safety.

Goal PS-4 Response to emergencies is quick, efficient, and effective.

Policy PS-4.1 Update Emergency Response Plan. Regularly update the Morro Bay Emergency Response Plan with updated evacuation routes and hazard information. Publicize evacuation routes and other relevant emergency procedures.

Policy PS-4.2 **Hazardous Waste Transportation Routes.** Identify and establish specific routes for transporting hazardous materials and wastes. Consider avoiding residential areas, instead using state divided highways as preferred routes.

Policy PS-4.3 **Use, Storage, and Transportation of Hazardous Materials.** Require businesses that use, store, or transport hazardous materials to take adequate measures to protect public health and safety. Restrict access to these materials through setbacks and other measures.

Policy PS-4.4 **Interagency Cooperation.** Work cooperatively with public agencies with responsibility for natural and environmental hazards.

Policy PS-4.5 **Transportation Requirements.** Establish minimum road widths and clearances around structures to improve transportation in the event of an emergency.

Compliance with existing applicable regulations and General Plan and LCP Update policies would minimize risks from routine use, transport, handling, storage, disposal, and release of hazardous materials. Oversight by the appropriate federal, State, and local agencies and compliance by new development with applicable regulations related to the handling and storage of hazardous materials would minimize the risk of the public's potential exposure to these substances. Therefore, impacts from a hazard to the public or the environmental through routine transport, use or disposal of hazardous materials would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 3:	Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact HAZ-2 NEW DEVELOPMENT OF RESIDENTIAL, INDUSTRIAL, AND COMMERCIAL USES FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN INCREASED USE AND STORAGE OF HAZARDOUS MATERIALS WITHIN ONE QUARTER MILE OF EXISTING OR PROPOSED SCHOOLS. COMPLIANCE WITH REGULATORY REQUIREMENTS OF THE SAN LUIS OBISPO COUNTY EHS AND EXISTING APPLICABLE STATE AND FEDERAL REGULATIONS WOULD ENSURE THAT RISKS FROM HAZARDOUS EMISSIONS OR HANDLING OF HAZARDOUS MATERIALS, SUBSTANCES, OR WASTE NEAR EXISTING OR PROPOSED SCHOOLS WOULD REMAIN LESS THAN SIGNIFICANT.

Under the General Plan and LCP Update, new development of residential, industrial, and commercial uses could result in increased use and storage of hazardous materials within one quarter mile of existing or proposed schools. Commercial uses that may use or store hazardous materials include gas stations, dry cleaners, auto-body shops, and medical laboratories. The locations of existing school land uses within the planning area are shown in Figure 2-3, Existing On-The-Ground Land Use, in Section 2.0, *Project Description*.

Since the General Plan and LCP Update does not include any specific development projects, the quantity of hazardous materials proposed for use by future commercial developments within the city is currently unknown. Accidental release or combustion of hazardous materials at new commercial and industrial developments could endanger residents or students in the surrounding community. However, the siting of school facilities would be subject to California Education Code

(Section 17210 et seq.), which outlines the requirements for siting near or on known or suspected hazardous materials sites, or near facilities that emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste.

Hazardous materials and waste generated from future development would not pose a substantial health risk to nearby schools because all businesses that handle or have on-site storage of hazardous materials would be regulated by the San Luis Obispo County EHS and any additional elements as required in the California Health and Safety Code Article 1 Chapter 6.95 for Business Emergency Plan. As described in Section 4.6.1(h), both the federal and State governments require all businesses that handle more than a specified amount of hazardous materials to submit a business plan to San Luis Obispo County EHS. Compliance with regulatory requirements of the San Luis Obispo County EHS and existing applicable State and federal regulations would minimize the risks associated with exposure of sensitive receptors to hazardous materials. This impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 4:	Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?

Impact HAZ-3 IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN DEVELOPMENT OF SITES CONTAMINATED WITH HAZARDOUS MATERIALS. HOWEVER, COMPLIANCE WITH APPLICABLE REGULATIONS RELATING TO SITE CLEANUP AND ADHERENCE TO THE GENERAL PLAN AND LCP POLICIES WOULD MINIMIZE IMPACTS RELATED TO DEVELOPMENT ON LISTED CONTAMINATED SITES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The DTSC maintains the Cortese List, which identifies sites where hazardous materials are present and cleanup activities are necessary. There are no facilities in the planning area on the Cortese List (DTSC 2018). The nearest hazardous materials sites documented on the Cortese List include the Baywood Park Training Area and Camp San Luis, which are both located outside of the planning area.

In Morro Bay, there are four known facilities that are not currently subject to State or federal response activities pursuant to the DTSC and where hazardous materials are still present or may be present (refer to Table 1). The closed Morro Bay Power Plant has undergone remediation to remove hazardous materials. DTSC has determined that the site poses no significant health or environmental hazard (DTSC 2014). According to DTSC, two additional former military sites (one near the intersection of Panorama Drive and Nevis Street, the other near the intersection of Embarcadero and Coleman Street) are in need of evaluation to determine the hazardous materials risk, and one additional site (in the foothills near Little Morro Creek Road) has been cleaned such that no further action is required (DTSC 1997, 2005b, 2005c). Tanks and associated piping at the former military site near the intersection of Panorama Drive and Nevis Street have been removed. The environmental document for this application identifies potential hazardous materials on the site, and requires site-specific mitigation intended to prevent public exposure to this hazard. There are no Federal Superfund sites in the planning area.

Currently, there are 15 permitted underground storage tanks (USTs) in the planning area (Appendix B). In addition to permitted USTs, it is also possible that unpermitted USTs that were in use prior to

permitting and recordkeeping requirements may be present in the planning area. In the event that an unidentified UST is uncovered or disturbed during construction activities, it would be closed and abandoned in place or removed, consistent with applicable regulations.

The following General Plan and LCP Update Public Safety Element policy directs the City to work with appropriate regulatory agencies in managing contaminated sites and is intended to facilitate compliance with regulatory requirements related to hazardous waste contamination described in Section 4.6.1(h) *Regulatory Setting*.

> **Policy PS-4.4** **Interagency Cooperation.** Work cooperatively with public agencies with responsibility for natural and environmental hazards.

Compliance with Policy PS-4.4, and existing federal and State regulatory requirements associated with hazardous waste contamination would minimize this impact. New development on documented hazardous materials sites in the planning area would be preceded by remediation under the supervision of applicable regulatory agencies. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 5:	Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Impact HAZ-4 THE PLANNING AREA IS OUTSIDE OF THE AIRPORT LAND USE PLANNING AREA AND ASSOCIATED SAFETY ZONES FOR THE SAN LUIS OBISPO COUNTY AIRPORT AND PASO ROBLES MUNICIPAL AIRPORT AND IS NOT LOCATED NEAR ANY OTHER AIRPORTS. THERE WOULD BE NO IMPACTS ASSOCIATED WITH AIRPORT-RELATED HAZARDS.

Airport-related hazards can occur if departing or landing aircraft pose a safety risk to nearby development, or vice versa. The nearest airports to the planning area include the San Luis Obispo County Regional Airport, located approximately 17 miles to the southeast, and the Paso Robles Municipal Airport located 32 miles to the northeast. The planning area is not located in the airport land use plan area or associated safety zones associated with runway activities for either of these airports (San Luis Obispo County Airport Land Use Commission 2018). Therefore, there would be no impacts related to airport-related hazards.

Mitigation Measures

No mitigation would be required.

Threshold 6:	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact HAZ-5 POPULATION GROWTH AND INCREASED DEVELOPMENT IN COASTAL AREAS COULD IMPACT EVACUATION ROUTES AND INCREASE THE NUMBER OF RESIDENTS SUSCEPTIBLE TO COASTAL HAZARDS IN THE PLANNING AREA AS A RESULT OF THE GENERAL PLAN AND LCP UPDATE. PROPOSED POLICIES AND MAPPED EVACUATION ROUTES IN THE GENERAL PLAN AND LCP UPDATE WOULD ENSURE EFFECTIVE EMERGENCY RESPONSE FOLLOWING A NATURAL OR HUMAN-CAUSED DISASTER. THEREFORE, THE GENERAL PLAN AND LCP UPDATE WOULD NOT RESULT IN INTERFERENCE WITH AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The General Plan and LCP Update would facilitate increased urban development and population growth in the city. Population growth would incrementally increase traffic, impacting evacuation routes in the city, and increased development in coastal areas would increase the number of residents susceptible to coastal hazards described in the City's Multi-Hazard Emergency Response Plan or LHMP. The Public Safety Element of the General Plan and LCP Update identifies Goal PS-4 and Policy PS-4.1 through PS-4.5, described in Impact HAZ-1, as well as the following goals and policies to protect and maintain public safety in the event of an emergency.

Policy PS-4.6 **Resiliency Hubs.** Work with local schools and community centers to create "resiliency hubs" that can serve as gathering places during emergencies and interruptions in services, and contain access to water, electricity, and other needed services.

Policy PS-5.7: **Passive Resiliency.** Ensure, to the greatest extent possible, that new and significantly remodeled buildings will maintain livable conditions in the event of extended loss of power or heating.

Fire Department review of new development applications for adequate emergency access and evacuation routes, in addition to implementation of the General Plan and LCP Update Public Safety Element policies listed above, would ensure adequate emergency response. Therefore, potential impacts to emergency response and evacuation would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 7:	Would the project expose people or structures, directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?
Threshold 8:	Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?
Threshold 9:	Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?
Threshold 10:	Would the project require installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?
Threshold 11:	Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?
Threshold 12:	Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Impact HAZ-6 THE GENERAL PLAN AND LCP UPDATE PLANNING AREA INCLUDES A DESIGNATED VERY HIGH FIRE HAZARD AREA. HOWEVER, LAND USE DESIGNATIONS WOULD LIMIT NEW DEVELOPMENT WITHIN DESIGNATED VERY HIGH FIRE HAZARD AREAS TO RECREATIONAL USES. ADDITIONALLY, GOALS AND POLICIES INCLUDED IN THE GENERAL PLAN AND LCP UPDATE WOULD MINIMIZE EXPOSURE OF PEOPLE OR STRUCTURES TO RISK OF LOSS, INJURY, OR DEATH INVOLVING WILDLAND FIRES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

According to Appendix G of the CEQA Guidelines, impacts related to wildfire hazards may be significant if a project is located in or near state responsibility areas or lands classified as very high fire hazard severity zones. The City of Morro Bay has been identified by CAL FIRE as being within a wildland-urban interface (CAL FIRE 2018), which includes areas where homes or other structures are built near or among lands prone to wildland fire. Morro Bay's proximity to undeveloped natural areas increases the potential for exposure to wildland fire. The entire planning area is a Local Responsibility Area (LRA) wherein the City has responsibility for fire protection (CAL FIRE 2018b).

The majority of the developed portion of Morro Bay is located outside of a mapped fire hazard severity zone. However, as shown in Figure 4.7-1, there is one area within the planning area designated as a very high fire hazard zone located at the southern end of the planning area adjacent to State Park Road. Development within a very high fire hazard zone is unsafe when fire suppression activities would be impeded by lack of water, rugged terrain, or delayed response times. The area mapped as very high fire hazard zone would be designated as Open Space/Recreation under the General Plan and LCP Update. The Open Space/Recreation land use designation allows for improved and unimproved park facilities, open space areas, natural resource areas, and outdoor recreation. Therefore, this very high fire hazard zone would not be developed with residential dwelling units or other uses subject to substantial wildfire risk, and the project would not require installation or maintenance of associated infrastructure that would exacerbate fire risk in a designated as a high fire hazard severity zone.

Any new development located in a very high fire hazard zone within a LRA would be required to comply with standards in California Government Code 51182 to minimize fire risk. These standards

include maintaining a firebreak of at least 30 feet, removing all flammable vegetation and combustible growth, and additional firebreaks within 100 feet by the removal of all brush, flammable vegetation, or combustible growth. In addition, prior to construction of a new dwelling that requires a building permit, California Government Code 51182 requires that the owner obtain certification from the local building official that the building complies with all applicable state and local fire standards. New development also would be subject to statewide standards for fire safety in the California Fire Code. Therefore, land use designations and limitations on residential development would minimize direct and indirect exposure of people or structures to risk of loss, injury, or death involving wildland fires.

The Public Safety Element of the General Plan and LCP Update identifies Goal PS-4 and Policy PS-4.1 through PS-4.5, described in Impact HAZ-1, as well as the following General Plan and LCP Update Public Safety Element goals and policies, which provide guidance for preventative measures and practices to avoid and minimize wildland fire risks.

Goal PS-2 Development is protected from natural disasters and hazards to the greatest extent possible.

Policy PS-2.2 **New Development in High-Risk Areas.** Require new development to be located outside of areas subject to natural hazards from tsunami, geologic, flood, and wildfire conditions to the maximum feasible extent. If development must occur in such high-risk areas, including if development cannot be feasibly sited in a manner that avoids such areas entirely, ensure that such development is sited, designed, and conditioned to minimize risks to life and property while mitigating the development's impacts to coastal resources, particularly to public recreational beach access. Development shall also ensure stability and structural integrity; shall not create nor contribute significantly to erosion, geologic instability, or destruction of the site; shall not substantially alter natural landforms; and shall not include shoreline protective devices.

Policy PS-2.4 **Construction in High-Risk Areas.** Require that structures be built in fire defensible spaces and minimize the construction of public facilities in areas of high or very high wildfire risk, including as mapped by the California Department of Forestry and Fire Protection.

Policy PS-2.6 **New Development in Wildfire High-Risk Areas.** Require new developments in areas of high and very high wildfire risk to incorporate fire-safe building methods and site planning techniques into the development.

Policy PS-2.7 **Additional Fire Protection Standards for All Development.** In addition to other hazard requirements that may apply, the following fire protection standards apply to all development:

a. New Development and Fire Safety. New development shall meet all applicable fire safety standards and shall be sited and designed to minimize fuel modification and brush clearance to the maximum feasible extent, and to avoid such activities within ESHA and ESHA buffers on-site and on neighboring property, as well as parkland. All such requirements shall be applied as conditions of approval applicable for the life of the development.

b. Existing Development and Fire Safety. Removal of major vegetation adjacent to existing development for fire safety purposes shall only be

allowed upon a finding that fuel modification and brush clearance techniques are required in accordance with applicable fire safety regulations and are being carried out in a manner which reduces coastal resource impacts to the maximum feasible extent. In addition to the foregoing requirements, removal of ESHA, or removal of materials in an ESHA buffer, shall only be allowed for fire safety purposes if it is not already prohibited by coastal permit conditions; if there are no other feasible alternatives for achieving compliance with required fire safety regulations; and if all ESHA and related impacts are mitigated in a manner that leads to no net loss of ESHA resource value.

Compliance with the goals and policies listed above would minimize potential wildland fire impacts to future growth associated with the General Plan and LCP update. Additionally, with implementation of State requirements for very high fire hazard areas, California Fire Code standards for new structures, and fire hazard policies in the General Plan and LCP Update that apply to fire hazard areas, the impact of wildland fire hazards would be less than significant. Fire Department review of new development applications for adequate emergency access and evacuation routes, in addition to implementation of the General Plan and LCP Update Public Safety Element policies listed above, would ensure adequate emergency response. Therefore, potential impacts to emergency response and evacuation would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce impacts associated with wildland fires.

d. Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on hazards and hazardous materials throughout the County of San Luis Obispo (the cumulative impact analysis area) and is cumulative in nature. Some types of hazards and hazardous materials impacts are related to site- and project-specific characteristics and conditions and would not be significantly affected by other development outside of the planning area. As discussed in Impacts HAZ-1 and HAZ-2, there are existing federal, State, and local regulations that effectively reduce the inherent hazard associated with routine transport, use, storage, and disposal of hazardous materials. Regulations and oversight, as outlined in the impacts analysis above, would also effectively reduce the potential for individual projects to create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions, within the planning area as well as in San Luis Obispo County. Thus, cumulative impacts related to the transport, use, storage, or disposal of hazardous materials, upset conditions, hazardous emissions near schools, and project locations on known or unknown hazardous materials sites, would be less than significant.

Similarly, impacts related to airport hazards are site-specific depending on the characteristics and design of individual projects and their location relative to distance and location of nearby airports. Existing regulations place limitations on the types of development that can be permitted within various aircraft zones surrounding an airport, such as building height restrictions or prohibiting residential occupancy. Mandatory compliance with these regulations would prevent substantial hazards related to airports.

Emergency response plans are generally specific to a particular city or county or parts thereof. For example, in the event of an imminent emergency in Morro Bay, emergency response would typically be from police, ambulance and fire departments local to the city or county (through mutual aid agreements), and not from areas outside of San Luis Obispo County. Thus, the cumulative impacts related to conflict with emergency response plans would be less than significant.

The land use plan in the General Plan and LCP Update would facilitate development near areas mapped as very high fire hazards. The risk of loss from existing development and the anticipated growth within San Luis Obispo County would result in cumulative impacts related to wildland fire hazards. As described in Impact HAZ-6, compliance with City and County policies related to fire protection, as well as implementation of State requirements for very high fire hazard areas, California Fire Code standards for new structures, and fire hazard policies in the General Plan and LCP Update that apply to fire hazard areas, would minimize potential cumulative wildland fire impacts.

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4.8 Hydrology and Water Quality

This section evaluates the potential environmental effects of the General Plan and LCP Update associated with regional and local watershed characteristics, including water quality, drainage and infiltration patterns, and flood hazards. The analysis includes a review of surface water, groundwater, flooding, storm water, and water quality. Water supply and wastewater conveyance and treatment are discussed in Section 4.14, *Utilities*. Issues regarding wetlands and waters of the U.S. are discussed in Section 4.3, *Biological Resources*.

4.8.1. Setting

The City of Morro Bay is located on the Central Coast of California, midway between San Francisco and Los Angeles. The city is surrounded by a buffer of undeveloped land on the north, east, and south and by the Pacific Ocean on the west.

The planning area is characterized by a typical Mediterranean coastal climate, which is generally dry in the summer with mild, wet winters. The U.S. Climate Data Center maintains average weather data for the city, within the General Plan and LCP Update planning area. Rainfall is concentrated in the winter months with the wettest months of the year being January, February, and March, with average monthly rainfall totals of 3.6, 3.8, and 3.3 inches, respectively (U.S. Climate Data 2018).

a. Surface Water

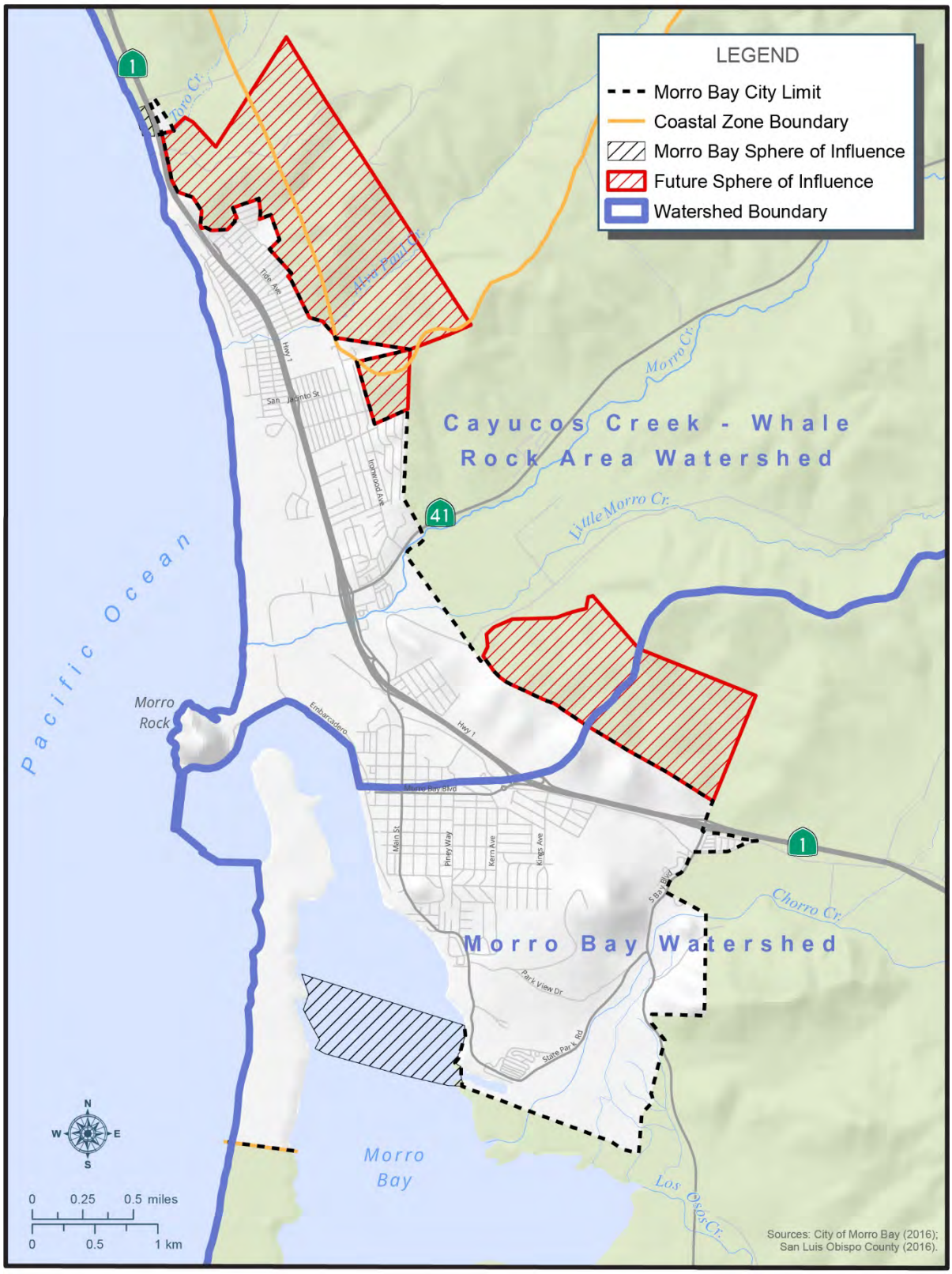
The California Department of Water Resources (DWR) divides surface watersheds in California into 10 hydrologic regions. The General Plan and LCP Update planning area lies within the Central Coast hydrologic region, a large coastal watershed in central California that consists of approximately 7.22 million acres (DWR 2003). The hydrologic region includes all of Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties, most of San Benito County, and parts of San Mateo, Santa Clara, and Ventura counties. Major drainages in the Central Coast hydrologic region include the Salinas, Cuyama, Santa Ynez, Santa Maria, San Antonio, San Lorenzo, San Benito, Pajaro, Nacimiento, Carmel, and Big Sur rivers (DWR 2003).

The California DWR subdivides hydrologic regions into hydrologic units, and further into hydrologic areas and hydrologic subareas. Within the Central Coast hydrologic region, the planning area is located entirely in the Estero Bay hydrologic unit (California Department of Forestry and Fire Protection 2002). The Central Coast Regional Water Quality Control Board (RWQCB) governs basin planning and water quality within this hydrologic unit (Central Coast RWQCB 2019).

The majority of the city is in the Morro Bay Watershed, which covers 46,598 acres in the central, coastal area of San Luis Obispo County. Waters in the Morro Bay Watershed drain into Chorro and Los Osos Creeks and eventually into Morro Bay. A small portion of the city, north of Morro Bay Boulevard, is located within the Cayucos Creek-Whale Rock Watershed. Waters in the Cayucos Creek-Whale Rock Watershed drain into Morro Creek and discharge into the Pacific Ocean (Appendix B). The watershed boundaries and primary creeks providing drainage in the city are shown in Figure 4.8-1.

Morro Bay hosts one of the least disturbed wetland systems on the central and southern California Coast (Morro Bay National Estuary Program 2012). The bay is a shallow lagoon fed by tidal inflow and fresh water from Chorro Creek and Los Osos Creek. Figure 4.3-2 in Section 4.3, *Biological Resources*, shows the drainage and wetland systems in the planning area.

Figure 4.8-1 Morro Bay Watershed Boundaries and Drainages



b. Groundwater

Two groundwater basins underlie the project area: the Morro Valley Basin and the Chorro Valley Basin. The Morro Valley Basin occupies approximately 1,200 acres and is bounded by the Pacific Ocean to the west, the Morro Bay Estuary to the east and impermeable rock units to the north and south. Morro Valley Basin recharge comes primarily from percolation of stream flows (primarily from Morro Creek and Little Morro Creek), precipitation, and excess irrigation flow (DWR 2004a). However, deep percolation of precipitation and residential/agricultural return flows also contribute to the water recharge of this basin. The water supply aquifers are predominantly located within alluvial deposits drained by Morro Creek, which are comprised of gravel, sand, silt and clay (Appendix B). The total estimated groundwater storage capacity in the Morro Valley Basin historically ranged from 7,600 acre feet to 33,900 acre feet between 1975 and 1982. The perennial yield of the Morro Valley Basin is estimated to be 1,500 acre feet per year (AFY). During drought conditions, the operation of Morro Bay's seawater and freshwater supply wells from the Morro Valley Basin could be subject to seawater intrusion (Appendix B).

The Chorro Valley Basin is approximately 3,200 acres and is only bounded by the Morro Bay Estuary and impervious rock units. Recharge to the basin comes primarily from percolation of stream flows (primarily from Chorro Creek and tributaries) as well as from deep percolation of precipitation and residential agriculture (DWR 2004b). The water supply aquifers are alluvial deposits drained by Chorro Creek which are comprised of gravel, sand silt, and clay (Morro Bay 2017). Within the Chorro Valley Basin, the total groundwater storage capacity is approximately 9,600 acre feet. Of the total storage capacity, the estimated perennial yield of the basin is 2,210 AFY (Morro Bay 2017). Groundwater quality in the basins is discussed in more detail below under the heading *Water Quality*.

c. Water Quality

Water quality in the planning area is governed by the Central Coast RWQCB, which sets water quality standards in the *Water Quality Control Plan for the Central Coast Basin* (Basin Plan, Central Coast RWQCB 2019). The Basin Plan identifies beneficial uses for surface water and groundwater and establishes water quality objectives to attain those beneficial uses. The identified beneficial uses and the water quality objectives to maintain or achieve those uses are together known as water quality standards. The Central Coast RWQCB designates beneficial uses for some individual water bodies in the Central Coast Basin. All other water bodies not designated individually are assigned the designated uses of municipal and domestic water supply and protection of recreation and aquatic life. Table 4.8-1 presents the designated beneficial uses listed in the Basin Plan for these surface waters.

Table 4.8-1 Basin Plan Beneficial Uses

Water Body	Beneficial Uses
Morro Creek	Municipal and Domestic Supply; Agricultural; Groundwater Recharge, Water Contact Recreation; Non-Contact Water Recreation; Wildlife Habitat; Cold Fresh Water Habitat; Warm Fresh Water Habitat; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Rare, Threatened, or Endangered Species; Estuary; Fresh Water Replenishment; Commercial and Sport Fishing
Little Morro Creek	Municipal and Domestic Supply; Agricultural; Groundwater Recharge; Water Contact Recreation; Non-Contact Water Recreation; Wildlife Habitat; Cold Fresh Water Habitat; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Rare, Threatened, or Endangered Species; Commercial and Sport Fishing

Water Body	Beneficial Uses
Morro Bay Estuary	Industrial Service Supply; Water Contact Recreation; Non-Contact Water Recreation; Wildlife Habitat; Cold Fresh Water Habitat, Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Preservation of Biological Habitats of Special Significance; Rare, Threatened, or Endangered Species; Estuary; Commercial and Sport Fishing, Aquaculture; Shellfish Harvesting
Chorro Creek	Municipal and Domestic Supply; Agricultural; Groundwater Recharge; Water Contact Recreation; Non-Contact Water Recreation; Wildlife Habitat; Cold Fresh Water Habitat; Warm Fresh Water Habitat; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Preservation of Biological Habitats of Special Significance; Rare, Threatened, or Endangered Species; Fresh Water Replenishment; Commercial and Sport Fishing

Source: Central Coast RWQCB 2019.

The Clean Water Act 303(d) list is a register of impaired and threatened waters which the Clean Water Act requires all states to submit for Environmental Protection Agency approval every two years. The list identifies all waters where the required pollution control measures have so far been unsuccessful in reaching or maintaining the required water quality standards. Waters that are listed are known as “impaired.” Impairment is measured by total maximum daily load (TMDL), which is the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards (Appendix B). In the planning area, Chorro Creek and Morro Creek are listed as impaired, with one or more pollutants listed by the RWQCB above the TMDL threshold. Specific pollutants in these water bodies that exceed TMDL thresholds are Escherichia coli (E. coli), nutrients, sedimentation/siltation, dissolved oxygen, and pathogens.

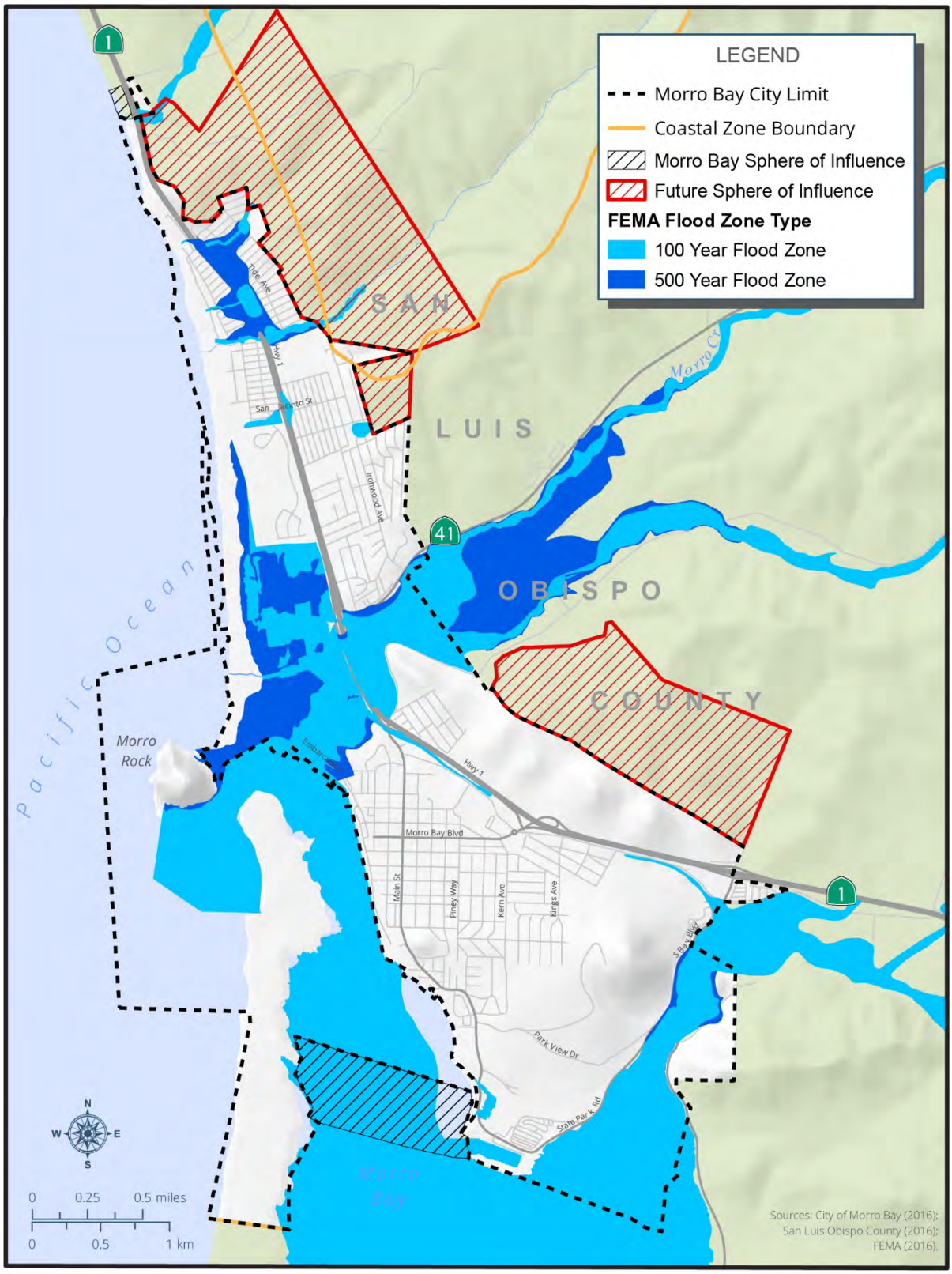
The City of Morro Bay acts as the sole water supplier for the planning area. The City’s potable water supply quality depends on the quality of imported water and local groundwater, as well as the proportion in which the two sources are blended. Imported surface water utilized for potable uses has lower total dissolved solids (TDS) concentrations than local groundwater levels. The potable water supply provided by the City’s groundwater wells generally has a TDS concentration ranging from 460 parts per million (ppm) to 910 ppm. The City’s surface water supply imported by the State Water Project has a TDS concentration ranging from 340 ppm to 572 ppm (Appendix B).

The City’s water supply is tested at multiple locations annually. The City publishes a water quality report annually which details the water quality sampling results for City wells and State Water Project water. While the range of contamination in untreated well water may exceed drinking water standards, all of the water delivered to customers is blended or treated to reduce contaminant levels to acceptable levels to meet health and safety requirements.

d. Flood Hazards

Flood hazards occur when the amount of rainfall exceeds the infiltration capacity of the surrounding landscape or the conveyance capacity of the storm water drainage system. The Federal Emergency Management Agency (FEMA) delineates regional flooding hazards as part of the National Flood Insurance Program. FEMA identifies flood hazard risks through its Flood Insurance Rate Map (FIRM) program. Higher flood risk zones are called Special Flood Hazard Areas; these areas have a 1 percent chance or greater of flooding in any given year (also called the 100-year flood). Figure 4.8-2 shows the portions of the planning area that are located within the 100-year and 500-year FEMA designated flood hazard zones.

Figure 4.8-2 Morro Bay FEMA Flood Zones



Additional flood hazards are posed by tsunamis and seiches. A tsunami is a wave generated by the sudden displacement of a large amount of water. Tsunamis can be triggered by earthquakes, volcanic eruptions, or similar events that occur under the water or the shore. Impacts of tsunamis can be both immediate and long-term. Seiches are a related hazard that can occur when a sudden displacement event or very strong winds happen in an enclosed or semi-enclosed body of water such as a lake or bay (Appendix B). While tsunamis are relatively rare, they pose risks to the entire waterfront commercial area and other low-lying areas of the city. These risks are generally greater in the northern portion of Morro Bay, which is directly exposed to the ocean and is not protected by the bay and sandspit. Figure 4.8-3 shows the potential tsunami inundation zone in Morro Bay. Some residential neighborhoods in northern Morro Bay near Beachcomber Street lie within the tsunami inundation zone.

e. Regulatory Setting

Federal

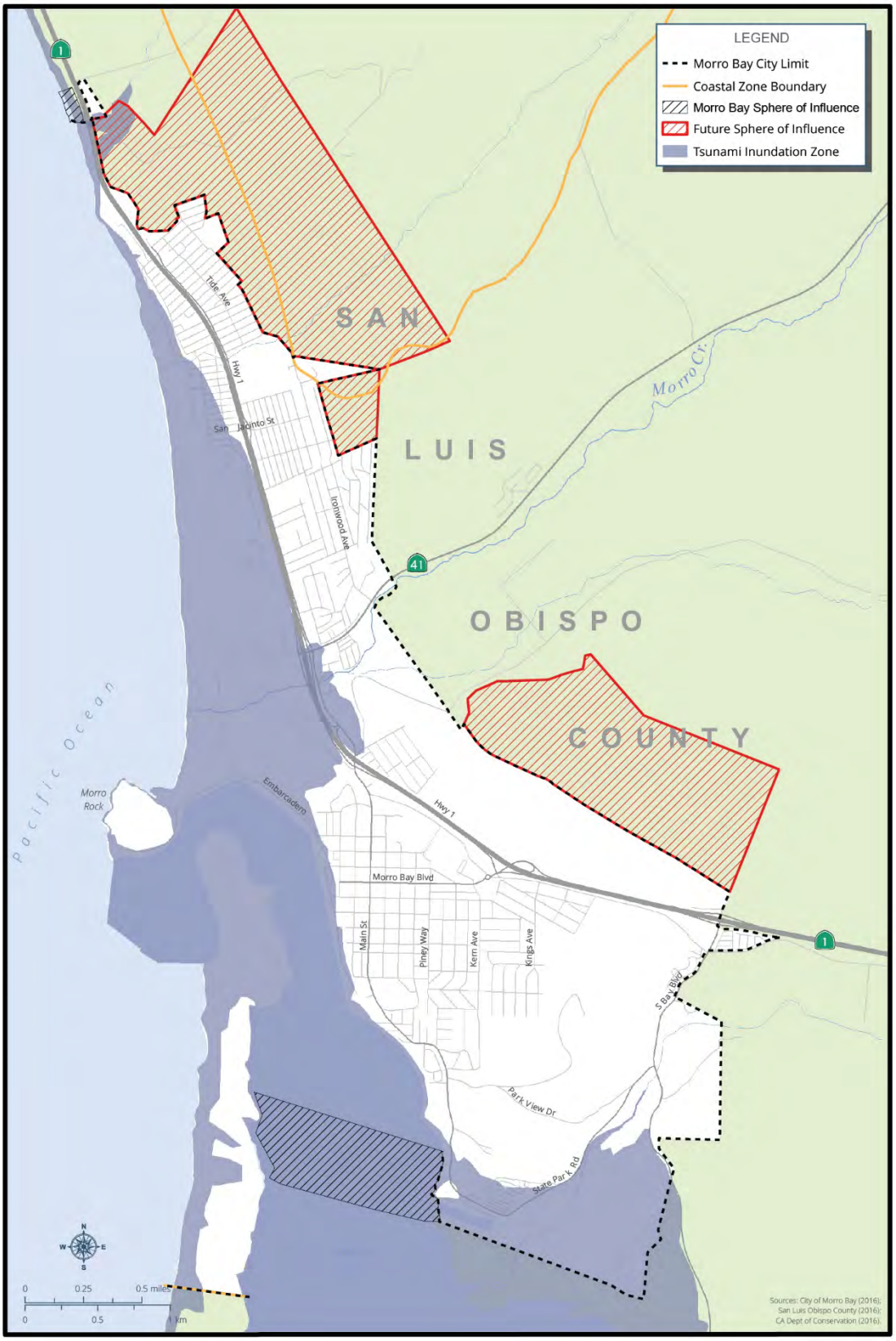
Clean Water Act

The federal Clean Water Act (CWA), enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the United States and forms the basis for several State and local laws throughout the country. The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States. The CWA gave the U.S. Environmental Protection Agency the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the federal level, the CWA is administered by the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. At the state and regional levels in California, the CWA is administered and enforced by the SWRCB and the nine RWQCBs.

Clean Water Act Section 401

Under Section 401 of the CWA, the RWQCBs have regulatory authority over actions in waters of the United States and/or the State of California through the issuance of water quality certifications, which are issued in conjunction with any federal permit (e.g., permits issued by the U.S. Army Corps of Engineers under Section 404 of the CWA, described below). Section 401 of the CWA provides the SWRCB and the RWQCBs with the regulatory authority to waive, certify, or deny any proposed activity that could result in a discharge to surface waters of the State. To waive or certify an activity, these agencies must find that the proposed discharge would comply with State water quality standards, including those protecting beneficial uses and water quality. If these agencies deny the proposed activity, the federal permit cannot be issued. This water quality certification is generally required for projects involving the discharge of dredge or fill material to wetlands or other bodies.

Figure 4.8-3 Tsunami Inundation Zone



Clean Water Act Section 402

Section 402 of the CWA requires that all construction sites on an acre or greater of land, as well as municipal, industrial and commercial facilities discharging wastewater or stormwater directly from a point source (e.g., pipe, ditch, or channel) into a surface water of the United States must obtain permission under the National Pollutant Discharge Elimination System (NPDES) permit. All NPDES permits are written to ensure that the surface water receiving discharges will achieve specified water quality standards.

According to federal regulations, NPDES permit coverage for stormwater discharges associated with construction activity can be obtained through individual state permits or general permits. Individual permitting involves the submittal of specific data on a single construction project to the appropriate permitting agency that will issue a site-specific NPDES permit to the project. NPDES coverage under a general permit involves the submittal of a Notice of Intent by the regulated construction project that they intend to comply with a general permit to be developed by U.S. Environmental Protection Agency or a state with delegated permitting authority. In California, the NPDES program is administered by the SWRCB through the nine RWQCBs. Further discussion of the NPDES program and permits in California relevant to the General Plan and LCP Update planning area is provided in discussion of State regulations, below.

Clean Water Act Section 404

Under Section 404 of the CWA, proposed discharges of dredged or fill material into waters of the United States require U.S. Army Corps of Engineers authorization. Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands (with the exception of isolated wetlands). The U.S. Army Corps of Engineers identifies wetlands using a multi-parameter approach, which requires positive wetland indicators in three distinct environmental categories: hydrology, soils, and vegetation. According to the *Corps of Engineers Wetlands Delineation Manual* (1987), except in certain situations, all three parameters must be satisfied for an area to be considered a jurisdictional wetland. The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008) is also used when conducting jurisdictional wetland determinations in areas identified within the boundaries of the arid west, such as the Coachella Valley.

When an application for a Section 404 permit is made, the Applicant must show it has:

- Taken steps to avoid impacts to wetlands or waters of the U.S. where practicable;
- Minimized unavoidable impacts on waters of the U.S. and wetlands; and
- Provided mitigation for unavoidable impacts.

Drinking Water Regulations

The federal Safe Drinking Water Act was enacted in 1974 and allows the U.S. Environmental Protection Agency to promulgate national primary drinking water standards specifying Maximum Contaminants Levels for each contaminant present in a public water system with an adverse effect on human health. Primary Maximum Contaminants Levels have been established for approximately 90 contaminants in drinking water. The U.S. Environmental Protection Agency also adopts secondary Maximum Contaminants Levels as non-enforceable guidelines for contaminants that may cause cosmetic or aesthetic effects. States have the discretion to adopt them as enforceable standards. U.S. Environmental Protection Agency has delegated to the California Department of Public Health the responsibility for administering California's drinking-water program. In 1976, two

years after the federal Safe Drinking Water Act was passed, California adopted its own safe drinking water act (see below).

National Pollutant Discharge Elimination System Program

CWA Section 402 establishes the NPDES permit program, which sets nationwide permitting requirements for discharging pollutants into waterways. The limits vary by category of industry and based on a level of treatment that is achievable using the best available technology. CWA Section 402 prohibits the discharge of pollutants into waters of the United States from any point source without an NPDES permit. To regulate storm water (non-point source) discharges, the EPA developed a two-phased NPDES permit program, commonly referred to as Phase I and Phase II. The Phase I program for Municipal Sanitary Storm Sewer Systems (MS4s) requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a stormwater management program as a means to control polluted discharges from these MS4s. Stormwater discharges from MS4s in urbanized areas are a concern because of the high concentration of pollutants found in these discharges. The NPDES Phase II permit program also requires the development and implementation of stormwater management plans to reduce such discharges. The Phase II program is based on the use of federally enforceable NPDES permits. The Phase II program encourages the use of general permits; provides flexibility for regulated operators to determine the most appropriate stormwater controls; allows for the recognition and inclusion of existing NPDES and non-NPDES stormwater programs in Phase II permits; includes public education and participation efforts as primary elements of the small MS4 program; attempts to facilitate and promote watershed planning and to implement the stormwater program on a watershed basis; and works toward a unified and comprehensive NPDES stormwater program with Phase I of the program.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a program administered by FEMA to provide subsidized flood insurance for property owners in communities. The NFIP established regulations that limit development in flood-prone areas. The boundaries of flood-prone areas are demined by FEMA's Flood Insurance Rates Maps, which provide flood information and identify the flood hazard in the community. In certain high-risk areas, federally regulated or insured lenders require property owners to have flood insurance before issuing a mortgage.

Executive Order 11988

Executive Order (EO) 11988 (1977) addresses floodplain issues related to public safety, conservation, and economics. It requires federal agencies that construct, permit, or fund project located in a flood plain to avoid development that is generally incompatible with the floodplain of would otherwise have adverse effects on flood risks. Development s to which EP 19988 applies should be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values. Federal agencies are required to take floodplain management into account when creating or reviewing land use and water plans.

State

California Department of Water Resources Bulletin 118

The California DWR's Bulletin 118 is the State's official compendium on groundwater, and it defines the boundaries and describes the hydrologic characteristics of California's groundwater basins. The

DWR periodically updates Bulletin 118, which includes revising the basin boundaries as applicable. An interim update of Bulletin 118 occurred in 2003 and again in 2016 (DWR 2018).

National Pollutant Discharge Elimination System Municipal Permits

The regional boards implement the municipal stormwater NPDES permit program. The state issues area-wide permits for urban areas that are considered sources of pollutants or contribute to water quality standard violations. Regardless of population, the area-wide permits cover all municipalities within the defined urban area. The main goal of the general permit is to protect water quality from the impacts of stormwater runoff from small MS4s. The intent is that stormwater quality impacts will be considered in all aspects of a municipality's activities and that multiple departments within the municipality will work together to implement stormwater best management practices (BMPs). Many activities that a municipality already does can be recognized as a benefit to stormwater or can be modified to add stormwater quality benefits. The general permit states that the permittee shall maintain, implement, and enforce an effective Stormwater Management Plan (SWMP) and develop adequate legal authority to implement and enforce the SWMP.

In February 2008, the Central Coast RWQCB sent a letter notifying the City of Morro Bay of the new enrollment process for the NPDES permit. This letter sets forth the RWQCB's expectations for the SWMP in order to be found in compliance with the general permit. The letter stated that the SWMP must include additional control measures including six minimum control measures: maximize infiltration of clean stormwater, and minimize runoff volume and rate; protect riparian areas, wetlands, and their buffer zones; minimize pollutant loading; and provide long-term watershed protection. In order to achieve the maximum extent practicable standard, the City has incorporated each of these conditions into the six minimum control measures.

California Coastal Act

The California Coastal Act of 1976 (Coastal Act) and the California Coastal Commission, the state's coastal protection and planning agency, were established by voter initiative in 1972 to plan for and regulate new development, and to protect public access to and along the shoreline. The Coastal Act considers water quality and water-related public safety concerns as issues of public importance. To provide maximum public access to the coast and public recreation areas, the Coastal Act directs each local government located within the coastal zone to prepare a Local Coastal Program consistent with Section 30501 of the Coastal Act, in consultation with the Coastal Commission and with public participation.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, the SWRCB has the primary authority over state water rights and the water quality policy. The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the nine RWQCBs conduct planning, permitting, and enforcement activities. The RWQCBs also regulate water quality under this act through the regulatory standards and objectives set forth in Water Quality Control Plans (also referred to as Basin Plans) prepared for each region.

The planning area is located within the jurisdiction of the Central Coast RWQCB (Region 3). The most current version of the Central Coast RWQCB's Basin Plan was adopted in 2016. The Basin Plan has five major components: 1) identifies the waters of the region, including the Monterey Bay; 2) designates beneficial uses of those waters; 3) establishes water quality objectives for the protection of those uses; 4) prescribes an implementation plan; and 5) establishes a monitoring and

surveillance program to assess implementation efforts. Water quality objectives of the Basin Plan are incorporated into individual NPDES permits authorized by the Central Coast RWQCB.

California Ocean Plan

The Water Quality Control Plan for Ocean Waters of California (or Ocean Plan) (State Water Resources Control Board, 2015) establishes water quality objectives and beneficial uses for waters of the Pacific Ocean adjacent to the California Coast outside of estuaries, coastal lagoons, and enclosed bays. The Ocean Plan establishes effluent quality requirements and management principles for specific waste discharges. The water quality requirements and objectives of the Ocean Plan are incorporated into NPDES permits for ocean discharges, such as permit for discharge of treated wastewater from the Morro Bay – Cayucos Sanitary District Wastewater Treatment Plant (WWTP) to Morro Bay and the Pacific Ocean.

California Safe Drinking Water Act

The U.S. Environmental Protection Agency has delegated to the California Department of Public Health the responsibility for administering California's drinking-water program. In 1976, two years after the federal Safe Drinking Water Act was passed, California adopted its own safe drinking water act (contained in the Health and Safety Code) and adopted implementing regulations (contained in Title 22 California Code of Regulations). California's program sets drinking water standards that are at least as stringent as the federal standards. Each community water system also must monitor for a specified list of contaminants, and the monitoring results must be reported to the state. Responsibility for the state's Drinking Water Program was transferred from the Department of Public Health to the Division of Drinking Water, which is a division of the SWRCB that was created in July 2014.

California Drainage Law, Government Code 65302

Government Code Section 65302(a) requires cities and counties to review the Land Use, Conservation, and Safety elements of the general plan "for the consideration of flood hazards, flooding, and floodplains" to address flood risks. The code also requires cities and counties to annually review the land use element within "those areas covered by the plan that are subject to flooding identified by floodplain mapping prepared by FEMA or the California DWR."

Regional and Local

Central Coast RWQCB Post-Construction Requirements

In July 2013, the Central Coast RWQCB adopted Resolution No. R3-2013-0032, which prescribes new Post-Construction Requirements for projects that create or replace 2,500 square feet or more of impervious area and receive their first discretionary approval for design elements after March 2014. The primary objective of these post-construction requirements is to ensure that the project permittee is reducing pollutant discharges to the maximum extent practicable and preventing stormwater discharges from causing or contributing to a violation of receiving water quality standards in all applicable development projects that require approvals and/or permits. These post-construction requirements complement the MS4 General Permit for the storm drain system because post-construction runoff from project sites in the General Plan and LCP Update area would generally be captured in the storm drain system. Table 4.8-2 summarizes the post-construction requirements for different categories of projects.

Table 4.8-2 Central Coast RWQCB Post-Construction Requirements for Stormwater

Project Category	Performance Requirements
Tier 1 Projects: Projects that create or replace 2,500 square feet or more of impervious surface	**Implement One or More Low Impact Design Measures:** -Limit disturbance of natural drainage features; -Limit clearing, grading, and soil compaction; -Minimize impervious surfaces; -Minimize runoff by dispersing runoff to landscape or using permeable pavements
Tier 2 Projects: Projects that create or replace 5,000 square feet or more net impervious surface	**Tier 1 Requirements, Plus:** Treat runoff generated by the 85th percentile 24-hour storm event with an approved and appropriately sized low impact development treatment system prior to discharge from the site
Tier 3 Projects: Projects that create or replace 15,000 square feet or more of impervious surface	**Tier 2 Requirements, Plus:** Prevent offsite discharge from events up to the 95th percentile rainfall event using stormwater control measures
Tier 4 Projects: Projects that create or replace 22,500 square feet or more of impervious surface	**Tier 3 Requirements, Plus:** Control peak flows to not exceed pre-project flows for the 2-year through 10-year events

Source: Resolution No. R3-2013-0032, adopted by Central Coast RWQCB in July 2013

Wastewater treatment in the General Plan and LCP Update planning area is provided by the WWTP, jointly owned and managed by the City of Morro Bay and the Cayucos Sanitary District (CSD). The City has evaluated options for reconstruction and expansion of the wastewater treatment plant for a number of years, and approved a Coastal Development Permit (CDP) for a site on South Bay Boulevard and State Route (SR) 1 which is currently under construction.

OneWater Morro Bay Plan

The City's OneWater Morro Bay Plan (2018) serves as a foundational document and source of information for Water Supply Assessments (SB 610) and Written Verifications of Water Supply (SB 221). The OneWater Morro Bay Plan ensures the City as a water provider has adequate water supplies available or planned infrastructure improvements to meet future demand in the face of diminishing water resources (Appendix B).

Morro Bay Municipal Code

Chapter 13.12 of the Morro Bay Municipal Code governs the connection, permitting, and design of new sewers as well as quality of sewer and stormwater discharge; grease, oil, and sand interceptors for construction; and both commercial and residential facility operations. It also identifies sewer charges and discharge fees. Chapter 14.48 covers building regulations, including illicit discharge and stormwater management control. It identifies the responsibilities of the discharger, illegal discharges, exceptions, and requirements to eliminate illegal discharges and remediate discharges.

Morro Bay Stormwater Management Plan

The Morro Bay SWMP identifies key BMPs of the NPDES permit (NPDES General Permit Order No. 2003-0005-DWQ). It outlines implementation tasks and additional continuing tasks for the 10 categories as outlined under Municipal Stormwater Permit Program, above.

Morro Bay Stormwater Management Guidance Manual for Low Impact Development and Post-Construction Requirements (and EZ Manual)

The City of Morro Bay is required by the Central Coast RWQCB to implement hydromodification criteria and low impact development (LID). As a site is developed, the site becomes less permeable and therefore less water can infiltrate back into the ground. LID techniques attempt to mimic the natural site hydrology before development in order to protect water quality and control runoff flows in new and significant redevelopment projects. The City participated in a joint effort with other municipalities and agencies on the Central Coast to develop hydromodification criteria for long-term watershed protection. The results of that joint effort included the preparation of the *Stormwater Management Guidance Manual for Low Impact Development & Post-Construction Requirements* (known as the *EZ Manual*). Two versions of the EZ Manual are available. The condensed manual identifies LID practices for individual single-family homes. The main EZ Manual is used for all other projects.

Morro Bay National Estuary Program Comprehensive Conservation and Management Plan

The Comprehensive Conservation and Management Plan (CCMP) defines the priority issues facing the health of the Morro Bay Estuary and Watershed and presents action plans to effectively address those issues. The CCMP is the guiding document for the NEP. The NEP has four watershed goals:

- Water quality protection and enhancement
- Ecosystem restoration and conservation
- Public education, outreach, and stewardship
- Fostering collaboration

These issues were identified through grassroots public participation, scientific study, and more than a decade of conservation and restoration experience. The priority issues include: accelerated sedimentation, bacterial contamination, elevated nutrient levels, and toxic pollutants, scarce freshwater resources, preserving biodiversity, and environmentally balanced uses. The CCMP has a five-year implementation period. The CCMP includes 61 action plans that the NEP and its partners used to address the threats to the estuary. All the action plans have been initiated. Some have been fully completed, and a few were found to be ineffective and have been discontinued. Since the first CCMP in 2001, new issues, notably the effects of climate change, have been incorporated into action plans.

4.8.2. Impact Analysis

a. Methodology

This section describes the potential environmental impacts of implementation of the General Plan and LCP Update associated with hydrology and water quality. The impact analysis is based on an assessment of baseline conditions for the city, including climate, topography, watersheds and surface waters, groundwater, and floodplains, as described above under Section 4.8.1, *Setting*. This analysis identifies potential impacts based on the predicted interaction between the affected environment and construction, operation, and maintenance activities related to the predicted development that would occur under the General Plan and LCP Update.

b. Significance Thresholds

The following thresholds of significance are based on Appendix G to the *CEQA Guidelines*. For purposes of this EIR, implementation of the General Plan and LCP Update may have a significant adverse impact if it would do any of the following:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious pavements, in a manner which would:
   a. Result in substantial erosion or siltation on- or off-site
   b. Substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site
   c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
   d. Impede or redirect flows
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; and/or
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?
Threshold 5:	Would the project conflict with or obstruct implementation of a water quality control plan?

Impact HWQ-1 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD RESULT IN AN INCREASE IN POLLUTANTS IN STORMWATER AND WASTEWATER, AND ALTER DRAINAGE PATTERNS. COMPLIANCE WITH NPDES PERMIT REQUIREMENTS, MORRO BAY MUNICIPAL CODE REQUIREMENTS, AND GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES WOULD PREVENT SUBSTANTIAL EROSION AND SILTATION, AND DISCHARGES OF POLLUTANTS, INCLUDING POLLUTION ASSOCIATED WITH DRAINAGE, EROSION, AND STORMWATER, AND MINIMIZE ADVERSE EFFECTS ON WATER QUALITY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Construction

Construction activities facilitated by the General Plan and LCP Update could include road improvements and realignments, installation and realignment of utilities, demolition of existing structures for replacement, new development, and the potential replacement and/or improvement of drainage facilities. Construction activity could result in the alteration of existing drainage patterns and soil erosion due to earth-moving activities such as stockpiling, excavation and trenching for foundations and utilities, dredging, paving, soil compaction and moving, cut and fill activities, and

grading. Disturbed soils would be susceptible to erosion from wind and rain, resulting in sediment transport via stormwater runoff from the construction sites. The types of pollutants contained in runoff from construction sites would be typical of urban and suburban areas, and may include sediments and contaminants such as oils, fuels, paints, and solvents. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to downstream drainages and ultimately into collecting waterways, contributing to degradation of water quality.

Potential water quality impacts would be specific to individual construction locations. Local topography, the amount of soil disturbance, the duration that disturbed soil would be exposed, the amount of rainfall and wind that would occur during construction, and the proximity of the nearest water body all affect the potential for water quality degradation during construction.

Individual construction activities that disturb one or more acres would be subject to the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2012-0006-DWQ (Construction General Permit). Permit conditions require development of a stormwater pollution prevention plan (SWPPP), which describes the site, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of construction sediment and erosion control measures, maintenance responsibilities, and non-storm water management controls. Inspection of construction sites before and after storms is also required to identify storm water discharge from the construction activity and to identify and implement erosion controls, where necessary. Compliance with the Construction General Permit is reinforced through the Morro Bay Municipal Code (Title 14, Chapter 14.48), the City's Stormwater Management Program, and adherence to the Central Coast RWQCB Basin Plan. The water quality objectives of the Basin Plan are incorporated into individual NPDES permits authorized by the Central Coast RWQCB. Therefore, the project would not conflict with or obstruct implementation of a water quality control plan. Pursuant to the Morro Bay Municipal Code, all persons undertaking construction activities are required to implement appropriate BMPs as measures for post-construction stormwater. Development or redevelopment projects that may require implementation of BMPs are required to submit a maintenance plan or manufacturers maintenance guide for those devices as part of project submittal. Projects that result in the creation, addition, or replacement of two thousand five hundred feet of impervious surface are required to comply with the City's stormwater control section of engineering standards.

In 2014, the City developed a stormwater management guidance document that outlines the procedure for the City's fulfillment of the NPDES Phase II Small MS4 General Permit Order No. 2013-0001-DWQ. As part of the Permit the City is required to incorporate construction site storm water runoff control elements into the Stormwater Management Program. This includes the development and implementation of a construction outreach and education strategy that includes enforceable ordinance requirements for erosion and sediment control, soil stabilization, dewatering, source controls, pollution prevention measures and prohibited discharges.

In addition, the City engineer or designee has the authority to inspect erosion and sediment control measures and facilities associated with projects requiring a City permit. The City engineer or designee is authorized to issue a notice of violation and/or stop work order for violations of the City's grading, erosion control, and stormwater discharge requirements. Likewise, the Central Coast RWQCB or its designee may conduct periodic or routine monitoring of construction BMPs and erosion control measures implemented pursuant to the SWPPP required under the Construction General Permit at project sites.

Compliance with the regulations and policies discussed above would reduce the risk of water degradation within the city from soil erosion and other pollutants related to construction activities. Because violations of water quality standards would be minimized, impacts to water quality from construction activities facilitated by the General Plan and LCP Update would be less than significant.

Operation

Stormwater

Development facilitated by the General Plan and LCP Update would result in long-term alterations to drainage patterns in the planning area, such as changes in ground surface permeability due to new paving, and changes in topography due to grading and excavation. If uncontrolled, operation of future development facilitated by the General Plan and LCP Update could result in the addition of sediment and silt, and contaminants such as oil, grease, metals, and landscaping chemicals (pesticides, herbicides, fertilizers, etc.) into the City's stormwater drainage system, and ultimately untreated discharge into the Pacific Ocean and Morro Bay. Such a discharge could be a potential violation of MS4 General Permit, depending on the pollutant and quantity discharged.

As described in Section 4.8.1(e), *Regulatory Setting*, the City operates its storm drain system under the NPDES General Permit for Storm Water Discharges from small MS4s, Order No. 2013-0001-DWQ (MS4 General Permit). The purpose of this permit is to implement and enforce BMPs to reduce the discharge of pollutants from municipal separate storm sewer systems, such as the City's storm drain system. To ensure compliance with the permit requirements and conditions of the MS4 General Permit, Morro Bay Municipal Code Section 14.48.010 outlines regulations regarding illicit discharge and stormwater management control in the City's building regulations. Morro Bay Municipal Code Section 14.480.080 states that no person shall discharge or cause to be discharged into the storm drain system any materials that cause or contribute to violation of applicable water quality standards, other than stormwater, to the maximum extent practicable. Morro Bay Municipal Code Sections 14.48.140 and 14.480.150 require BMPs during project construction or as measures for post-construction stormwater control, including maintenance to ensure proper operation. Morro Bay Municipal Code Section 13.12.120 lists prohibited discharges into the public sewer system.

Post-construction requirements for stormwater management were adopted by the Central Coast RWQCB in 2014. These requirements would be applicable to development projects that create 2,500 square feet or more of impervious surface. Post-construction requirements include low impact design measures, treating runoff before discharge from the project site, and prevention of off-site discharge up to the 95th percentile rainfall event, and controlling off-site discharge so that peak flows do not exceed pre-existing flows for the 2-year and 10-year event. The post-construction requirements also require routine maintenance of permanent BMPs intended to protect water quality and prevent discharges of pollutants to the municipal stormwater system. Compliance with these requirements would also minimize erosion and siltation that could adversely affect water quality in the planning area.

Wastewater Discharge

In additional to stormwater runoff, polluted wastewater could be discharged by development facilitated by the General Plan and LCP Update. In general, new development and redevelopment projects would be required to discharge wastewater to existing sanitary sewer systems. The Morro Bay Public Works Department co-operates the City's sewer system and WWTP through a Joint Powers Authority (JPA) with the CSD. Wastewater is conveyed through a main line to the WWTP

located on the Atascadero Road in Morro Bay. The CSD currently serves a population of approximately 13,300 people and has an average daily flow of 1.089 million gallons per day (Morro Bay 2018b). The WWTP is outdated and no longer has adequate capacity, which results in primary-treated sewage being discharged into the ocean at an estimated million gallon per day (Appendix B). The City has approved a CDP for the WWTP replacement which is currently under construction. Required compliance with applicable CWA requirements would ensure that wastewater discharged to the sewer system and CSD are properly and effectively treated to meet or exceed discharge requirements of the NPDES permit.

The replacement of the WWTP is part of a larger set of ongoing projects identified in the City's Sewer System Management Plan (SSMP). Additional improvement projects identified in the SSMP include ongoing storm drain improvements and ongoing maintenance and repair of sewer pipelines and lift pumps (Appendix B). Current planning efforts for developing a new WRF to replace the existing WWTP are also discussed under Impact U-2 in Section 4.14, *Utilities*.

Sea Level Rise

As discussed in Section 4.6, *Greenhouse Gas Emissions*, climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. In addition to compliance with mandatory CWA requirements (NPDES Construction General Permit and MS4 General Permit), Morro Bay Municipal Code requirements, and the Central Coast RWQCB's post-construction requirements for stormwater management, implementation of the following General Plan and LCP Update goals and policies would minimize erosion and siltation, prevent substantial discharges of contaminated stormwater to the municipal storm drain system or surface waters, reduce the potential for violations of water quality standards or waste discharge requirements, and minimize potential flooding impacts from sea level rise:

Goal C-7 Morro Bay water is safe, available, and used in an environmentally responsible manner.

Policy C-7.5 **New Development and Reuse Projects.** Manage new development and reuse projects and existing land uses to mitigate impacts and/or facilitate improvements to the City's water systems.

Policy C-7.13 **Drainage Technologies.** Require that new development projects employ innovative and efficient drainage technologies that comply with federal and state water quality requirements and reduce runoff and water quality impacts to downstream environments.

Policy C-7.14 **Pollutant Runoff.** Reduce pollutants in runoff from agriculture and new development by requiring the use of the most effective best management practices currently available. All runoff shall be filtered and treated to remove expected pollutants prior to being directed to infiltration areas and/or stormwater systems. Where runoff cannot be adequately accommodated on-site through on-site systems, any excess runoff shall be conveyed inland in a nonerosive manner. Also encourage green infrastructure on designated "Green Streets" where stormwater and runoff would be managed, captured and cleansed in public rights-of-way. Main Street should be studied for potential as a Green Street.

Policy C-7.15 **Water Quality.** To reduce the potential for degradation or impairment of water quality, the City shall continue to investigate and implement new measures to reduce potential pollutants in stormwater and irrigation runoff and require the following:

- To the maximum extent feasible, development shall include specific measures to help reduce potential pollutants and water quality impairment, including controlling the disposal of chemicals and hazardous materials, controlling the use of pesticides and herbicides, maintaining existing stormwater capture programs, applying low-impact development designs, and requiring on-site retention and/or reuse of runoff. The City shall utilize ecologically responsible pest control methods and integrated pest management to the extent feasible on public property and encourage this practice on private property.
- Drainage plans and erosion, sediment, and pollution control measures shall be required as conditions of approval of every application for new development that has the potential to impair water quality.
- Construction phase stormwater pollutant controls shall be required for development with the potential for water quality impairment, including erosion controls, sediment traps and filtering of off-site stormwater flows, capture of site-generated pollutant sources, street sweeping of dirt tracked off-site, litter control, post-construction monitoring, and other best management practices. Construction-phase water quality impacts shall be avoided by minimizing the disturbed area, phasing grading activities, implementing soil stabilization and pollution prevention measures, and preventing unnecessary soil compaction. Development with the potential for water quality impairment shall, at a minimum, be designed to meet National Pollutant Discharge Elimination System stormwater runoff requirements.
- Additionally, development shall be planned, sited, and designed in a manner that maintains or enhances on-site infiltration, reduces runoff, minimizes the transport of pollutants in runoff generated from the development, and recharges groundwater. Development shall ensure that runoff is appropriately collected, filtered, and treated by best management practices (BMPs) to minimize pollutant loading to the maximum degree feasible.

Policy C-7.16 **Developments of Water Quality Concern.** Developments of water quality concern, including gas stations/car washes, industrial development, and others that have a greater potential for adverse impacts to water quality and hydrology due to the extent of impervious surface area, type of land use, wastewater streams, and/or proximity to coastal waters, shall require additional and context-specific best management practices to protect and enhance water quality.

Policy C-7.17 **Impervious Surfaces.** Development shall minimize new impervious surfaces, especially impervious areas directly connected to water and marine resources,

and, where feasible, increase the area of pervious surfaces in redevelopment to reduce runoff.

Policy C-7.18 **Wastewater Marine Impacts.** Wastewater disposal systems which minimize or eliminate marine resource pollution, and which provide for reclamation of wastewater for reuse, shall be required. New development, including redeveloped structures, shall connect to the public wastewater treatment system.

Goal PS-3 Morro Bay is prepared for and responsive to the effects of sea level rise and other coastal hazards in both the short and longer term future.

Policy PS-3.8: **New Shoreline Protective Devices.** New shoreline protective device development (including replacement, augmentation, addition, and expansion associated with an existing device) shall only be allowed where required to protect existing structures (i.e., structures legally constructed prior to January 1, 1977, that have not been redeveloped since then) and coastal-dependent development in danger from erosion (i.e., when the development would be unsafe to use or occupy within two or three years). Such devices shall only be utilized if no other feasible, less environmentally damaging alternative, including removal or relocation away from such hazards, beach nourishment, nonstructural drainage and native landscape improvements, or other similar nonstructural options can be used to address erosion hazards. Such nonstructural options shall be used and prioritized wherever possible to protect coastal resources, including coastal habitats, public recreational uses, and public access to the coast.

Where such nonstructural options are not feasible in whole or in part, soft structural alternatives (sand bags, vegetation, etc.) shall be used and prioritized wherever possible before more significant shoreline protective devices are considered. Shoreline protective devices shall not be constructed to protect non-coastal-dependent development, development built on or after January 1, 1977 (including redeveloped structures), or where other measures/alternatives, including relocation, can adequately mitigate erosion hazards. All construction associated with shoreline protective devices and repair or maintenance or augmentation of existing protection devices shall be designed to eliminate or mitigate adverse impacts to coastal resources. The City shall only be involved financially with public shoreline protective devices.

Policy PS-3.10 **Shoreline Management Plan**. The City shall prepare a Shoreline Management Plan for approval by the Coastal Commission as an amendment to the Local Coastal Program. The plan shall function as a tool to help implement coastal protections, maximize public access, and protect coastal resources along the City's shoreline, including building upon the City's Adaptation Strategy Report. The plan shall be prepared in coordination with relevant local, regional, and/or state agencies for the purpose of protecting coastal resources, as well as ensuring the resilience of coastal public infrastructure. The plan shall conduct the following:

- Adaptation Triggers. Refining adaptation triggers for actions to address sea level rise impacts for different areas and assets in Morro Bay, including

monitoring beaches for sea level rise impacts such as erosion and changes in beach widths in order to identify trigger points for various adaptation strategies.

- Site Reuse. Considering appropriate uses for sites previously occupied by relocated assets, including parks, open space/natural areas, and other predominantly passive land uses.
- Transfer of Development Rights (TDR). Considering a TDR program to restrict development in areas that are vulnerable to sea level rise and allow the transfer of development rights to parcels with less vulnerability to hazards.
- Sea Level Rise Hazard Overlay Zone. Establishing a Sea Level Rise Hazard Overlay Zone (in the potential sea level rise hazard areas established in Figure PS-8) to address safety from flood and sea level rise related hazards, and recommend remedial actions. Establishing a program to inform owners of real estate in the Sea Level Rise Hazard Overlay Zone about coastal hazards or property vulnerabilities, including information about known current and potential future vulnerabilities to sea level rise, and disclosing permit conditions related to coastal hazards to prospective buyers prior to closing escrow.

The Shoreline Management Plan may be amended every five to ten years, as appropriate, by the City Council, and adopted by the Coastal Commission through the Local Coastal Program amendment process.

For all other areas outside of the Harbor, Marina, area immediately adjacent to the shoreline, and Working Waterfront Area, development shall be sited and designed in a manner consistent with the following policies.

Policy PS-3.14 **Floor Elevations in Flood-Prone Areas**. Require development in flood-prone areas in the city to include finished floor elevations two feet above the 100-year flood elevation.

Policy PS-3.15 **Storm Drain Capacity**. Maintain and increase local storm drain capacity to meet 100-year or greater flood protection requirements to protect residents and businesses from flood risks.

Policy PS-3.16 **Ponding**. Identify and manage areas that experience ponding during heavy rain events to mitigate future impacts of flooding.

Policy PS-3.17 **Resilient Buildings**. Require new and significantly renovated buildings and all public buildings to be designed and constructed to withstand severe storms, flooding, and other impacts that are expected to result from a changing climate.

Compliance with NPDES permits requirements, Morro Bay Municipal Code requirements, and General Plan and LCP Update goals and policies would minimize erosion and siltation, reduce the risk of discharge of pollutants to avoid violations of water quality standards or waste discharge requirements, and minimize potential impacts of sea level rise. Implementation of these General Plan and LCP Update goals and policies would also ensure that the runoff from development envisioned in the General Plan and LCP update would not exceed the capacity of the City's existing

and future storm drain system and minimize potential flooding impacts. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation would be required to address this impact. As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific measures.

Threshold 2:	Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
Threshold 5:	Would the project conflict with or obstruct implementation of a sustainable groundwater management plan?

Impact HWQ-2 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INCREMENTALLY INCREASE THE AMOUNT OF IMPERVIOUS SURFACE IN THE CITY, WHICH COULD REDUCE THE POTENTIAL FOR GROUNDWATER RECHARGE FROM INFILTRATION. COMPLIANCE WITH THE MORRO BAY MUNICIPAL CODE AND THE CENTRAL COAST RWQCB'S POST-CONSTRUCTION REQUIREMENTS FOR STORMWATER MANAGEMENT WOULD ENSURE THAT NEW IMPERVIOUS SURFACES WOULD NOT SUBSTANTIALLY INTERFERE WITH GROUNDWATER RECHARGE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Development facilitated by the General Plan and LCP Update would incrementally increase the amount of impervious surface within the City of Morro Bay, which could reduce the potential for groundwater recharge from infiltration. Compliance with the Morro Bay Municipal Code, as well as the Central Coast RWQCB post-construction requirements for stormwater management would maximize the on-site infiltration capacity for new development and redevelopment projects. This would reduce the quantity of stormwater runoff that enters the storm drainage system and discharges to the Pacific Ocean and Morro Bay, as opposed to infiltrating through the ground surface. Therefore, the incremental increase of impervious surface would not substantially interfere with groundwater recharge or redirect runoff such that it results in on- or off-site flooding. This impact would be less than significant.

The City has access to and water rights permits for two local groundwater basins: Morro and Chorro Basins. As discussed in Section 4.14, *Utilities*, the City has pumping rights to 1,723.5 acre-feet per year (AFY) from both basins. For the existing conditions of the City's groundwater supply, and the expected effects of groundwater demand from development facilitated by the General Plan and LCP Update, refer to Section 4.14, *Utilities*. Implementation of the General Plan and LCP Update would increase use of groundwater. However, the City evaluates their water supply in the OneWater Plan, and has determined that there is adequate water supply to serve buildout of the General Plan and LCP Update. Therefore, the project wouldn't decrease groundwater supply significantly, and would not conflict with a sustainable groundwater management plan.

Mitigation Measures

No mitigation measures are required.

Threshold 3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious pavements, in a manner which would: a. Result in substantial erosion or siltation on- or off-site; b. Substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site; c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or d. Impede or redirect flows.
Threshold 4:	Would the project risk release of pollutants due to project inundation in a flood hazard zone?

Impact HWQ-3 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD BE SUBJECT TO FLOOD HAZARDS AND COULD IMPEDE OR REDIRECT FLOOD FLOWS TO ADJACENT AREAS. COMPLIANCE WITH APPLICABLE PROVISIONS OF THE MORRO BAY MUNICIPAL CODE WOULD REQUIRE NEW DEVELOPMENT TO BE DESIGNED AND CONSTRUCTED SUCH THAT THE RISK AND DAMAGE OF FLOODING IS NOT EXACERBATED BY IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE. IMPACTS RELATED TO FLOODING AND FLOOD HAZARDS WOULD BE LESS THAN SIGNIFICANT.

As shown in Figure 4.8-2, portions of the planning area would be subject to a 100-year flood zone, including areas west of SR 1 and south of SR 41, and the southern portion of the planning area. Development in these areas could be subject to flood hazards and/or could impede or redirect flood flows to adjacent areas.

Compliance with applicable provisions of the Morro Bay Municipal Code would minimize the risk and exposure to flood hazards. Morro Bay Municipal Code Section 14.72.050 includes requirements and provisions for reducing losses from flooding, including construction standards to minimize flood risks associated with new development. Specific requirements and provisions for construction in flood-prone areas include:

- Restrict or prohibit uses which are dangerous to health, safety, and property due to water and erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels and natural protective barriers which help accommodate or channel floodwaters;
- Control filling, grading, dredging, and other development which may increase flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

Morro Bay Municipal Code Section 14.72.040 requires that a development permit be obtained before construction or development begins in a Flood Hazard Area as designated by the City. The

development permit must show plans that outline the flood characteristics and flood hazard reduction on the site, including elevation of the area in question, existing structures on site, utilities, grading, proposed fill, and location of the regulatory information. The application for a development permit is reviewed by the designated Floodplain Administrator, who determines whether the "site is reasonably safe from flooding" and whether development would adversely affect the carrying capacity of areas where base flood elevations have been determined.

Required compliance with applicable sections of the Morro Bay Municipal Code would ensure new structures would not impede or redirect flood flows within a 100-year flood hazard area, such that a flood hazard would be increased elsewhere. In addition, the following goals and policies in the Public Safety Element of the General Plan and LCP Update would minimize flood risk:

Goal PS-2 Development is protected from natural disasters and hazards to the greatest extent possible.

Policy PS-2.2 **New Development in High-Risk Areas.** Require new development to be located outside of areas subject to natural hazards from tsunami, geologic, flood, and wildfire conditions to the maximum feasible extent. If development must occur in such high-risk areas, including if development cannot be feasibly sited in a manner that avoids such areas entirely, ensure such development is sited, designed, and conditioned to minimize risks to life and property while mitigating the development's impacts to coastal resources, particularly to public recreational beach access. Development shall also ensure stability and structural integrity; shall not create nor contribute significantly to erosion, geologic instability, or destruction of the site; shall not substantially alter natural landforms; and shall not include shoreline protective devices.

Goal PS-3 Morro Bay is prepared for and responsive to the effects of sea level rise and other coastal hazards in both the short and longer term future.

Policy PS-3.15 **Storm Drain Capacity.** Maintain and increase local storm drain capacity to meet 100-year or greater flood protection requirements to protect residents and businesses from flood risks.

Implementation of these goals and policies and compliance with applicable laws and regulations, including flood hazard mitigation construction guidelines outlined in the Morro Bay Municipal Code, such that risk of loss, injury or death involving flooding in the planning area is not exacerbated by the General Plan and LCP Update. Therefore, impacts related to flooding and flood hazards would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold 4:	Would the project risk release of pollutants due to project inundation in a tsunami or seiche zone?

Impact HWQ-4 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE MAY OCCUR IN AREAS EXPOSED WITH POTENTIAL FOR INUNDATION BY SEICHE, TSUNAMI, AND/OR MUDFLOW. COMPLIANCE WITH APPLICABLE MUNICIPAL CODE REQUIREMENTS WOULD ENSURE DEVELOPMENT WITHIN AREAS SUBJECT TO TSUNAMI, SEICHE, AND MUDFLOW WOULD BE SITED, DESIGNED AND CONSTRUCTED SO AS TO NOT EXACERBATE RISKS TO LIFE AND PROPERTY. THE GENERAL PLAN AND LCP UPDATE WOULD NOT INCREASE EXPOSURE OF PEOPLE OR STRUCTURES TO SIGNIFICANT RISK OR LOSS, INJURY, OR DEATH INVOLVING INUNDATION BY SEICHE, TSUNAMI, OR MUDFLOW. THESE IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The majority of the City of Morro Bay is located within the coastal zone and adjacent to the Pacific Ocean. As shown in Figure 4.8-3, the western and southern portions of the planning area are subject to inundation by tsunami. Land uses in the tsunami inundation zone include coastal residential, public facilities, and mixed use areas along the Embarcadero. Tsunamis create a risk of coastal flooding, which is included on FEMA flood plain maps. Tsunamis are expected to continue to occur, although the risk of a serious tsunami remains low (Appendix B). As many of the areas outlined in the General Plan and LCP Update for future land use changes already have existing land uses that are susceptible to tsunami inundation, implementation of the General Plan and LCP Update would not substantially increase the number of people or structures exposed to significant risk or loss, injury or death involving inundation by tsunami.

According to the San Luis Obispo County Local Hazard Mitigation Plan, seiches may occur in any reservoir located in the County, and in Morro and San Luis Bays. However, these water-bodies are not large enough to generate seiches large enough to result in substantial damage or significant risk or loss, injury, or death (San Luis Obispo County 2014). Therefore, potential impacts associated with tsunamis and seiches in Morro Bay would be less than significant.

Development under the General Plan and LCP Update would result in additional residential and non-residential development in the city. Additional residents and employees could be potentially exposed to the effects of mudflow as a result of heavy rainfall. Structures built on steep slopes could be exposed to risk of mudflow. Morro Bay Municipal Code Section 14.720.010 would require proposed grading, excavation, new construction and substantial improvements associated with these developments to be adequately designed and protected against mudslide and flood damage. Compliance with applicable Morro Bay Municipal Code requirements, as well existing laws and regulations including the California Building Code would reduce the potential for loss, injury, or death from mudflow by requiring that foundations and structures are built to withstand geotechnical hazards such as landslide and mudflow.

In addition to compliance with mandatory California Building Code requirements, implementation of the following General Plan and LCP Update goal and associated policies would help to ensure proper siting and construction of new development in areas subject to seiche, tsunami, or mudflow, and would minimize the risk of loss, injury, or death from such hazards:

Goal PS-2 Development is protected from natural disasters and hazards to the greatest extent possible.

Policy PS-2.2 New Development in High-Risk Areas. Require new development to be located outside of areas subject to natural hazards from tsunami, geologic, flood, and wildfire conditions to the maximum feasible extent. If development must occur

in such high-risk areas, including if development cannot be feasibly sited in a manner that avoids such areas entirely, ensure that such development is sited, designed, and conditioned to minimize risks to life and property while mitigating the development's impacts to coastal resources, particularly to public recreational beach access. Development shall also ensure stability and structural integrity; shall not create nor contribute significantly to erosion, geologic instability, or destruction of the site; shall not substantially alter natural landforms; and shall not include shoreline protective devices.

Policy PS-2.8 **Structural Stability**. Require new development to ensure structural stability while not creating or contributing to erosion or geologic instability or destruction of the site or surrounding area.

Policy PS-2.9 **New Development in High-Risk Areas**. Require that new development in areas subject to liquefaction and/or landslide hazards is located in a manner that will minimize risks to life and property.

Policy PS-2.10 **Building Retrofits**. Encourage building retrofits that improve resiliency to geologic and seismic hazards.

Policy PS-2.11 **New Development Proposals**. Require new development proposals in seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.

Policy PS-2.12 **Grading and Cut-and-Fill Operations**. Require new development to minimize grading and cut-and-fill operations.

Policy PS-2.13 **Additional Standards for Development Subject to Geologic and Seismic Hazards**. In addition to other hazard requirements that may apply, development in areas that are potentially subject to geologic hazards, (including Alquist-Priolo earthquake hazard zones and areas subject to landslides, liquefaction, steep slopes averaging greater than 30 percent, and unstable slopes regardless of steepness) shall comply with the seismic safety standards of the Alquist-Priolo Act (California Public Resources Code Sections 2621. et seq.) and all applicable seismic provisions and criteria in the most recent version of State and County codes; shall incorporate siting and design techniques to mitigate any such geologic hazards; and shall not create a hazard or diminish the stability of the area.

Implementation of these goals and policies would ensure that new development is properly designed in accordance with California Building Code requirements and is constructed such that exposure to loss, injury, or death from seiche, tsunami, or mudflow is not exacerbated as a result of the General Plan and LCP Update. Implementation of these goals and policies, in addition to compliance with applicable laws and regulations, would ensure that impacts associated with seiches, tsunamis, or mudflows would remain less than significant.

Mitigation Measures

No mitigation measures are required.

d. Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on hydrology and water quality throughout the cumulative impact analysis area and is cumulative in nature. Some types of hydrologic impacts are localized and not cumulative in nature. For example, affects to flood zones and exposure of people to a significant risk of loss, injury, or death involving flooding (including flooding as a result of the failure of a levee or dam), seiche, tsunami, or mudflow are typically independent and the determination as to whether they are adverse is specific to the project and location where they are created.

Some types of impacts to hydrology and water quality that may be additive in nature, and thus cumulative, include violation of water quality standards, interference with groundwater recharge, increased erosion, increased non-point source pollution, and increased runoff. Cumulative development would increase erosion and sedimentation resulting from grading and construction, as well as changes in drainage patterns which could degrade surface and ground water quality. Cumulative development would also increase the amount of impervious surfaces, potentially reducing groundwater recharge. In addition, new development would increase the generation of urban pollutants that may adversely affect water quality in the long term.

Development of individual projects in the Morro Bay Watershed (the cumulative impact area) would be required to comply with applicable water quality regulations, as discussed in Section 4.8.1(e), *Regulatory Setting*, and Impact HWQ-1 above. Compliance with these existing requirements would reduce impacts associated with pollutants discharged during construction and operation of project and adverse changes to water quality throughout the cumulative impact area. Therefore, cumulative impacts related to water quality would be less than significant.

As discussed in Impact HWQ-2, development of individual projects throughout the cumulative impact area would increase impervious surfaces and reduce groundwater recharge in the planning area, but compliance with applicable policies related to impervious surfaces would reduce impacts throughout the cumulative impact area. Similarly, as discussed in Impact HWQ-3 and Impact HWQ-4, compliance with applicable laws and regulations would minimize the potential for flooding from alteration to the drainage patterns, flood hazards, tsunamis, seiches, and mudflows. Therefore, cumulative impacts related to groundwater recharge, changing drainage patterns, and flooding would be less than significant.

4.9 Land Use and Planning

This section summarizes Morro Bay's land use characteristics, including the overall land use pattern as well as a more detailed analysis by major land use type, and analyzes existing plans and focus areas with development potential in order to determine the potential environmental effects of the proposed General Plan and LCP Update related to Land Use and Planning. This section also analyzes the General Plan and LCP Update's consistency with applicable local, regional, and State land use policies. Consistency with the San Luis Obispo County Air Pollution Control District (SLOAPCD) 2001 Clean Air Plan (CAP) for the San Luis Obispo County region is discussed in Section 4.2, *Air Quality*. Land use compatibility conflicts associated with growth facilitated by the General Plan and LCP Update are discussed in other sections of this EIR, including Sections 4.1, *Aesthetics*, 4.2, *Air Quality*, 4.7, *Hazards and Hazardous Materials*, and 4.10, *Noise*.

4.9.1. Setting

a. Existing Land Use Patterns

Various buildings and land uses in the General Plan and LCP Update planning area existed before the adoption of the current General Plan Land Use Element. Therefore, some existing "on-the-ground" land uses do not match the uses identified in the existing General Plan. Existing on-the-ground land use data in the planning area is maintained by the San Luis Obispo Council of Governments (SLOCOG). SLOCOG land use data is collected and analyzed based on the designations in the San Luis Obispo County General Plan, which are categorized differently, but in a similar manner, to the existing Morro Bay General Plan land use designations. Existing on-the-ground land uses in the city limits using the SLOCOG designations are provided in Table 4.9-1.

Table 4.9-1 Morro Bay Existing On-The-Ground Land Use Distribution

Land Use Designation	Sum of Acres	Percent of Area
Single-Family Residential	605.5	14.0
Multiple-Family Residential	39.5	0.9
Downtown	31.3	0.7
Commercial Retail/Office	63.3	1.5
Commercial Service/Industrial	74.6	1.7
School	75.9	1.8
Major Public Facility	100.0	2.3
Public Facility/Public Land	26.5	0.6
Cultural Facility/Religious Facility/Event Center	19.4	0.5
Visitor-Serving	19.8	0.5
Community Park/Regional Park/Golf Course/Other Reception	388.1	9.0
Open Space Area/Conservation Area/Riparian Area	397.6	9.2
State Park/Beach	2,139.1	49.6
Undeveloped	54.0	1.3
Agriculture (Other)	216.8	5.0

Land Use Designation	Sum of Acres	Percent of Area
Agriculture (Grazing/Ranchland)	54.1	1.3
Road/Other	11.1	0.3
Total	**4,316.7**	**100.0**

Source: Community Baseline Assessment for the General Plan and LCP Update (Appendix B)

As shown in Table 4.9-1, approximately half of the land in the city limits is either a part of Morro Bay State Park or the beach, including Morro Rock Beach, the sandspit, Coleman Park Beach, Morro Strand State Beach, and an unnamed beach area, with additional parks and open space comprising another 18 percent of the city. Single-family and multifamily homes make up another 14 percent and less than one percent of the city, respectively. Combined agricultural uses represent approximately six percent of the land area in the city. Just over one percent of the land in the city is currently undeveloped and does not fall within any of the existing on-the-ground land use designations provided in Table 4.9-1. Figure 2-3 in Section 2, *Project Description*, shows the existing on-the-ground land uses in Morro Bay.

The General Plan and LCP Update planning area includes approximately 100 acres outside of the city limits but within Morro Bay's Sphere of Influence (SOI), consisting of part of the estuary and a small area on the northern beachfront. The City's SOI encompasses the city and the area outside of the city under County jurisdiction but indicates the city's probable future boundary and service area. Most of Morro Bay's SOI is part of the Morro Bay Estuary located just outside of the marina, which allows the City to more effectively permit dredging and other Estuary maintenance activities. The SOI also includes a small amount of land at the beachfront at the northern end of the city, west of State Route (SR) 1.

b. Existing Plans and Studies

Local

Local Coastal Program

In accordance with the California Coastal Act of 1976 (CCA), Morro Bay adopted its existing local coastal program (LCP) in 1984. As shown on Figure 2-3 in Section 2, *Project Description*, the majority of the city is located in the coastal zone, which defines and prioritizes coastal-dependent uses.

1988 City of Morro Bay General Plan

The Morro Bay General Plan was adopted by the City Council in 1988. The City is currently preparing an update to the General Plan, and this EIR is intended to review the comprehensive update of the City's General Plan and LCP, *Plan Morro Bay*. As such, the EIR identifies revised and refined goals, policies, and implementation programs as appropriate, which are designed to avoid or mitigate environmental impacts of the General Plan and LCP Update.

Proposed General Plan and LCP Update

The proposed General Plan and LCP Update would update and supersede the 1988 General Plan. It contains a description of 19 different land use designations proposed for the City of Morro Bay. The description of each land use designation includes allowed maximum density or intensity of development; and specific guidance on the intended physical character of future development,

including building placement on a lot, lot coverage, building frontage, streetscape character, and parking location and access. Table 2-3 in Section 2, *Project Description*, describes the 19 proposed land use designations.

A principal intention of the General Plan and LCP Update is to guide land use decisions within the planning area through the year 2040 while helping the community enhance and maintain its identity as a seaside community that values its charming, artistic town character, working waterfront, and healthy environment and lifestyle. The General Plan and LCP Update contains the following goals related to land use planning:

PROPOSED GENERAL PLAN AND LCP UPDATE LAND USE ELEMENT GOALS

Goal LU-1 The community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.

Goal LU-2 Land use patterns improve community health and resiliency.

Goal LU-3 Morro Bay grows in a manner that maintains community identity and well-being.

Goal LU-4 Coastal-dependent uses are prioritized within appropriate locations in the coastal zone.

Goal LU-5 Coastal priority uses are viable, protected, and contribute to the economy and character of Morro Bay.

Goal LU-6 Visitors to Morro Bay have access to a variety of lower-cost lodging options to meet their needs.

Goal LU-7 All residents and visitors have unimpeded and convenient access to the coast.

Goal LU-8 Morro Bay's downtown and waterfront areas are active and welcoming locations for shopping, recreation, and coastal services.

c. Regulatory Setting

State

General Plan Law (California Government Code Section 65300)

California Government Code Section 65300 regulates the substantive and topical requirements of general plans. State law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning." The California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private.

California Government Code Section 65301

Section 65301 of the California Government Code requires a general plan to address the geographic territory of the local jurisdiction and any other territory outside its boundaries that bears relation to the planning of the jurisdiction. The jurisdiction may exercise their own judgment in determining what areas outside of its boundaries to include in the planning area. The State of California General Plan Guidelines denotes that the planning area for a city should include (at minimum) all land within the city limits and all land within the city's SOI.

California Government Code Section 65860

In charter cities with a population of more than two million, counties, and general law cities, zoning provisions must be consistent with the general plan. Charter cities with a population of under two million are exempt from the zoning consistency requirement unless their charters provide otherwise. The City of Morro Bay is a general law city and is, therefore, required to have zoning consistency with its general plan.

California Coastal Act

The California Coastal Commission currently regulates coastal development in the State. Local municipalities such as the City of Morro Bay may elect to prepare their own LCPs and, once the LCP is certified, development control reverts to the local government. The California Coastal Commission also has the authority to approve the LCP and has the right to appeal development projects within the Coastal Zone Appeals Jurisdiction. Amendments to the City's land use plan (LUP) must also be approved by the California Coastal Commission.

A LCP consists of City land use plans and land use controls that implement the provisions of the CCA. The CCA (Public Resources Code Section 30000 et seq.) is intended to "protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources." All development in the coastal zone requires approval of a coastal development permit, which are issued by the California Coastal Commission, in compliance with the LCP.

The City of Morro Bay adopted its LCP in 1984. The LCP consists of the City's LUP, local implementation plan (LIP), Zoning Code, land use and zoning maps, and implementing actions. As a package, these documents implement the CCA at the local level in Morro Bay. The adopted and certified LCP forms the legal standard of review for issuance of Coastal Development Permits (CDP) within the city's coastal zone and is legally binding on the City. The LCP may be amended to stay up to date with state laws and to continue to reflect the vision of the community. The LUP applies to all areas of the city in the coastal zone. Any future development resulting from the General Plan and LCP Update would be subject to the requirements of the CCA, Morro Bay LCP, and the Zoning Code.

Cortese Knox Hertzberg Local Government Reorganization Act of 2000

The Cortese Knox Hertzberg Local Government Reorganization Act (CKH Act) established procedures for local agency changes of organization, including city incorporation, annexation to a city or special district, and consolidation of cities or special districts (Section 56000, et seq.). Local Agency Formation Commissions (LAFCos) have numerous powers under the CKH Act, but the most important are the power to act on local agency boundary changes and to adopt SOIs for local agencies. The law also states that in order to update a SOI, LAFCos are required to first conduct a review of the municipal services provided by the local agency. The CKH Act also requires LAFCos to update SOIs for every city and special district every five years. The original deadline was January 2006, five years following the CHK Act becoming State law. That deadline was extended two years to January 2008. Every SOI update must be accompanied by an update of the municipal services review (MSR). San Luis Obispo LAFCO completed a MSR for Morro Bay in August 2017. San Luis Obispo LAFCo has a goal to update SOIs every five years or as necessary. The next MSR for Morro Bay will occur whenever an amendment is considered.

Regional

San Luis Obispo Council of Governments 2014 Regional Transportation Plan/Sustainable Communities Strategy

The San Luis Obispo Council of Governments (SLOCOG) is required by State and federal law to prepare, update, and adopt a Regional Transportation Plan (RTP) every four years. Senate Bill (SB) 375, California's Sustainable Communities and Climate Protection Act, was enacted in 2008, requiring all RTPs to include a Sustainable Communities Strategy (SCS) that reduces greenhouse gas emissions from passenger vehicles and light-duty trucks. The most recent update to the RTP was adopted by SLOCOG in 2019. The 2019 RTP serves as the blueprint for the region's transportation system over the next 25 years. The 2019 RTP identifies active transportation projects, non-highway system projects, highway system projects, and a park and ride project in Morro Bay.

The 2019 RTP includes the following goals:

- Preserve the transportation system.
- Improve intermodal mobility and accessibility for all people.
- Support a vibrant economy.
- Improve public safety and security.
- Foster livable, healthy communities and promote social equity.
- Practice environmental stewardship.
- Practice financial stewardship.

Local

Zoning Code

The City of Morro Bay Zoning Code (Title 17 of the Morro Bay Municipal Code) is the primary tool used by the City to carry out the goals, objectives, and policies of the Morro Bay General Plan by classifying and regulating the uses of land and structures within the city, consistent with the General Plan. Zoning is the instrument that implements the land use designations of a general plan. In addition to establishing permitted uses, zoning may also establish development standards relating to issues such as intensity, setbacks, height, and parking. Projects submitted to the City for review and approval are generally evaluated for consistency with the zoning districts.

The City's Subdivision Ordinance, Title 16 of the Morro Bay Municipal Code, provides standards for the processing of subdivision requests, including new tract maps, parcel maps, and lot line adjustments. The Zoning Code describes various types of zoning districts and land use classifications, land use regulations, development standards, and environmental performance standards. The Zoning Code applies to all land uses and development within the City of Morro Bay. The purpose of the Zoning Code is "to implement the general plan and local coastal plan and to promote the growth of the city in an orderly manner; and to promote the public health, safety, peace, comfort and general welfare of the city by establishing regulations pertaining to uses of land and uses, location, height, bulk, size and types of buildings and open spaces around buildings in certain districts; providing for the administration and enforcement of such regulations and prescribing penalties for violations thereof" (Section 17.04.020).

As shown in Table 4.9-2, the city is divided into 21 primary zoning districts, with several special treatment overlays, combining districts, and specific plans, which implement the Morro Bay General Plan. Existing on-the-ground land uses in the city are shown in Table 4.9-1.

Table 4.9-2 Zoning Districts that Apply to Property within the City of Morro Bay

District Abbreviation	Name of District
Primary Districts	
AG	Agriculture
R-A	Suburban Residential
R-1	Single-family Residential
R-2	Duplex Residential
R-3	Multiple-family Residential
R-4	Multifamily Residential-hotel-professional
CRR	Coastal Resource Residential
C-1	Central Business
C-2	General Commercial
MCR	Mixed Commercial/residential
C-VS	Visitor-serving Commercial
G-O	General Office
M-1	Light Industrial
M-2	Coastal-dependent Industrial
OA	Open Area
WF	Waterfront
CF	Commercial/recreational Fishing
H	Harbor and Navigable Ways
MMR	Mariculture and Marine Research
SCH	School
GC	Golf Course
Special Treatment Overlay, Combining Districts, and Specific Plans	
PD	Planned Development Overlay
ESH	Environmental Sensitive Habitat Overlay
S	Special Treatment Overlay
	Combining Mixed Use Overlay
I	Interim Use Overlay

District Abbreviation	Name of District
SP-BS	Beach Street Area Specific Plan
SP-NM	North Main Street Specific Plan

Note: For a graphic depiction, refer to City of Morro Bay Zoning Map: https://www.morro-bay.ca.us/DocumentCenter/View/996/Zoning-Map

Source: Title 17 of the Morro Bay Municipal Code, City of Morro Bay

4.9.2. Impact Analysis

a. Methodology and Significance Thresholds

The analysis in this section focuses on the compatibility of land uses identified in the proposed General Plan and LCP Update with existing and planned land uses in the planning area, as well as consistency with any applicable land use plans, policies, or regulations. The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. For purposes of this EIR, implementation of the proposed General Plan and LCP Update may have a significant adverse impact if it would do any of the following:

1. Physically divide an established community; and/or
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project physically divide an established community?

Impact LUP-1 IMPLEMENTATION OF THE PROPOSED GENERAL PLAN AND LCP UPDATE WOULD PROVIDE FOR ORDERLY DEVELOPMENT IN MORRO BAY AND WOULD NOT PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Based on the buildout capacity of the planning area under the General Plan and LCP Update, an estimated 1,348 new residents, 881 new dwelling units, and approximately 8.3 million square feet of non-residential development could be added to Morro Bay. The overall residential growth is roughly equivalent to an annual growth rate of 0.6 percent through the year 2040.

Approximately one percent of the land in Morro Bay is currently physically undeveloped and is designated as Undeveloped. As a result, new growth will likely involve increased development density in developed areas, redevelopment of existing developed parcels, or annexation of new land into the city. Specifically, the General Plan and LCP Update calls for redevelopment of the former Morro Bay Power Plant and existing wastewater treatment plant properties in the North Embarcadero area and identifies downtown Morro Bay and the North Morro Bay neighborhood as prime areas for intensifying infill development and redevelopment. The projected growth and redevelopment of these areas would not physically divide the City of Morro Bay.

The Community Vision section of the General Plan and LCP Update establishes a Vision and Values statement for the city to provide a comprehensive vision for Morro Bay in the future and identify the community's key priorities. The community values include a Mobility and Access Value, which supports the Community Vision for safe and accessible streets, trails, and multimodal transportation options that conveniently connect people and places throughout town and to surrounding

destinations. The General Plan and LCP Update Land Use Element includes the following goals and policies that would facilitate connectivity throughout the city and to the coast:

Goal LU-1 The community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.

Policy LU-1.1 **Land Use Pattern.** Maintain the current pattern of Morro Bay's land use to preserve the distinct character areas and community form, while enhancing and transforming areas with the greatest potential for change to improve economic activity and align them with the community vision. (See Figure LU-4 Land Use Map.) New development shall be located within, contiguous with, or in close proximity to existing developed areas with adequate public services and where it will not have significant effects, either individually or cumulatively, on coastal resources.

Policy LU-1.3 **Access to Daily Needs.** Create sustainable development patterns characterized by mixed uses, walkable neighborhoods, and multimodal connections that allow residents to meet their daily needs for food, goods and services, employment, and other resources.

Policy LU-1.5 **Senior Living.** Encourage the development of housing designed for universal access and senior housing that is accessible to public transit, health and community facilities, and services.

Goal LU-2 Land use patterns improve community health and resiliency.

Policy LU-2.3 **Social Resiliency.** Maintain and create new urban public spaces that promote pedestrian activity and social engagement through building design, public art, landscaping elements, and amenities.

Goal LU-3 Morro Bay grows in a manner that maintains community identity and well-being.

Policy LU-3.1 **Growth Limits.** Continue to limit the amount of development, including future population growth accommodated by *Plan Morro Bay*, to a level supported by adequate and long-term sustainable available land, water supply, and other infrastructure and service capacity.

Policy LU-3.6: **Infill Development.** Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay.

Policy LU-3.7: **Limited Outward Expansion.** Allow for some limited outward expansion beyond the city's existing limits to achieve large-scale conservation of parcels and a small amount of rural-scale residential use and visitor-serving amenities to serve conservation lands. Standards applied to the future sphere of influence (SOI) area include keeping development off of ridgelines and preserve views of the city's backdrop of undeveloped open land. (See also Policies C-9.1 through C-9.5 and Implementation Actions C-30 and C-31.)

Goal LU-4 Coastal-dependent uses are prioritized within appropriate locations in the coastal zone.

Policy LU-4.1 **Waterfront Uses.** Maintain and encourage the development of visitor-serving and coastal-dependent land uses along the waterfront, and give such uses

priority over other types of development that are either not dependent on a waterfront location or related to public use and enjoyment of the coast.

Goal LU-5 Coastal priority uses are viable, protected, and contribute to the economy and character of Morro Bay.

Policy LU-5.1 **Use Conflicts.** Reduce potential conflicts between commercial fishing and coastal recreational uses.

Goal LU-7 All residents and visitors have unimpeded and convenient public access to and along the coast.

Policy LU-7.1 **Lateral Access**. All existing publicly used lateral accessways and areas shall be protected, preserved, and enhanced to the maximum possible extent, and new lateral accessways/areas shall be encouraged and provided, where appropriate. All lateral connections along the coast, with particular emphasis on the Embarcadero, shall be required to be improved and enhanced. All such connections shall be universally accessible. For new development (defined by the Coastal Act) adjacent to the bayfront or ocean, open and unobstructed public access shall be provided from the nearest public roadway to the shoreline and along the coast as required herein.

a. Easements. For new developments on properties adjacent to the mean high-tide line, easements or offers of dedication for open and unobstructed public accessways along the shoreline between the mean high-tide line and the first line of vegetation shall be required, except as provided herein.

b. Lateral Public Access. Open and unobstructed lateral public access along the waterfront revetment (or shoreline, pursuant to subsection (a.) of this section if no revetment exists) shall be provided in all new development or additions on properties adjacent to the bayfront consistent with the provisions herein, and with public safety needs and the need to protect public rights, rights of private property held by leaseholders, and natural resource areas from overuse. Provision for continuous lateral access, pursuant to this section, along the bayfront portion of a parcel shall be required for any development or improvement which results in:

c. Change in use. A change in land use designation, a change in intensity of use, or a change of use.

d. Additional floor area or improvements. An increase of 10 percent or more of internal floor area of an existing structure or an additional improvement of 10 percent or less where an improvement to the structure has previously been undertaken.

e. Increase in height. Any increase in height by more than 10 percent of an existing structure.

f. Significant nonattached structures. Any significant nonattached structure such as garages, fences, shoreline protective works, or docks.

g. Lateral access along the waterfront revetment may be achieved in the following manner:

i. Walkways. In the form of open or enclosed unobstructed walkways, a minimum of 10 feet wide across the bayward side of the proposed development.

ii. Decking and/or boardwalks. Open and unobstructed exterior decking and/or boardwalks extending bayward a minimum of 12 feet (minimum of 10 feet of walkway).

iii. Breezeways and/or walkways. Designated open and unobstructed breezeways and/or walkways within the structure, provided such breezeways are located as close as possible to the bay and designed to provide the most direct, convenient connection between adjacent existing or potential lateral accessways. Exterior access is preferred over interior access.

iv. Connection to adjacent properties shall be planned for and implemented on a system wide basis.

h. Exceptions. The lateral access requirements specified above may be waived in the following situations:

i. When the applicant can demonstrate, based on an engineering analysis, that all or a portion of such access is physically infeasible and there are no design alternatives capable of overcoming topographical or site constraints that jeopardize public safety and fragile coastal resources.

ii. If continuous lateral access across the bayward portion of the parcel is found infeasible due to topographical or site constraints as defined in subsection (d)(i) of this section, the contribution of an in-lieu fee, equivalent to the cost of construction of an accessway along the bayward edge of the structure proposed, shall be paid to the City. Fees shall be used to coordinate the bayfront lateral and vertical access program, and shall be used to link lateral access where feasible and to improve vertical access provisions.

iii. For coastal-dependent development where provisions of continuous lateral access would conflict with the day-to-day operations of the use, such lateral access may be temporarily restricted during that activity. No permanent barriers—i.e. fences, gates or barricades—shall be allowed. Areas may be restricted with moveable chains and signage for no more than 30 minutes prior to that activity and 30 minutes after that activity.

iv. Reduction in building square footage shall not be a consideration.

v. Removal or modification of existing structure shall not be considered as a basis for feasibility.

i. Prescriptive Rights. Development shall not interfere with the public's right of access to the sea where required through use or legislative authorization. Such access shall be protected through permit conditions or permitted development including easements, dedications, or continued accessway

maintenance by a private or public association. Existing identified trails or other access points shall not be required to remain open, provided that they are consolidated or relocated to allow public access on the same site and provide the same or comparable access benefits as existed before closure and meet all other applicable access requirements as provided in this section.

j. Public Use and Posting.

   i. Public Accessways. All public accessways shall be properly signed and conform to Coastal Conservancy/Coastal Commission access standards and guidelines.

   ii. Dedicated Accessways. Dedicated accessways shall not be required to be opened to public use until a public agency or private association approved by the City Council agrees to accept responsibility for maintenance and liability of the accessway.

Policy LU-7.2: **Lateral Access Requirements**. Lateral public access along the waterfront revetment shall be provided in all new developments and rehabilitation or addition projects, consistent with public safety needs and the need to protect public rights, rights of private property held by leaseholders, and natural resource areas from overuse.

Policy LU-7.3: **Unobstructed Lateral Access**. Furniture, windscreens, gates, fences, or other items shall not be placed in the area of pedestrian flow of a lateral accessway. Existing items of this sort shall be removed during future lease renewals or applications for improvements.

Policy LU-7.4: **Vertical Access**. Preserve and enhance coastal vertical access points in Morro Bay. The following are requirements at vertical access points:

a. Minimum Links. Where feasible, a minimum of one every 300 feet and/or every street stub shall link the vertical accessways with lateral access provisions along the bayward sides of structures.

b. Parking. Parking shall be provided in conjunction with new or improved vertical accessways whenever feasible and consistent with the site constraints to ensure use of the accessway. The number of parking spaces shall be determined by the director, who shall consider the carrying capacity of the public recreation area to which access is provided, environmental constraints, and safety considerations. These requirements apply to areas of the city outside of the Embarcadero.

c. The vertical access requirements specified above may be waived in the following situations:

   i. The provision of new accessways are inconsistent with public safety, military security needs, or the protection of fragile resources.

   ii. Adequate access exists nearby.

iii. Agriculture would be adversely affected. Improve lateral connections along the coast, with particular emphasis on the Embarcadero, and ensure such connections are universally accessible.

Policy LU-7.5: **Coastal Access Amenities.** Provide clear signage (including appropriate interpretive signs) and amenities (such as benches, picnic tables, trash and recycling service, bike racks, etc.) at all access points. (See also Policies CD-1.7 and CD-1.8)

Policy LU-7.6: **North Morro Bay Planning Area.** As a condition to the approval of any development permit on the Chevron property, the City shall require clear dedication of a lateral access easement along the sand and shoreline area.

Policy LU-7.7: **Public Access Management Plan.** Development with the potential to impact public access, whether during construction or after, shall develop a Public Access Management Plan designed to identify and limit impacts to public access. Plans shall identify peak use times and measures to avoid public access disruptions during those times, minimize road and trail closures, identify alternative access routes, and provide for public safety.

Policy LU-7.8: **Sea Level Rise Impacts on Lateral Access.** The following monitoring and actions shall be taken to address issues related to sea level rise in lateral access areas:

a. The bayside lateral access of at least eight lease sites between the 400 block and 1100 block of Embarcadero (lease site addresses are 451, 501, 699, 725, 801, 897, 1001, and 1185 Embarcadero) are expected to be affected by sea level rise by 2050. The City shall evaluate whether any of the existing bayside lateral access in the 2050 inundation zone can be defended in that part of the Embarcadero. During lease renegotiations, raising of the bayside lateral access or installing floating access may be required in this area if the existing bayside access cannot be defended.

b. All lease sites affected through 2050 will need to be monitored for additional sea level rise impacts to lateral accessways through 2100 due to lease site vulnerability. Significant attention should be paid to lease sites at 699 Embarcadero and 725 Embarcadero.

c. Due to sea level rise impacts through 2100, 495 and 1205 Embarcadero will require floating or raised bayside lateral access.

d. Due to anticipated sea level rise impacts by 2050, bayside lateral access from 451 Embarcadero to 501 Embarcadero will need to be replaced with floating accessways or raised for accessibility.

e. Due to anticipated sea level rise impacts by 2050, bayside access from 601 Embarcadero to 699 Embarcadero will need to be raised for continuous access.

f. Due to anticipated sea level rise impacts by 2050, most bayside access in the 800 block of Embarcadero will need to be raised or floating for accessibility.

g. Due to anticipated sea level rise impacts by 2050, bayside access from 1185 Embarcadero to 1205 Embarcadero will require floating or raised access to accommodate sea level rise.

h. All lease sites affected by sea level rise through 2050 will need to be monitored for continual water inundation through 2100 due to the vulnerability of those sites.

i. Due to anticipated sea level rise impacts by 2100, bayside lateral access at Giovanni's at 1001 Front Street will need to be raised.

j. When feasible, lease sites should be encouraged to implement floating bayside lateral accessways to improve design resiliency to sea level rise. Monitoring the need for improvements to the boat launch ramp will be done as part of this action.

Policy LU-8.10 **Multimodal Access.** Emphasize access for public transit and active transportation in downtown and along the waterfront.

Policy LU-8.11 **Multimodal Connections.** Improve pedestrian connections between the downtown and waterfront areas, and increase the pedestrian appeal of downtown.

Policy LU-8.12 **Vacant Lot Uses.** Identify suitable uses for vacant and underutilized parcels such as community events, temporary markets, and community gardens, consistent with neighborhood and community objectives.

These goals and policies would facilitate connectivity and mobility by providing for a balanced land use pattern and access throughout the planning area. This connectivity would be provided through equitable access for residents and employees to daily needs, strategic land use planning for new development and redevelopment, reduction in conflict between land uses, and preservation and provision of lateral and vertical access points and multimodal access.

The General Plan and LCP Update includes strategies, goals, and policies that would provide for orderly development and would not physically divide an established community. Therefore, this impact would be less than significant.

Mitigation Measure

This impact would be less than significant, and no mitigation is required.

Threshold 2:	Would the project cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Impact LUP-2 WITH A COMPREHENSIVE UPDATE TO THE CITY'S ZONING ORDINANCE AND ZONING MAP IN CONJUNCTION WITH THE GENERAL PLAN AND LCP UPDATE, IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE WOULD BE CONSISTENT WITH APPLICABLE REGIONAL LAND USE PLANS, POLICIES, AND REGULATIONS, SUCH AS THE SLOCOG 2019 RTP AND CITY ZONING DISTRICTS AND STANDARDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Several regionally- and locally-adopted land use plans, policies, and regulations apply to development under the General Plan and LCP Update. These include the SLOCOG 2019 RTP and the SLOAPCD 2001 CAP for San Luis Obispo County. Consistency of the General Plan and LCP Update with the 2001 CAP is discussed in Section 4.2, *Air Quality.*

The SLOCOG 2019 RTP is a long-range land use and transportation plan for the San Luis Obispo region. The 2019 RTP includes seven goals, with respective policy objectives to meet these goals, which are expected to result in significant benefits to the region, not only with respect to transportation and mobility, but also economic activity, safety, and social equity. Table 4.9-3 includes the 2019 RTP goals and policy objectives related to land use and describes consistency of the proposed land use designations and patterns in the General Plan and LCP Update with these goals and policy objectives.

Table 4.9-3 General Plan and LCP Update Land Use Consistency with the SLOCOG 2019 RTP

SLOCOG 2019 RTP Goals and Policy Objectives	General Plan and LCP Update Consistency
Goal 2 Mobility	
Objective 2.2: Improve opportunities for businesses and citizens to easily access goods, jobs, services, and housing. **Objective 2.5:** Support cooperative planning activities that lead to an integrated intermodal transportation system.	**Consistent.** The Land Use, Economic Development and Environmental Justice Elements of the General Plan and LCP Update include goals and policies that support equitable access for residents and employees to the coast, visitor amenities and services, housing, employment, retail, services, education, and recreation. **Goal LU-1** is to ensure that the community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life. The following policies support accessibility in the community: ▪ **Policy LU-1.3 – Access to Daily Needs** ▪ **Policy LU-1.5 – Senior Living** **Goal LU-6** is to ensure that visitors to Morro Bay have access to a variety of lower-cost lodging options to meet their needs and **Goal LU-7** is to provide all residents and visitors with unimpeded and convenient public access to and along the coast. All of the policies under **Goals LU-6 and LU-7** support access in the community. **Goal ED-1** is aimed at achieving a strong, resilient economy. Under **Goal ED-1**, the following policies would promote accessibility to services and jobs: ▪ **Policy ED-1.6 – Streamline the Development Process** ▪ **Policy ED-1.10 – Prioritize Access** **Goal ED-4** is to provide employment that provides a range of head-of-household jobs that pay living wages and support living in Morro Bay. All of the policies under this goal would improve accessibility to jobs in the

SLOCOG 2019 RTP Goals and Policy Objectives	General Plan and LCP Update Consistency
	city. **Goal EJ-1** is to ensure that Morro Bay residents enjoy a high quality of life that contributes to their mental, physical and social well-being. Specifically, **Policy EJ-1.3 – Services for All** requires that accessibility of facilities and services that meet the cultural, linguistic, gender, and sexual orientation needs of client populations. Additionally, **Goals EJ-1 and EJ-2** and all of the policies under these goals are generally intended to provide equitable access to goods and spaces in the planning area.
Goal 5 Healthy Communities	
Objective 5.1: Reflect community values while integrating land use and transportation planning to connect communities through a variety of transportation choices that promote healthy lifestyles. **Objective 5.2:** Integrate public health and social equity in transportation planning and decision-making. **Objective 5.3:** Support efforts to increase the supply and variety of housing, jobs, and basic services in locations that reduce trips, travel distances, and congestion on U.S. Route 101. **Objective 5.4:** Make investments and develop programs that support local land use decisions that implement the SCS and other strategies to reduce GHG emissions and make our communities more healthy, livable, sustainable, and mobile.	**Consistent.** The General Plan and LCP Update has been developed through an extensive public outreach and involvement process and following careful analysis by an advisory committee, commissions, City staff, elected officials, and the community. This approach is intended to provide a plan that encompasses community values and captures the community vision for the planning area. In addition, the Environmental Justice Element of the General Plan and LCP Update states that a major focus of the City is to ensure the greatest livability possible for people of every age, race, ability, and socioeconomic group. Accordingly, the Environmental Justice Element addresses the social aspects of community design by including goals and policies that anticipate how land use and transportation planning decisions will affect the overall well-being of residents and visitors and will allow needs to be met easily and affordably. **Goal LU-1** is to ensure that the community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life. The following policies support accessibility in the community: ▪ **Policy LU-1.3 – Access to Daily Needs** ▪ **Policy LU-1.5 – Senior Living** **Goal LU-2** is to ensure that land use patterns improve community health and resiliency. **Policy LU-2.1 – Fresh Food** requires support and facilitation of access to fresh food throughout all parts of Morro Bay. **Policy LU-2.2 – Local Food** requires expansion of marketing and distribution methods that connect local agricultural to consumers. **Goal LU-6** is to ensure that visitors to Morro Bay have access to a variety of lower-cost lodging options to meet their needs and **Goal LU-7** is to provide all residents and visitors with unimpeded and convenient public access to and along the coast. All of the policies under **Goals LU-6 and LU-7** support access in the community. **Goal ED-4** is to provide employment that provides a range of head-of-household jobs that pay living wages and support living in Morro Bay. All of the policies under this goal would improve accessibility to jobs in the city. **Goal EJ-1** is to ensure that Morro Bay residents enjoy a high quality of life that contributes to their mental, physical and social well-being. Specifically, **Policy EJ-1.3 – Services for All** requires that accessibility of facilities and services that meet the cultural, linguistic, gender, and sexual orientation needs of client populations. Additionally, **Goals EJ-1 and EJ-2** and all of the policies under these goals are generally intended to provide equitable access to goods and spaces in the planning area.

SLOCOG 2019 RTP Goals and Policy Objectives	General Plan and LCP Update Consistency
Goal 6 Environment	
Objective 6.1: Integrate environmental considerations in all stages of planning and implementation. **Objective 6.2:** Preserve aesthetic resources and promote environmental enhancements. **Objective 6.3:** Reduce GHG emissions from vehicles and improve air quality in the region **Objective 6.4:** Conserve and protect natural, sensitive, and agricultural resources.	**Consistent.** The Land Use, Community Design, Conservation, and Open Space Elements of the General Plan and LCP Update include goals and policies that support environmental protection in the planning area. The Land Use element provides the framework for the future layout of the community and includes policies that would promote development in a manner that protects environmental resources in the planning area. The Community Design Element provides goals and policies to address the components of Morro Bay's style that should be preserved as the city changes over time, including aesthetic resources in the city. Conservation Element goals and policies relate to the conservation of natural resources using open space areas within the planning area. The Open Space Element addresses the protection of natural habitat and wildlife by designating open space areas throughout the community. **Policy LU-1.2 – Realistic Development Capacity** requires the protection of sensitive habitats, natural landforms, scenic resources, and other coastal resources to be a priority in all City actions and decisions, and requires that all development standards (including with respect to height, setback, density, lot coverage, etc.) be interpreted as maximums (or minimums) that must be reduced (or increased) to protect and enhance such resources and meet LCP objectives to the maximum extent feasible. **Goal CD-1 of the Community Design Element** is to ensure that the individual identity of each of Morro Bay's character areas is embraced and represented by new and renovated development. The following policies support **Goal CD-1** and protection and enhancement of the environment: ▪ **Policy CD-1.2 – Compatible New Development** ▪ **Policy CD-1.3 – Design Guidelines** ▪ **Policy CD-1.4 –Design Standards** ▪ **Policy CD-1.8 – Minimize Aesthetic Impacts** **Goal C-1** of the Conservation Element is to ensure that sensitive habitats are protected from potential negative impacts of land use and development. All 16 of the policies under **Goal C-1** support the protection of sensitive habitats. **Goal C-7** of the Conservation Element is to ensure that Morro Bay water is safe, available, and used in an environmentally responsible manner. The following policies under **Goal C-7** support the protection of sensitive habitats and aesthetic resources. ▪ **Policy C-7.14 – Pollutant Runoff** ▪ **Policy C-7.15 – Water Quality** ▪ **Policy C-7.16 – Developments of Water Quality Concern** ▪ **Policy C-7.17 – Impervious Surfaces** ▪ **Policy C-7.18 – Wastewater Marine Impacts** ▪ **Policy C-7.20 – Outfalls** **Goal C-9** of the Conservation Element is to ensure that the aesthetic and visual natural resources in Morro Bay and protected to preserve the community's identity. All ten of the policies under **Goal C-9** support the preservation of aesthetic resources. **Goal CIR-1**, **Policy CIR-1.12 – Climate Change Impacts on Transportation** requires ongoing evaluation of the transportation infrastructure system and its ability to withstand future effects of climate change. **Policy CIR-1.12** also required identification of future points to begin incorporating resilient strategies and materials into design, using the most up-to-date

SLOCOG 2019 RTP Goals and Policy Objectives	General Plan and LCP Update Consistency
	guidance from the Federal Highway Administration. General Plan and LCP Update **Goal C-4** and all of the policies under **Goal C-4** would also ensure that GHG emissions in Morro Bay are reduced and consistent with State goals. These goals and policies in the General Plan and LCP Update would assist in the reduction of GHG emissions and attainment of GHG reduction targets for the reason. **Goal OS-4 through Goal OS-7** and all of the policies under these goals support the conservation and protection of natural and sensitive resources in the planning area.

Source: SLOCOG 2019

As summarized in Table 4.9-3, the proposed land uses and land use patterns in the General Plan and LCP Update are consistent with the related goals and policies in the SLOCOG 2019 RTP. The determination of General Plan and LCP Update consistency is within the discretion of the City Council. In making this determination, the applicable law requires the decision makers to view the General Plan and LCP Update as a whole and does not permit the elevation of certain specific General Plan and LCP Update policies over others. The General Plan and LCP Update is consistent with the SLOCOG 2019 RTP.

The Morro Bay Municipal Code is one of the primary means of implementing the General Plan. Adoption of the General Plan and LCP Update would require a comprehensive review of the Zoning Ordinance and Zoning Map to ensure that it is consistent with the General Plan and LCP Update. This review and update is currently being conducted by the City. Specifically, revisions to the Zoning Map will be consistent with the General Plan and LCP Update, incorporating revisions to the land use categories and other recommended design and development standards. The land use designations in the Land Use Element of the General Plan and LCP Update have been updated from the City's 1988 General Plan to better match the existing, on-the-ground land uses and established land use pattern in the planning area as well as meet the vision and future needs of the community. These designations include allowable uses and building density, but also address building placement on individual lots, parking location and access, building frontage, and streetscape design. As described in the General Plan and LCP Update, this land use update is consistent with the community's desire to ensure equitable access to the coast, visitor amenities and services, and housing, employment, retail and services, education, and recreation for residents and employees, and allows the City to establish zoning districts that similarly communicate these desires.

For each land use designation, the uses allowed and the standards for development intensity (dwelling units per acre for residential development, and floor area ratio [FAR] for non-residential development) are specified. While land use designations are broad, the zoning districts set forth specific allowances and prohibitions of uses (including conditional uses), dimensional requirements, such as building setbacks, parking standards, and building heights. While land use designations and zoning districts must be compatible, they need not be exactly identical. Zoning districts must be within the range of allowed intensity and uses found in the General Plan and LCP Update.

Required updates to the Zoning Ordinance and Zoning Map in the Morro Bay Municipal Code to ensure consistency with the General Plan and LCP Update, which are currently being prepared by the City, will ensure compatibility between the land use designations and zoning districts and standards within the planning area. In addition, San Luis Obispo LAFCo has a goal to update SOIs every five years, or as necessary. Future amendments to the Morro Bay SOI being contemplated as

part of the General Plan and LCP Update would be implemented in coordination with LAFCo and the County of San Luis Obispo and would be required to be consistent with applicable LAFCo policy. Therefore, impacts related to policy consistency would be less than significant. As noted previously, the above discussion is intended to guide policy interpretation, but is not intended to replace or supplant City decision-makers. The final determination of consistency will be made by City decision-makers when they act on the proposed project.

Mitigation Measures

Mitigation measures identified throughout this EIR would serve to reduce identified environmental impacts and further improve consistency of the project with applicable regional land use plans, policies, and regulations. However, no specific mitigation for this impact is required.

c. Cumulative Impacts

Planned and projected growth in the San Luis Obispo County region, including in the communities neighboring the City of Morro Bay, could have significant cumulative land use impacts related to either the physical division of communities or conflicts with land use goals, plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental effects. The community of Cayucos is located to the north of the city, and the community of Los Osos is located to the south of the city, with a buffer of undeveloped land between both communities and the city. Therefore, the General Plan and LCP Update would not contribute to a significant cumulative impact related to the physical division of any established community.

The communities of Cayucos and Los Osos are included in the County's Estero Area Plan which directs new growth in these unincorporated areas and are included in the 2019 RTP. The Estero Area Plan includes goals, policies and programs adopted for the purpose of avoiding or mitigating environmental effects. The communities surrounding the city are also subject to the County's zoning standards. Additionally, the goals, policies, programs and regulations in the 2019 RTP apply to surrounding communities in the same manner as they apply to Morro Bay, thereby avoiding potential for cumulative considerable conflict between the land use and planning for the city and these communities. Therefore, the cumulative impacts resulting from the implementation of the proposed General Plan and LCP Update related to conflict with plans, policies and regulations would be less than significant.

4.10 Noise

This section analyzes noise impacts from buildout of the General Plan and LCP Update. Impacts related to noise from construction, building operations, traffic, and flight operations are addressed. The transportation data used to support the analysis in this section is based on the Morro Bay Circulation Element Update Final Technical Report, completed by Central Coast Transportation Consulting (2018). This report is provided as Appendix E to this report and contains traffic counts and a detailed description of the traffic forecasting prepared for the analysis.

4.10.1 Setting

a. Overview of Noise and Vibration Measurement

Noise

Noise is defined as unwanted sound that disturbs human activity. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with human hearing response, which is most sensitive to frequencies around 4,000 Hertz (similar to the highest note on a piano) and less sensitive to frequencies below 100 Hertz (similar to a transformer hum).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while those along arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (drop off) at a rate of 6 dB per doubling of distance from point sources such as industrial machinery. Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance.

In addition to the instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to cause annoyance, direct physical damage, or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period.

The time period in which noise occurs is also important since nighttime noise tends to disturb people more than daytime noise. Two commonly used noise metrics – the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) - recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dB to actual nighttime (10:00 p.m. to 7:00 a.m.) noise levels to account for the greater sensitivity to noise during

that time period. The CNEL is identical to the Ldn, except it also adds a 5 dB penalty for noise occurring during the evening (7:00 p.m. to 10:00 p.m.). Noise levels described by Ldn and CNEL typically do not differ by more than 1 dBA. In practice, CNEL and Ldn are often used interchangeably.

Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors. Groundborne vibration related to human annoyance is generally related to root mean square (RMS) velocity levels expressed in vibration decibels (VdB). However, construction-related groundborne vibration in relation to its potential for building damage can also be measured in inches per second (in/sec) peak particle velocity (PPV) (Federal Transit Administration 2006). Based on the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment* and the Caltrans') *1992 Transportation-Related Earthborne Vibration, Technical Advisory*, vibration levels decrease by 6 VdB with every doubling of distance.

The background vibration velocity level in residential and educational areas is usually around 50 VdB. (FTA 2006). The threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

b. Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Noise-sensitive land uses generally should not be subjected to noise levels that would be considered intrusive in character. The City defines noise-sensitive land uses as residences, schools, hospitals and nursing homes, churches, meeting halls, auditoriums, music halls, theaters, libraries, transient lodging, playgrounds and parks, offices, and mixed-use development. Noise-sensitive land uses in the city include residences, Morro Bay Library, Del Mar Elementary School, Morro Bay High School, Bayside Care Center, Morro Bay State Park, and several churches. Noise-sensitive land uses in the city that are currently exposed to elevated noise levels include residences located along State Route (SR) 1 and major arterial routes in the city, and Morro Bay High School.

c. Existing Noise Conditions and Sources

In general, the city is a relatively quiet environment. Roadway traffic from SR 1, SR 41, Morro Bay Boulevard, Main Street, Embarcadero, and South Bay Boulevard is the greatest source of noise in the city. Other sources of noise include pedestrians, commercial activities (e.g., buildings with HVAC units and automotive repair shop operations), school functions (e.g., high school sporting events), and sounds associated with the coastal setting (e.g., ocean waves, beachgoers, and animal activity).

To determine existing ambient noise levels in the city, 15-minute sound level measures were collected on April 6, 2016, using an ANSI Type II integrating sound level meter near major roadways

and typical land uses in the city. These sound level measurements provide existing ambient sound levels throughout the city as shown in Figure 4.10-1 and detailed in Table 4.10-1.

As shown in Table 4.10-1, ambient sound levels at major roadways and land uses in Morro Bay ranged from approximately 51 to 72 dBA Leq. Measurement locations 8 and 9, near SR 1 and South Bay Boulevard, respectively, had the highest ambient sound levels due to high levels of roadway traffic during the afternoon peak period, during which these measurements were recorded. The lowest ambient sound levels were recorded in established commercial and residential areas, ranging from 51 to 55 dBA Leq.

Ambient average daily noise levels along area roadways were estimated based on average daily traffic volumes. Estimated noise levels at 50 feet from major roadways in Morro Bay range from approximately 63 to 77 dBA Ldn. Noise levels are highest along SR 1 due to high volumes of traffic compared to other roadways in the city. Lower noise levels were modeled along roadway segments that run along the bay and commercial areas.

Noise contours are lines of equal noise level, shown on a map extending out from a noise source (or sources). Figure 4.10-2a through Figure 4.10-2d show existing noise contours along major roadways. The results shown in these figures represent an estimate of average daily noise levels (Ldn) as modeled from the centerline of the given roadway segment. These contours are for planning purposes and do not account for the site-specific conditions such as topography, soundwalls, and intervening structures that may affect local noise levels.

d. Regulatory Setting

Federal

There are no federal noise requirements or regulations that apply directly to the implementation of the General Plan and LCP Update. However, there are federal regulations that influence the audible landscape, especially for projects where federal funding is involved. For example, the Federal Highway Administration (FHWA) requires abatement of highway traffic noise for highway projects through rules in the Code of Federal Regulations (23 CFR Part 772), the FTA, and Federal Railroad Administration (FRA). Each agency recommends thorough noise and vibration assessments through comprehensive guidelines for any highway, mass transit, or high-speed railroad projects that would pass by residential areas.

State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements establishing uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings. Specifically, Section 1207.4 in Title 24 states that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA CNEL in any habitable room of a new building.

While there are no State standards for vibration, Caltrans establishes vibration risk for structures. For continuous, frequent, and intermittent vibration, Caltrans considers the architectural damage risk level to be somewhere between 0.08 and 0.5 in/sec PPV depending on the type of building that is affected.

Figure 4.10-1 Ambient Sound Level Measurement Locations

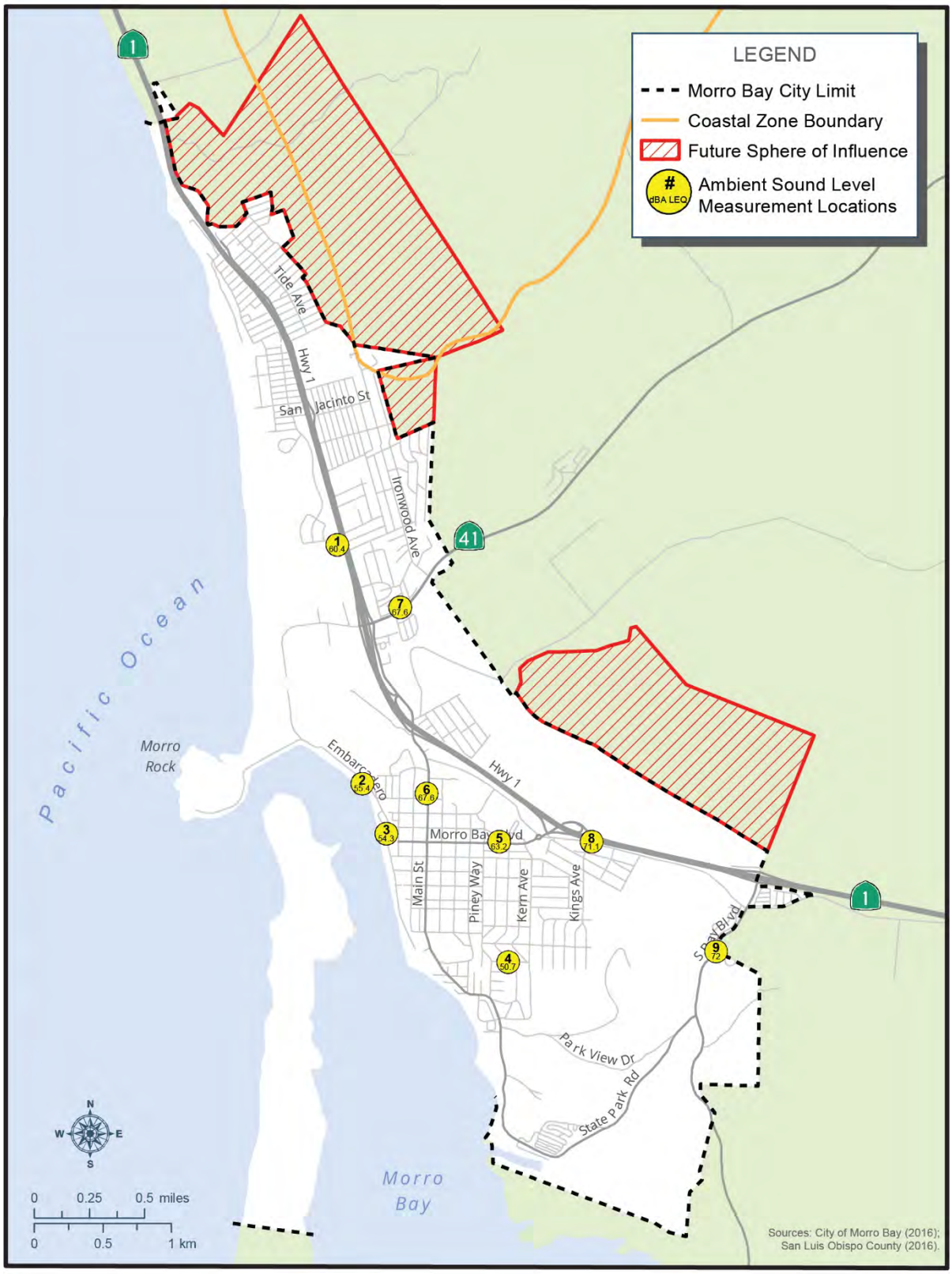


Table 4.10-1 Ambient Sound Level measurements in the City

Measurement Number	Location and Time[1]	Noise Source	Distance from Primary Noise Source (feet)	Leq[15] (dbA)[2]
1	SR 1, west side of highway, approx. 80 ft north of Morro Bay High School, 12:45 pm	Primary – roadway traffic Secondary – aircraft flyover, bicycle and pedestrian path activity	150	60.4
2	Morro Bay Harbor, south end of parking lot across from boat docking area, 1:20 pm	Primary- harbor and commercial operations Secondary – Embarcadero roadway, parking lot noise	100	55.4
3	Embarcadero commercial area, 140 feet south of Harbor Street intersection, 1:46 pm	Primary – pedestrian and commercial activity Secondary – Embarcadero roadway	50	54.3
4	Corner of Luisita Street and Bernardo Avenue, 2:17 pm	Primary – residential commercial activity, Luisita Street traffic	15	50.7
5	Morro Bay Boulevard, at Morro Bay Park, 2:45 pm	Primary – roadway traffic Secondary – fire engine sirens, pedestrian activity	30	63.2
6	Main Street, 130 feet north of Beach Street intersection, 3:09 pm	Primary – roadway traffic Secondary – Beach Street traffic	35	67.6
7	SR 41, 145 feet west of Hill Street intersection, 3:34 pm	Primary – roadway traffic	40	67.6
8	SR 1, along Quintana Road 110 feet east of Kings Avenue, 3:59 pm	Primary – roadway traffic Secondary – Quintana Road traffic	75	71.1
9	South Bay Boulevard, 0.25 mile south of Quintana Road intersection, 4:22 pm	Primary – roadway traffic	20	72.0

[1] Field visit on April 6, 2016, using ANSI Type II integrating sound level meter.

[2] The single steady A-weighted level over a 15-minute period.

Source: Community Baseline Assessment for the General Plan and LCP Update (Appendix B)

Figure 4.10-2a Existing Noise Contours

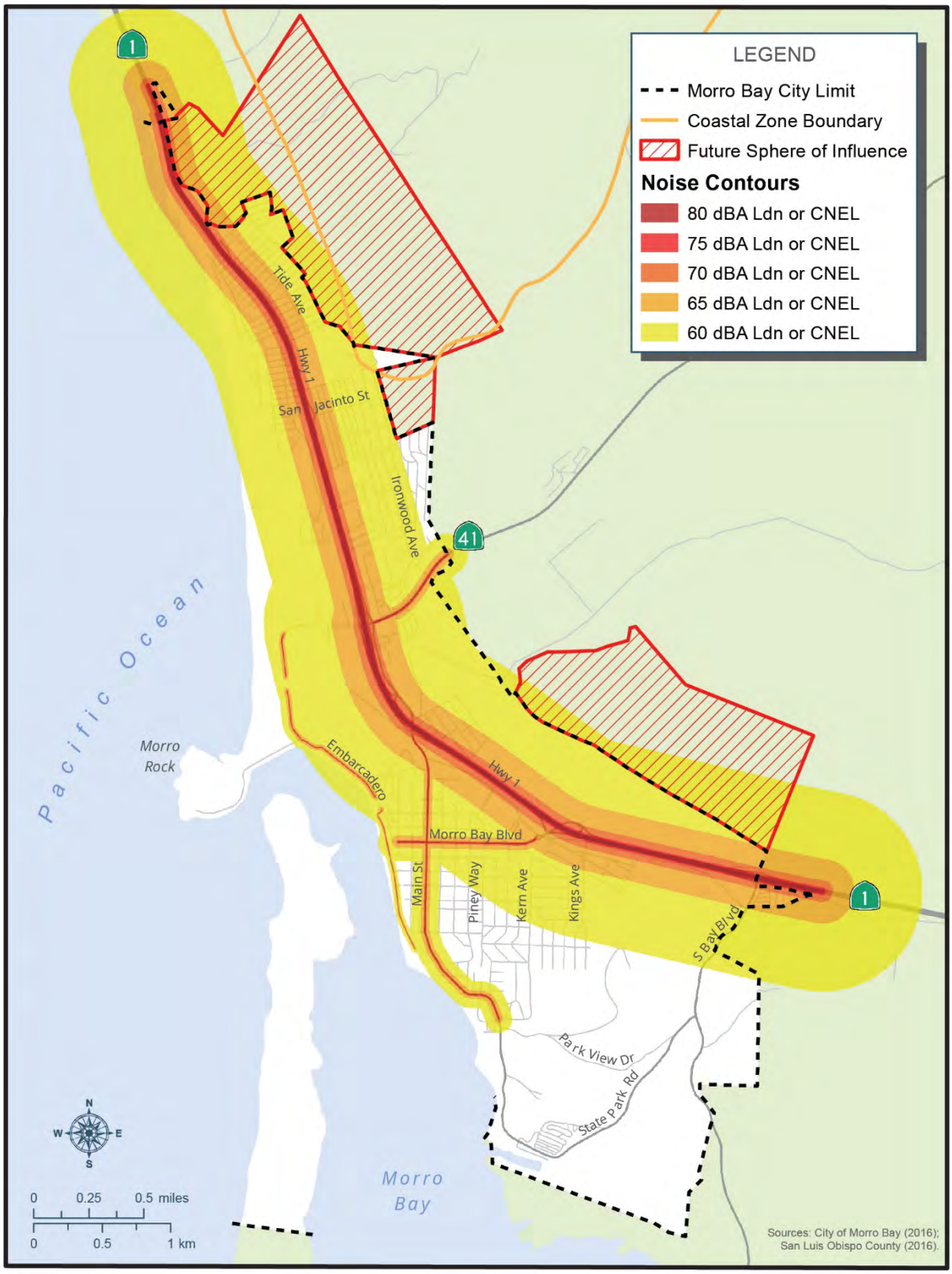


Figure 4.10-2b Existing Noise Contours

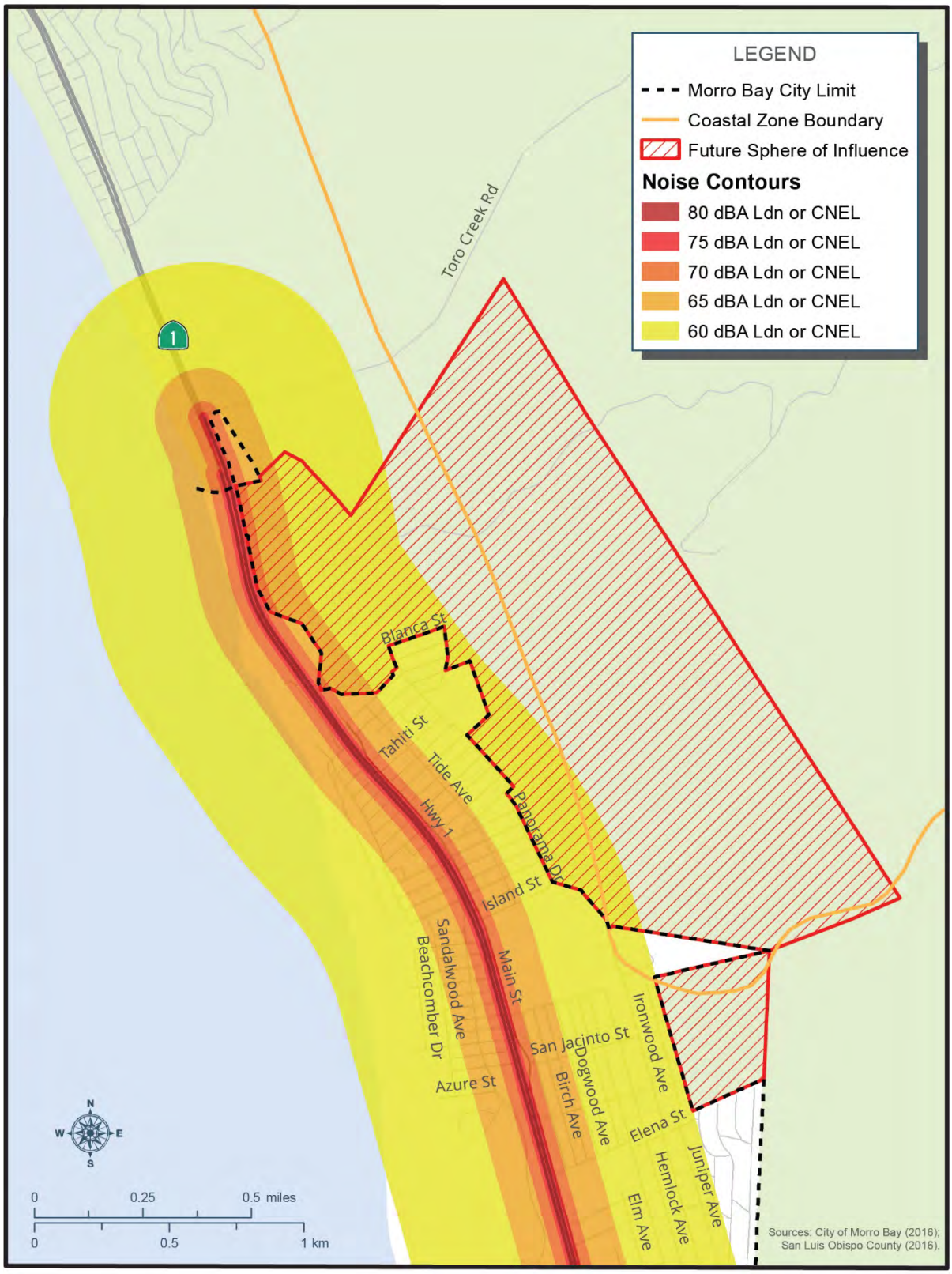


Figure 4.10-2c Existing Noise Contours

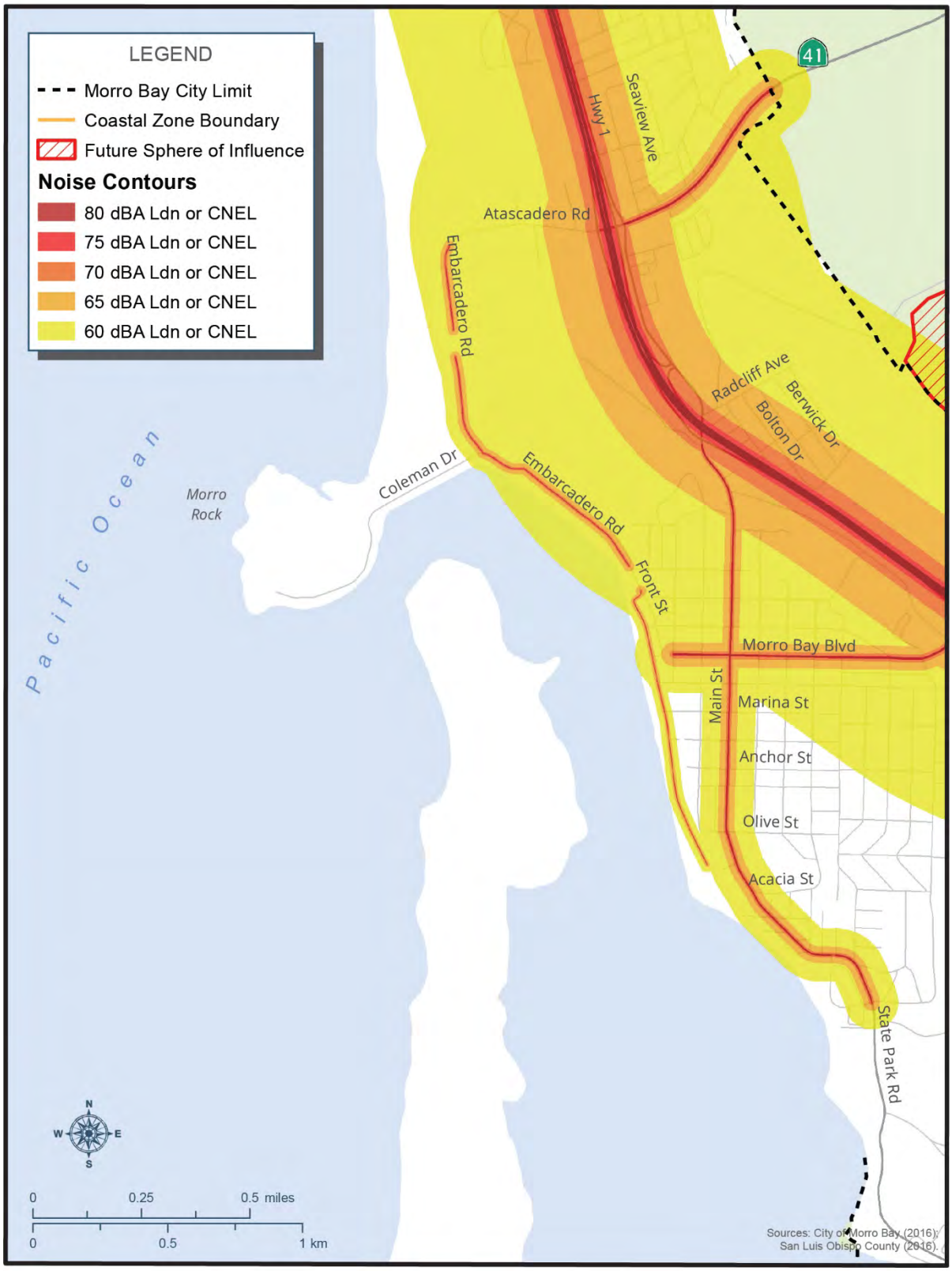
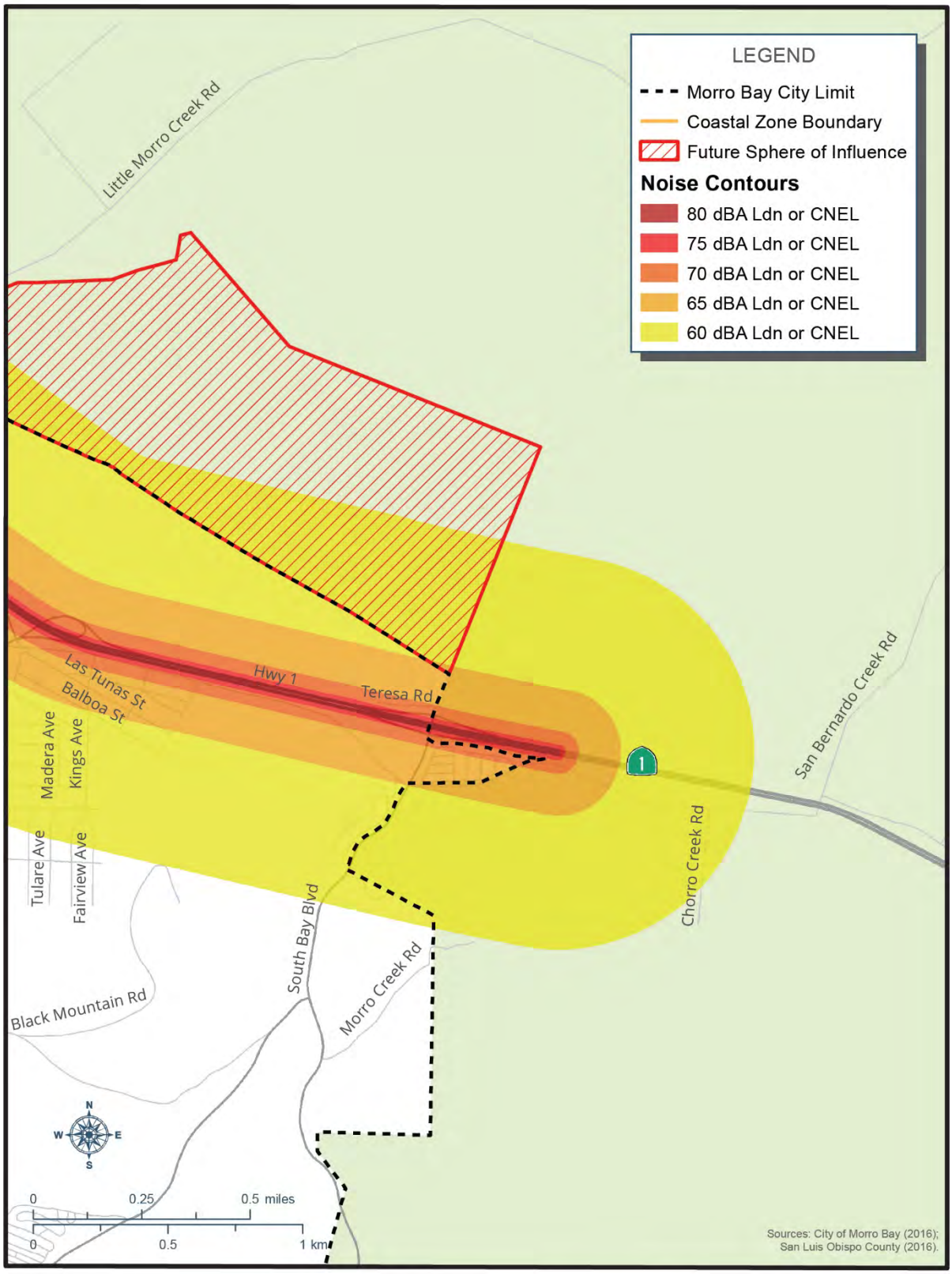


Figure 4.10-2d Existing Noise Contours



Local

City of Morro Bay General Plan Noise Element

The City of Morro Bay General Plan Noise Element (1993) contains goals, policies, and implementation measures describing the compatibility of sensitive land uses with noise. The purpose of these goals, policies, and implementation measures is to reduce the various potential effects of noise on people. Table 4.10-2 summarizes the ranges of noise exposure which are considered to be acceptable, conditionally acceptable, or unacceptable for various noise-sensitive land uses in the city. These ranges are derived from the California Governor's Office of Planning and Research General Plan Guidelines.

Table 4.10-2 Community Exterior Noise Exposure Levels

	Community Noise Exposure (CNEL or Ldn dBA)		
Land Use Category	Acceptable[1]	Conditionally Acceptable[2]	Unacceptable[3]
Residential, Theaters Auditoriums, Music Halls	<60	60-70	>70
Transient Lodging – Motels, Hotels	<60	60-75	>75
Schools, Libraries, Museums, Hospitals, Nursing Homes, Meeting Halls, Churches	<60	60-75	>75
Playgrounds and Parks	<70	70-75	>75
Offices	<60	60-75	>75

[1] Specified land use is satisfactory. No noise mitigation measures are required.

[2] Use should be permitted only after careful study and inclusion of protective measures, as needed, to satisfy the policies of the Noise Element.

[3] Development is usually not permitted.

Source: City of Morro Bay 1993

Table 4.10-3 summarizes the maximum transportation noise exposure levels for noise-sensitive land uses. The maximum allowable noise exposure from transportation noise sources in outdoor activity areas for most sensitive land uses is 60 dBA CNEL or Ldn. The maximum allowable interior noise exposure from transportation noise sources is 45 dBA Ldn.

Table 4.10-3 Maximum Allowable Noise Exposure – Transportation Noise Sources

	Outdoor Activity Areas[1]	Interior Spaces	
Land Use	CNEL or Ldn dBA	CNEL or Ldn dBA	Leq dBA[2]
Residential	60[c]	45	–
Transient Lodging	60[c]	45	–
Hospitals, Nursing Homes	60[c]	45	–
Theaters, Auditoriums, Music Halls	–	–	35
Churches, Meeting Halls, Office Buildings	60[3]	–	45

Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	CNEL or Ldn dBA	CNEL or Ldn dBA	Leq dBA[2]
Schools, Libraries, Museums	–	–	45
Playgrounds, Neighborhood Parks	70	–	–

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2] As determined for a typical worst-case hour during periods of use.

[3] Where it is not possible to reduce noise in outdoor activity areas to 60 dBA Ldn or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dBA Ldn may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with the values in this table.

Note: New development would result in a significant noise impact if the project would result in an exceedance of noise standards above, or if the existing noise environment exceeds an increase of 3 dBA Ldn.

Source: City of Morro Bay 1993

Table 4.10-4 summarizes the maximum noise exposure levels for noise-sensitive land uses due to stationary noise sources. New development of noise-sensitive land uses may be permitted only where location and design allow the development to meet the daytime and nighttime standards listed in the Table 4.10-4. The maximum allowable exterior noise exposure from stationary noise sources during daytime hours is 70 dBA Lmax. Lmax is the maximum instantaneous noise level experienced during a given period of time. The maximum allowable exterior noise exposure from stationary sources during nighttime hours is 65 dBA Lmax.

Table 4.10-4 Maximum Allowable Exterior Noise Exposure – Stationary Noise Sources[1]

	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly Leq, dBA[b]	50	45
Maximum Level (Lmax), dBA[2]	70	65
Maximum Level, Impulse Noise (Lmax), dBA[3]	65	60

[1] As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barrier or other property line noise mitigation measures.

[2] Sound level measurements shall be made with slow meter response.

[3] Sound level measurements shall be made with fast meter response.

Note: New development would result in a significant noise impact if the project would result in an exceedance of the noise standards above, or if the existing noise environment exceeds an increase of 3 dBA Ldn.

Source: City of Morro Bay 1993

Outdoor activity areas include patios, decks, balconies, outdoor eating areas, swimming pool areas, yards of dwelling units, and other areas that have been designated for outdoor activities and recreation. Although outdoor recreation areas, such as playgrounds and parks, are considered noise-sensitive, the recommended exterior noise limit for this land use is 70 dBA Ldn from transportation noise sources, as shown in Table 4.10-3. In mixed-use development, residential noise standards are applied to the residential portion of such projects. The City will consider implementing mitigation measures where existing noise levels produce significant noise impacts to noise-sensitive land uses or where new development may result in cumulative increases of noise upon noise-sensitive land uses.

Morro Bay Municipal Code

Section 17.52.030 of the Morro Bay Municipal Code establishes noise requirements for the city. In general, the code prohibits any business operation with sustained or intermittent noise levels exceeding 70 dBA CNEL within 100 feet of residential uses, hospitals, and other noise-sensitive uses unless noise levels are mitigated in compliance with the Morro Bay Municipal Code. Additionally, all commercial and industrial deliveries and loud commercial activities within 100 feet of a residential use shall be limited to the hours between 7:00 a.m. and 10:00 p.m. The City is also required to review new public and private development proposals to determine conformance with the policies of the Noise Element, the City shall require an acoustical analysis early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to issuance of a building permit.

In addition, Section 9.28.030 of the Morro Bay Municipal Code regulates noise from construction and building repair activities. This section prohibits "erection (including excavating), demolition, alteration or repair of any building or general land grading and contour activity using equipment in such a manner as to be plainly audible at a distance of fifty feet from the building" between 7:00 p.m. and 7:00 a.m. on weekdays, and between 7:00 p.m. and 8:00 a.m. on weekends.

4.10.2 Methodology and Significance Thresholds

a. Methodology and Significance Thresholds

In accordance with Appendix G of the *CEQA Guidelines,* a significant noise impact would occur if new development facilitated by the General Plan and LCP Update would result in:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan, or noise ordinance, or applicable standards of other agencies;
2. Generation of excessive groundborne vibration or groundborne noise levels;
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the expose people residing or working in the project area to excessive noise levels.

Construction Noise

This section estimates construction noise from development facilitated by the proposed General Plan and LCP Update based on reference noise levels reported by the FTA's *Noise and Vibration Impact Assessment* (2006) for various pieces of construction equipment. This analysis conservatively assumes that construction equipment typically operates as close as 50 feet from the nearest receptors when construction activity occurs adjacent to noise-sensitive land uses. Construction noise level estimates do not account for the presence of intervening structures or topography, which could reduce noise levels at receptor locations. New development facilitated by the General Plan and LCP Update would have a significant impact if temporary construction noise during permitted daytime hours could expose noise-sensitive receptors to noise levels that exceed applicable standards.

Groundborne Vibration

This analysis applies the following vibration thresholds established by the FTA for disturbance of people:

- 65 VdB for buildings where low ambient vibration is essential for interior operations (such as hospitals and recording studios);
- 72 VdB for residences and buildings where people normally sleep, including hotels; and
- 75 VdB for institutional land uses with primary daytime use (such as churches and schools).

These thresholds apply to "frequent events," which the FTA defines as vibration events occurring more than 70 times per day. The thresholds for frequent events are considered appropriate because of the scale and duration of construction activity that could occur under the General Plan and LCP Update. In addition, this analysis applies the FTA thresholds shown in Table 4.10-5 for potential structural damage to buildings from construction vibration.

Table 4.10-5 Vibration-related Building Damage Thresholds

Building Category	PPV (in/sec)	Approximately L_v
I. Reinforced-concrete, steel or timber (no plaster)	0.50	102
II. Engineered concrete and masonry (no plaster)	0.30	98
III. Non-engineered timber and masonry buildings	0.20	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

PPV = peak particle velocity
in/sec = inches per second
L_v = root mean square velocity in decibels (VdB) re 1 micro-inch/second
Source: FTA 2006

On-site Operational Noise

On-site activities at new development facilitated by the General Plan and LCP Update would have a significant impact if such activities would expose neighboring noise-sensitive land uses to noise levels exceeding applicable City's noise standards. The City's existing noise standards are shown in Table 4.10-2, Table 4.10-3, and Table 4.10-4, and are reiterated in the General Plan and LCP Update.

Increase in Traffic Noise

This analysis involves noise contour modeling to estimate noise levels associated with existing and future (year 2040) traffic on area roadways. Projected traffic volumes in the year 2040, assuming full buildout of the General Plan and LCP Update, are used to predict future noise contours (refer to the Circulation Element Update Final Technical Report included in Appendix E). To assess the increase in noise-sensitive receptors' exposure to traffic noise during buildout facilitated by the General Plan and LCP Update existing and future noise contours are compared. Proposed General Plan and LCP Update policies are then evaluated to determine their ability in protecting noise-sensitive receptors from excessive increases in ambient noise.

Exposure of New Noise-sensitive Land Uses to Noise

This section analyzes noise exposure to new noise-sensitive land uses for informational purposes only because the Second District Court of Appeal found in 2011 that, as an impact of the environment on the project, it is not required for CEQA compliance (*Ballona Wetlands Land Trust et al. v. City of Los Angeles)*. Projected noise contours for the year 2040 were evaluated to estimate future exposure to ambient traffic noise. Estimated noise levels are compared to the City's existing exterior noise compatibility standards, shown in Table 4.10-2, Table 4.10-3, and Table 4.10-4 and reiterated in the General Plan and LCP Update, and to the State's Title 24 interior noise standard of 45 dBA CNEL.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan, or noise ordinance, or applicable standards of other agencies?

Impact N-1 CONSTRUCTION OF INDIVIDUAL PROJECTS FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD TEMPORARILY PRODUCE HIGH NOISE LEVELS, POTENTIALLY AFFECTING NEARBY NOISE-SENSITIVE LAND USES. COMPLIANCE WITH EXISTING STANDARDS AND GENERAL PLAN AND LCP UPDATE GOALS AND POLICIES WOULD ENSURE CONSTRUCTION ACTIVITY ASSOCIATED WITH REDEVELOPMENT OR NEW DEVELOPMENT WOULD LIMIT NOISE DISTURBANCE AT NOISE-SENSITIVE RECEPTORS IN THE CITY. THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Noise from individual construction projects carried out under the General Plan and LCP Update would temporarily increase ambient noise levels on and adjacent to individual construction sites, including noise from construction traffic. Since there are no specific plans or time scales for individual development projects that would be carried out under the General Plan and LCP Update, it is not possible to determine exact noise levels, locations, or time periods for construction of such projects. However, sites adjacent to areas where higher density future development or redevelopment is anticipated to occur would be exposed to the highest levels of construction noise for the longest duration. New development would result from conversion of uses in response to market demand, as well as increased density in the downtown area. This development would facilitate considerable construction activity over the life of the General Plan and LCP Update.

Construction activities, including traffic, demolition, and reconstruction, would generate noise. Table 4.10-6 illustrates typical noise levels associated with various, common types of construction equipment at a minimum distance of 50 feet, which is representative of the exposure of adjacent noise-sensitive receptors to construction noise. Noise from stationary sources of equipment typically drops off at a rate of approximately 6 dBA per doubling of distance. Therefore, noise levels would be about 6 dBA lower at 100 feet from the noise source and 12 dBA lower at a distance of 200 feet from the noise source, in comparison to the minimum distance of 50 feet. This analysis assumes that pile drivers, which are sometimes used in construction of multi-story buildings with pile foundations, would not be required for new construction or redevelopment in Morro Bay.

Table 4.10-6 Typical Noise Levels for Construction Equipment

	Estimated Noise Levels at Nearest Sensitive Receptors (dBA Leq)		
Equipment	**50 feet**	**100 feet**	**200 feet**
Air Compressor	81	75	69
Backhoe	80	74	68
Concrete Mixer	85	79	73
Dozer	85	79	73
Grader	85	79	73
Jackhammer	88	82	76
Paver	89	83	77
Saw	76	70	64
Scraper	89	83	77
Truck	88	82	76

Source: FTA 2006

As shown in Table 4.10-6, noise levels from individual pieces of construction equipment could reach up to 89 dBA Leq at adjacent land uses located approximately 50 feet away from an active construction site. Construction noise near active construction sites in the planning area would exceed ambient noise levels and may temporarily disturb people at neighboring properties.

Section 9.28.030 of the Morro Bay Municipal Code restricts the timing of construction activities authorized by a City permit to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and 8:00 a.m. to 7:00 p.m. on weekends and holidays. Implementation of and adherence to the following policies in the General Plan and LCP Update Noise Element would ensure application of noise reduction strategies and timing restrictions on construction activity, as necessary to protect noise-sensitive receptors.

Goal NOI-3 Noise from construction activities associated with maintenance vehicles, special events, and other nuisances is minimized in residential areas and near noise-sensitive land uses.

Policy NOI-3.1 **Source Reduction.** Reduce construction, maintenance, and nuisance noise at the source as the first and preferred strategy to reduce noise conflicts.

Policy NOI-3.3 **Construction Shielding**. Encourage shielding for construction activities to reduce noise levels and protect adjacent noise-sensitive land uses.

Policy NOI-3.4 **Construction Hours**. Limit allowable hours for construction activities and maintenance operations located adjacent to noise-sensitive land uses.

The temporary nature of construction noise and the City's restrictions on the timing and manner of construction activities described in the Morro Bay Municipal Code would reduce noise impacts at nearby noise-sensitive receptors. General Plan and LCP Update Noise Element Goal NOI-3, and Policies NOI-3.1, 3.3, and 3.4 would further reduce potential impacts to noise-sensitive receptors

from temporary construction noise. Therefore, the impact of construction noise from development facilitated by the General Plan and LCP Update would be potentially significant.

Mitigation Measures

No mitigation would be required.

Threshold 2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Impact N-2 CONSTRUCTION OF INDIVIDUAL PROJECTS FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD TEMPORARILY GENERATE GROUNDBORNE VIBRATION, POTENTIALLY AFFECTING ADJACENT SENSITIVE LAND USES. ALTHOUGH THE MORRO BAY MUNICIPAL CODE'S TIMING RESTRICTIONS ON CONSTRUCTION ACTIVITY WOULD LIMIT VIBRATION DISTURBANCE, HIGH VIBRATION LEVELS DURING WORKING CONSTRUCTION HOURS COULD POTENTIALLY DISTURB PEOPLE OR DAMAGE FRAGILE BUILDINGS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Construction of individual projects facilitated by the General Plan and LCP Update could intermittently generate strong vibration on and adjacent to construction sites. Typical construction equipment that produces vibration includes vibratory rollers for paving, caisson drills, bulldozers, loaded trucks, and jackhammers. This analysis assumes that construction activity would not involve the use of vibration-generating pile drivers, as discussed in Impact N-1. There are no anticipated major sources of operational groundborne vibration in the city through the General Plan and LCP Update horizon; therefore, this analysis focuses on potential vibration impacts during construction activity.

Table 4.10-7 shows estimated vibration levels from the use of typical construction equipment, based on reference levels provided by the FTA at a distance of 25 feet from the source.

Table 4.10-7 Vibration Levels for Typical Construction Equipment

	Estimated VdB at Nearest Sensitive Receptors			
Equipment	**25 Feet**	**50 Feet**	**100 Feet**	**200 Feet**
Caisson Drilling	87	80	74	67
Jackhammer	79	72	66	59
Large Bulldozer	87	80	74	67
Loaded Trucks	86	79	73	66
Small Bulldozer	58	51	45	38
Vibratory Roller	94	87	81	74

Source: FTA 2006

Based on the vibration levels shown in Table 4.10-7, vibration-sensitive receptors could experience the strongest vibration during the use of vibratory rollers, caisson drills, and large bulldozers at neighboring construction sites. Vibration levels from vibratory rollers could approach 94 VdB at a distance of 25 feet from the source and 87 VdB at 50 feet.

Compliance with Section 9.28.030 of the Morro Bay Municipal Code would restrict the timing of construction activities authorized by a City permit to the hours of 7:00 a.m. to 7:00 p.m. Monday

through Friday and 8:00 a.m. to 7:00 p.m. on weekends and holidays. This requirement for new development would protect residents from exposure to vibration during normal sleeping hours. Therefore, vibration would not exceed the FTA's thresholds of 72 VdB for residences and buildings where people normally sleep. However, vibration levels during daytime construction activity could potentially exceed the FTA threshold of 75 VdB for institutional land uses like schools, churches, or offices with primary daytime use. The use of vibratory rollers also could generate vibration levels that equal or exceed the FTA's thresholds of 90 VdB for buildings extremely susceptible to vibration damage and 94 VdB for non-engineered timber and masonry buildings. Therefore, impacts related to vibration would be potentially significant.

Mitigation Measures

Mitigation Measures N-2 would be required to reduce construction-related vibration to the extent feasible.

N-2 Construction Vibration Control Measures and Notification

The following new policies shall be added to the Noise Element under Goal NOI-3:

Policy NOI-3.5 Vibration Control. Control construction vibration by avoiding the use of vibratory rollers near vibration-sensitive receptors and scheduling construction activities with the highest potential to produce vibration to hours with the least potential to affect sensitive land uses.

Policy NOI-3.6 Construction Vibration Notification. Developers shall notify neighbors of scheduled construction activities that would generate vibration.

Significance After Mitigation

The avoidance of vibratory rollers in close proximity to vibration-sensitive receptors would prevent potential structural damage from vibration. In addition, the appropriate scheduling of construction activities and notification of neighbors would minimize disturbance of people from vibration-generating equipment. Compliance with the vibration control and notification measures in Mitigation Measure N-2 would reduce temporary vibration impacts to a less than significant level.

Threshold 1:	Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project expose persons to or generate noise levels in excess of standards established in the local general plan, or noise ordinance, or applicable standards of other agencies?

Impact N-3 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE COULD INCREMENTALLY INCREASE TRAFFIC AND ASSOCIATED NOISE LEVELS ALONG ROADWAYS IN MORRO BAY, EXPOSING NOISE-SENSITIVE LAND USES LOCATED NEAR ROADWAYS TO INCREMENTALLY GREATER NOISE LEVELS. HOWEVER, IMPLEMENTATION OF POLICIES IN THE GENERAL PLAN AND LCP UPDATE WOULD ENSURE THAT TRAFFIC NOISE WOULD HAVE A LESS THAN SIGNIFICANT IMPACT.

Full buildout of the General Plan and LCP Update, over a period of 20 plus years, is anticipated to add up to 881 new dwelling units and approximately 8.3 million square feet of non-residential space (refer to Table 2-5 in Section 2, *Project Description*). The General Plan and LCP Update would re-designate existing land uses to facilitate development on the remaining vacant parcels in the downtown area as well as redevelopment of existing built-out parcels in the North Embarcadero area. This pattern of development would allow for additional housing, mixed uses, and visitor-

serving commercial in these areas. Redevelopment and new development would result in increased vehicle trips on roadways in the planning area. By generating new vehicle trips, new development would incrementally increase the exposure of land uses along roadways in Morro Bay to traffic noise.

The increase in roadway activity would result in greater ambient noise throughout the planning area. Figure 4.10-3a through Figure 4.10-3d show the estimated noise contours from traffic activity in the year 2040, assuming full buildout of the General Plan and LCP Update. The highest estimated ambient noise levels would be greater than 75 dBA Ldn or CNEL along SR 1 from SR 41 to the southern end of the planning area and along Main Street from Beach Street to the Morro Bay State Park. These noise levels are a conservative estimate of future noise levels because they do not account for site-specific conditions that may reduce exposure to ambient noise, such as intervening structures and topography between noise sources and receptors. Increases in ambient noise would have the greatest effect on noise-sensitive uses, such as residences and schools.

The General Plan and LCP Update Noise Element includes the following policies intended to reduce exposure to traffic noise.

Goal NOI-2 Minimize transportation-related noise.

Policy NOI-2.1 **Transportation Noise Standards.** Mitigate noise created by any existing or new transportation noise source so that it does not exceed the exterior or interior sound levels specified in this element. Routes for use by heavy trucks will be located away from noise-sensitive land uses when feasible.

Policy NOI-2.2 **Compatible Roadway Design.** Consider noise impacts in the design of road systems and give special consideration to noise-sensitive uses. To the greatest extent possible, the design of roads should minimize roadway noise to levels acceptable in surrounding areas.

Policy NOI-2.3 **Project Design Techniques.** Prioritize use of site planning and project design techniques to mitigate excessive noise. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Figure 4.10-3a Future Noise Contours

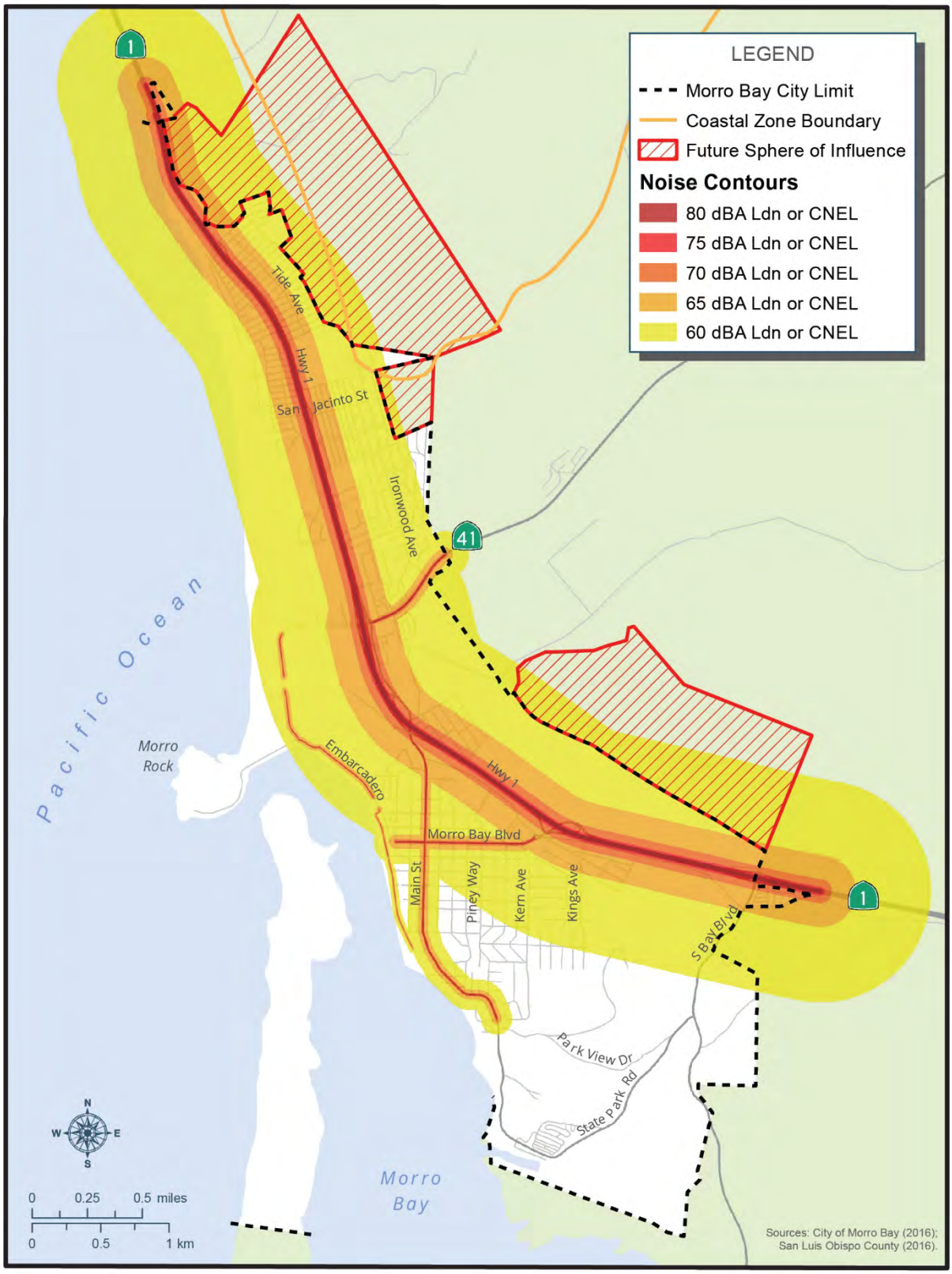


Figure 4.10-3b Future Noise Contours

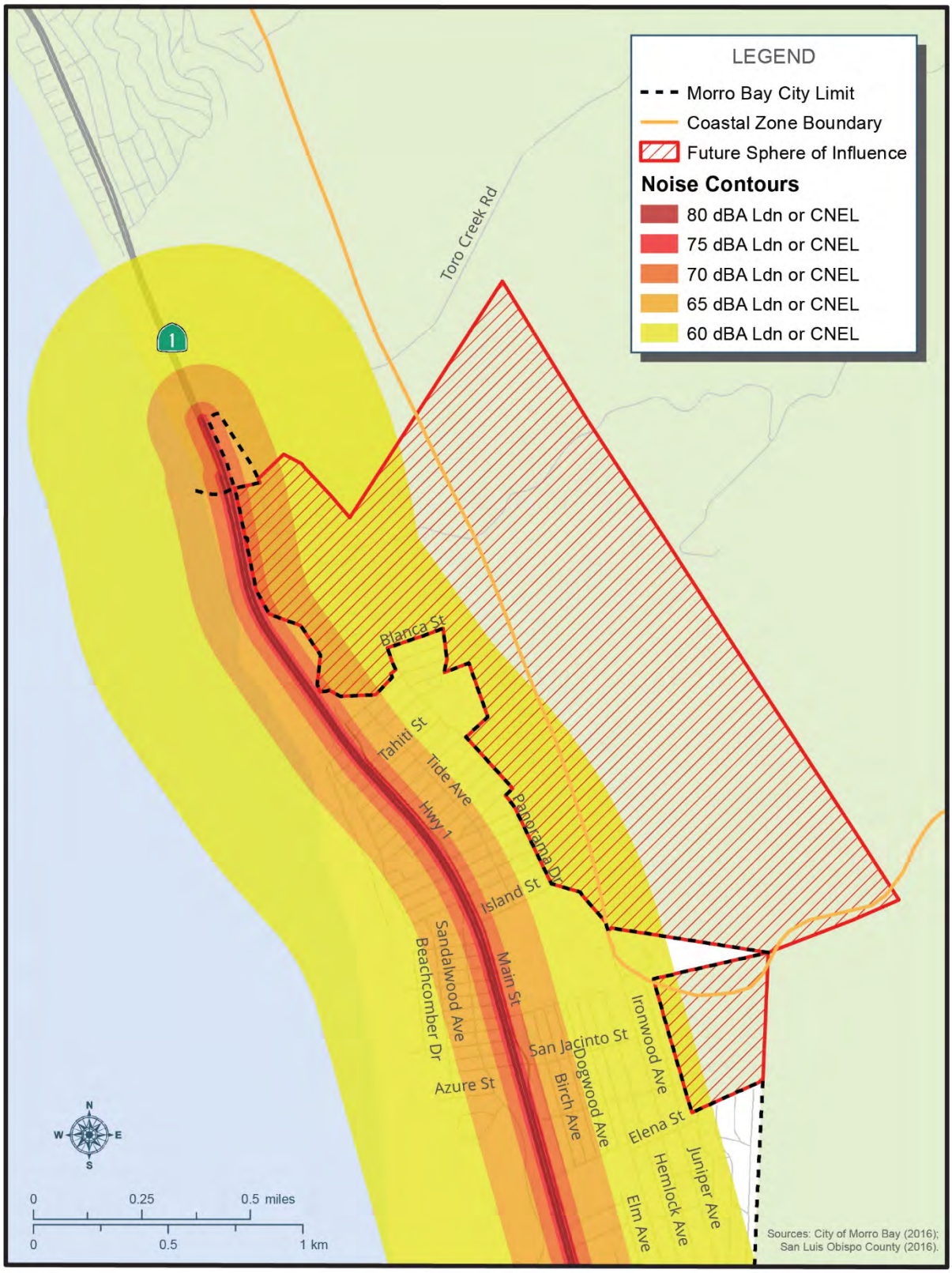


Figure 4.10-3c Future Noise Contours

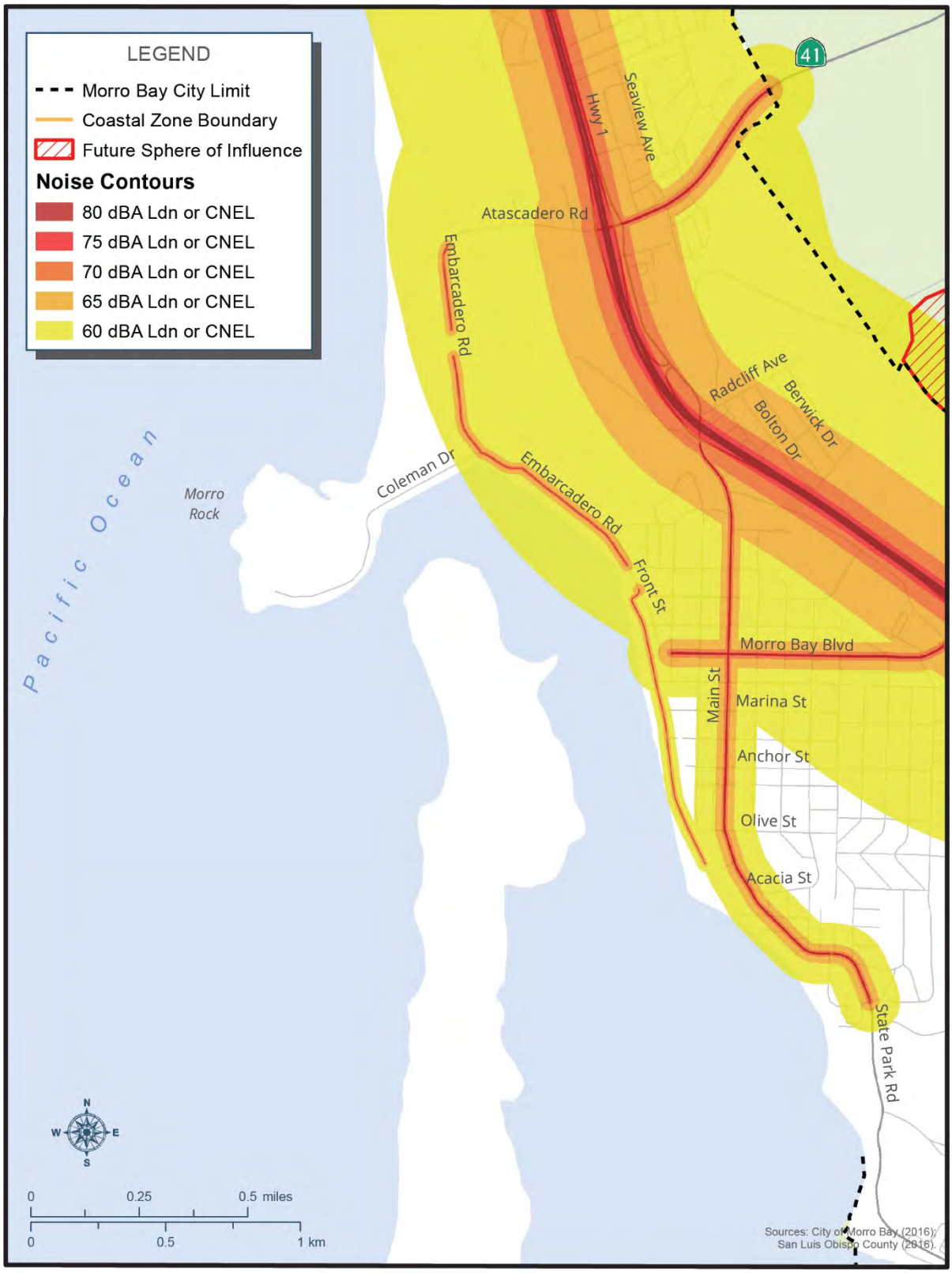
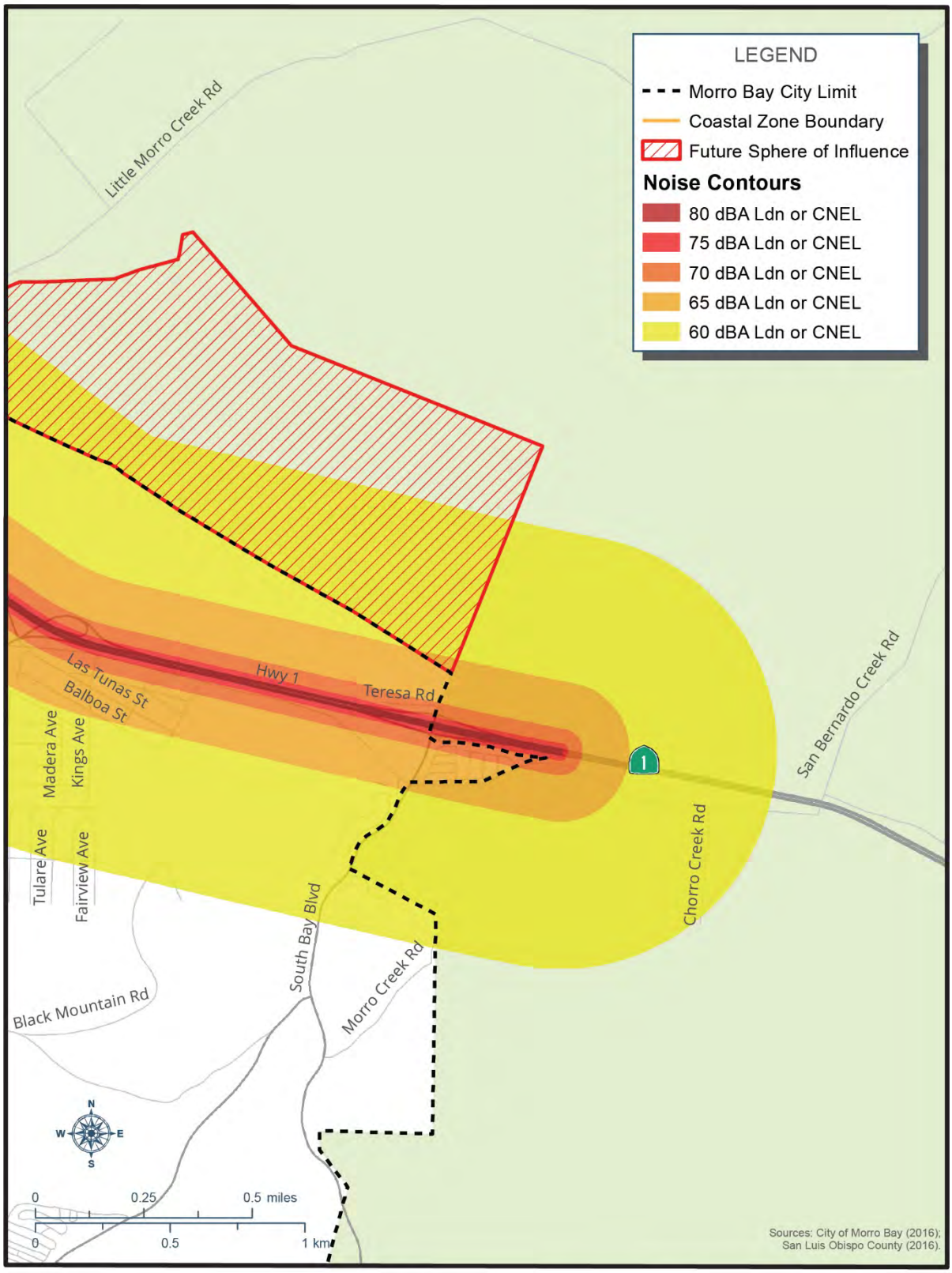


Figure 4.10-3d Future Noise Contours



Policy NOI-2.4 **Noise-Reducing Technologies.** Employ noise-reducing technologies such as quiet pavement surfaces to reduce the effects of roadway noise on noise-sensitive land uses.

Policy NOI-2.5 **Alternative Transportation.** Promote alternative transportation that minimizes noise impacts.

As shown in Figure 4.10-3a through Figure 4.10-3d, noise-sensitive land uses in the General Plan and LCP Update planning area would be exposed to incremental increases in traffic noise along major roadways. However, implementation of Policies NOI-2.1 through NOI-2.4 would promote the use of design features and techniques intended to minimize roadway noise affecting sensitive receptors and in order to maintain compliance with the City's interior and exterior noise standards. In addition, implementation of the Policy NOI-2.5 would encourage the use of alternative transportation in order to minimize increases in traffic that would result in increased noise in the planning area.

In summary, implementation of the policies for transportation-related noise would reduce noise and avoid generation of excessive noise from the local highways and city streets, which would minimize the exposure of sensitive receptors to traffic noise. This impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 1:	Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project expose persons to or generate noise levels in excess of standards established in the local general plan, or noise ordinance, or applicable standards of other agencies?

Impact N-4 NEW DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INTRODUCE NEW OPERATIONAL NOISE SOURCES ASSOCIATED WITH RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND MIXED-USE LAND USES. THE CONTINUED REGULATION OF ON-SITE NOISE, CONSISTENT WITH THE MORRO BAY MUNICIPAL CODE, WOULD MINIMIZE DISTURBANCE TO ADJOINING USES. THEREFORE, OPERATIONAL NOISE FROM THE PROJECT WOULD HAVE A LESS THAN SIGNIFICANT IMPACT.

New development facilitated by the General Plan and LCP Update would add up to an estimated 881 new dwelling units and approximately 8.3 million square feet of non-residential space in the planning area (refer to Table 2-5 in Section 2, *Project Description*). This new development would introduce on-site activities that generate operational noise. Typical noise sources at new residential and mixed-use development would include rooftop ventilation and heating systems, and delivery and hauling systems. New residential and mixed-use development near commercial and industrial areas could expose new residents to noise associated with loading activity and industrial equipment. Noise generated by on-site activities at new development would be subject to the City's maximum allowable noise levels at receiving land uses, as shown in Table 4.10-4, and reiterated in the General Plan and LCP Update.

In addition to the goals and policies listed under Impact N-1, the following goals and policies in the General Plan and LCP Update Noise Element would ensure continued application of local standards for on-site noise.

Goal NOI-1 A healthy and safe noise environment for Morro Bay residents, businesses, and visitors.

Policy NOI-1.1 Noise Compatibility. Ensure new development is compatible with existing and future noise environments by continuing to use potential noise exposure as a criterion in land use planning.

Policy NOI-1.2 Noise-Sensitive Land Uses. Maintain acceptable stationary noise levels at existing noise-sensitive land uses.

Policy NOI-1.3 Noise-Reducing Project Features. Incorporate design and construction features into residential and mixed-use projects that shield noise-sensitive land uses from excessive noise.

Policy NOI-1.4 Acoustical Studies. Require an acoustical study for proposed projects in areas where existing or projected noise levels exceed or would exceed the maximum allowable levels established in this element. Adopt procedures to ensure project compliance with mitigation measures and enforcement of noise standards.

Goal NOI-3 Noise from construction activities associated with maintenance vehicles, special events, and other nuisances is minimized in residential areas and near noise-sensitive land uses.

Policy NOI-3.2 Special Events. Require that special events at restaurants, bars, parking facilities, and other commercial uses or beach events where large numbers of people may be present adjacent to sensitive noise receptors comply with the noise standards in this element.

Implementation of the above policies and goals in the General Plan and LCP Update would provide for compliance with noise standards in the planning area, enforcement of the City's stationary noise standards, and limits on special events or beach events next to noise-sensitive land uses. The continued regulation of on-site noise, consistent with the Municipal Code, would minimize disturbance to adjoining noise-sensitive land uses. Therefore, on-site operational noise at new development facilitated by the General Plan and LCP Update would have a less than significant impact.

Mitigation Measures

No mitigation would be required.

Threshold 3:	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact N-5 THE GENERAL PLAN AND LCP UPDATE PLANNING AREA IS LOCATED 17 MILES FROM THE NEAREST AIRPORT. THEREFORE, THERE WOULD BE NO IMPACTS ASSOCIATED WITH AIRPORT NOISE IN THE PLANNING AREA.

As discussed in Section 4.7, *Hazards and Hazardous Materials*, the nearest airport to the General Plan and LCP Update planning area is the San Luis Obispo County Regional Airport located which is 17 miles away from the city. The planning area is located outside of the existing and projected future noise contours associated with the airport. Therefore, new development facilitated by the General Plan and LCP Update, particularly noise-sensitive uses, would not be exposed to aircraft noise associated with nearest airport to the planning area. There would be no impacts related to aircraft noise.

Mitigation Measures

No mitigation would be required.

c. Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on noise throughout the cumulative impact analysis area, which consists of San Luis Obispo County. Noise impacts are based on factors related to site-specific and project-specific characteristics and conditions, such as distance to noise sources and barriers between land uses and noise sources. Therefore, site-specific cumulative impacts related to exposure of existing and planned future receptors to construction and stationary noise sources would be similar to General Plan and LCP Update impacts discussed above and less than significant with the incorporation of mitigation.

The potential cumulative increase in traffic noise associated with buildout of the General Plan and LCP Update is evaluated in Impact N-3, above. Figure 4.10-3a through Figure 4.10-3d show the estimated noise contours from traffic activity in the year 2040, assuming full buildout of the General Plan and LCP Update. As discussed in Impact N-3, implementation of General Plan and LCP Update policies for transportation-related noise would reduce noise and avoid generation of excessive noise from the local highways and city streets, which would minimize the exposure of sensitive receptors to traffic noise. Therefore, the overall contribution of the General Plan and LCP Update to cumulative traffic noise would not be cumulatively considerable.

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4.11 Population and Housing

This section evaluates the potential population growth and potential displacement of housing impacts associated with implementation of the General Plan and LCP Update. Population, housing, and employment data are available on a city, county, regional, and state level. This EIR uses data collected and provided at the city level in comparison to county and state trends.

4.11.1. Setting

a. Population

Table 4.11-1 shows population growth in the city, county, and state since census year 2010.

Table 4.11-1 Population Growth in the City, County, and State

Year	Morro Bay	San Luis Obispo County	California
2010	10,234	269,637	37,253,956
Existing (2016)	10,714	278,141	39,179,627
Percent Change	4.7%	3.2%	5.2%

Source: DOF 2018

As shown in Table 4.11-1, the city's population increased by 4.7 percent between 2010 and 2016 (California Department of Finance [DOF] 2018). The city population grew at a higher rate than the county, but at a lower rate than the state between 2010 and 2016. The city's 2016 population represents 3.9 percent of the county's 2016 population.

b. Housing

A household is defined as a group of people who occupy a housing unit (U.S. Census Bureau 2017). A household differs from a dwelling unit because the number of dwelling units includes both occupied and vacant dwelling units. Typically, not all of the population in a given area lives in households. A portion of the population lives in group quarters, such as board and care facilities, while others are homeless.

Housing Units

Table 4.11-2 shows the growth in number of housing units in the city and the state between 2010 and 2016.

Table 4.11-2 Housing Inventory

	Morro Bay		San Luis Obispo County		California	
	2010	2016	2010	2016	2010	2016
Total Housing Units	6,320	6,414	117,315	120,308	13,670,304	13,982,846
Occupied	4,844	4,988	102,016	106,165	12,568,167	12,992,093
Vacancy Rate	23.4%	22.2%	13.0%	11.8%	8.1%	7.1%
Growth from 2010 to 2016	1.5%		2.6%		2.3%	

Source: DOF 2018

As shown in Table 4.11-2, between 2010 and 2016, 94 units were added to the city's housing inventory resulting in overall growth of 1.5 percent during this period. Between 2010 and 2016, the county and state housing inventory grew at higher rates of 2.6 percent and 2.3 percent, respectively.

In 2016, approximately 72 percent of the housing units in the city were single-family detached homes, approximately six percent were attached single-family homes, approximately 15 percent were multi-family units (buildings of at least two units), and approximately eight percent were mobile homes. In general, the city has a larger share of renter-occupied housing than the state as a whole. In addition, a large number of seasonal residents are reflected in the number of seasonal use housing units because Morro Bay is a tourist destination. About 20 percent of the total housing inventory in the city consists of units held for seasonal use, compared to only three percent of the statewide housing inventory (Appendix B).

Household Size

Small households (one to two persons per household [pph]) traditionally reside in units with one to two bedrooms; family households (three to four pph) normally reside in units with three to four bedrooms; and large households (five or more pph) typically reside in units with four or more bedrooms. However, the number of units in relation to the household size may also reflect preference and economics. Many small households obtain larger units, and some larger households live in small units for economic reasons. Table 4.11-3 compares the size of households in the city, county, and state in 2010 and 2016.

Table 4.11-3 Household Size in the City, County, and State

	Morro Bay		San Luis Obispo County		California	
Year	2010	2016	2010	2016	2010	2016
Household Size (pph)	2.08	2.12	2.48	2.52	2.90	2.95
Growth from 2010 to 2016	1.9%		1.6%		1.7%	

Source: DOF 2018

As shown in Table 4.11-3, the average household size in Morro Bay increased from 2.08 pph in 2010 to 2.12 pph in 2016 (an increase of 1.9 percent). Over the same period, household size in the county

increased from 2.48 to 2.52 pph (an increase of 1.6 percent) and household size in the state increased from 2.90 to 2.95 pph (an increase of 1.7 percent). Between 2010 and 2016, the city maintained a lower average household size in comparison to the county and state average household sizes.

c. Regulatory Setting

State

State Housing Element Statutes

State housing element statutes (Government Code Sections 65580-65589.9) mandate that local governments adequately plan to meet the existing and projected housing needs of all economic segments of the community. The law recognizes that in order for the private market to adequately address housing needs and demand, local governments must adopt land use plans and regulatory systems that provide opportunities for, and do not unduly constrain, housing development. As a result, State housing policy rests largely upon the effective implementation of local general plans and in particular, housing elements. Additionally, Government Code §65588 dictates that housing elements must be updated at least once every eight years.

Regional

Regional Housing Needs Assessment

California's Housing Element law requires that each county and city develop local housing programs to meet their "fair share" of existing and future housing growth needs for all income groups, as determined by the DOF. SLOCOG is tasked with distributing the total State-projected housing need for the San Luis Obispo Region among SLOCOG's seven cities and the county's unincorporated communities by four income categories (extremely low and very low, low, moderate, and above moderate). This fair share allocation is referred to as the Regional Housing Needs Assessment (RHNA) process. This RHNA allocation represents the minimum number of housing units by income level each community is required to plan for through a combination of: 1) zoning "adequate sites" at suitable densities that foster affordability; and 2) housing programs to support retention, rehabilitation, and production of lower income units with a reasonable degree of entitlement certainty. Morro Bay's allocation from the SLOCOG *Regional Housing Needs Plan* (RHNP), covering 2019 through 2028 and distributed among the five income categories, is shown in Table 4.11-4.

Table 4.11-4 Regional Housing Needs Assessment 2014-2019

Income Group	RHNA Allocation (units)	% of Total
Extremely Low	48	12.3%
Very Low	49	12.5%
Low	60	15.4%
Moderate	70	17.9%

Income Group	RHNA Allocation (units)	% of Total
Above Moderate	164	41.9%
Total	391	100.0%

Source: SLOCOG 2019a

San Luis Obispo Council of Governments

As discussed in Section 4.9, *Land Use and Planning,* the City of Morro Bay is located within the SLOCOG planning area. SLOCOG functions as the Metropolitan Planning Organization (MPO) for San Luis Obispo County and the towns and cities therein and is responsible for preparing and implementing the region's RHNA and the 2019 Regional Transportation Plan (RTP). The 2019 RTP is a long-term blueprint of the region's transportation system, requires updates ever four years, and plans for a 25-year timeframe. The plan identifies and analyzes transportation needs of the metropolitan region and creates a framework for project priorities. SLOCOG projections for the planning area consider regional, state, and national economic trends and planning policies.

Local

City of Morro Bay Housing Element

The Housing Element is one of the seven State-mandated elements of the General Plan (Government Code Sections 65300 through 65303.4). The Housing Element serves as a tool to identify and provide for the housing needs of the community. It identifies recent demographic and employment trends that may affect existing and future housing demand and supply. California law requires the Housing Element to establish policies and programs that will support the provision of an adequate housing supply for citizens of all income levels. The Housing Element is the only element that requires review by the State. The element addresses the City's ability to meet the regional housing needs as determined by the State of California.

Morro Bay adopted its current (6th cycle) Housing Element in August 2020, covering the period 2020-2028. The 6th cycle Housing Element was certified by the California Department of Housing and Community Development (HCD) in September 2020. The Housing Element serves as a tool to identify and provide for the housing needs of the community and identifies recent demographic and employment trends that may affect existing and future housing demand and supply. The Housing Element addresses the City's ability to meet the regional housing needs as determined by the State of California.

Housing Element Goal H-1 through Goal H-5, and Goal H- 7 through Goal H-8, and associated policies, are intended to preserve affordable units and prevent displacement in Morro Bay as follows:

Goal 1 **Housing Supply.** Provide a continuing supply of affordable housing to meet the needs of existing and future Morro Bay residents in all income categories.

Policy H-3 **Funding.** To the extent feasible, solicit housing assistance funds from the state and federal governments in conjunction with nonprofit and for-profit

developers to be used in the construction of new and rehabilitation of existing secondary units and very low- and low-income housing units.

Policy H-4 **Methods.** Continue to explore alternative methods for increasing its affordable housing stock with the goals of providing adequate extremely low-, very low-, and low-income, senior, ADA accessible, and workforce housing.

Policy H-5 **Housing Costs.** Ensure that the City's adopted policies, regulations, and procedures do not add unnecessarily to the cost of housing, while still attaining other important City objectives.

Policy H-6 **General Affordability.** Continue to require a percentage of new housing units built in the city be affordable to very low-, low-, and moderate-income households.

Policy H-7 **Housing Trust Fund.** Develop a Housing Trust Fund to be used for the development of affordable housing projects.

Policy H-8 **Mixed Housing Types.** Encourage the mixing of affordable housing throughout the community rather than concentrating affordable units in a few locations.

Policy H-10 **Secondary Units.** Allow for the development of secondary housing units as an affordable housing option throughout the city.

Goal 2 **Conservation and Rehabilitation.** Conserve and rehabilitate the city's current stock of affordable housing.

Policy H-11 **Section 8 Subsidies.** Continue to maintain Section 8 rent subsidies.

Policy H-12 **Special Needs Groups.** Provide financial assistance for rehabilitation of homes for elderly, disabled, and disadvantaged persons.

Goal 3 **Protect and conserve existing affordable housing stock in Morro Bay.** Preserve all affordable housing units in the city.

Policy H-15 **At-Risk Units.** Cooperation with other governmental, for-profit, and non-profit entities to ensure no lower-income residents are adversely impacted by the conversion of existing affordable housing projects to market-rate rents.

Policy H- 16 **Conversion to Condominiums.** Continue to protect existing lower-income apartment units from loss through conversion to condominiums.

Policy H-17 **Demolished Units.** Require the replacement of very low-, low-, and moderate-income housing that is demolished with similar affordable housing.

Goal 4 **Special Needs.** Meet the housing needs of special groups of Morro Bay Residents, including seniors, disabled persons, and single persons.

Policy H-18 **Senior Housing.** Provide more senior housing opportunities throughout the city.

Policy H-19 **Special Housing Needs.** Promote the development of special housing needs, such as transitional housing, housing for seniors, housing for persons with physical, developmental, or mental disabilities, farmworker housing, and housing for extremely low-income persons.

Policy H-20 **Family Housing.** Support family housing that addresses resident needs for child care, youth services, recreation opportunities, and access to transit.

Goal 5 **The Homeless.** Reduce the incidence of homeless persons in the community, work with other cities, the County, and various nonprofits to continue to operate a convenient homeless shelter for the region.

Policy H-21 **Regional Homeless Shelter**. Participate in the operations and maintenance of the regional homeless shelter facility. The City will continue to provide information about housing opportunities and services for homeless persons through the Police Department as well as at City Hall.

Goal 7 **Equal Opportunity**. Ensure equal access to sound, affordable housing for all persons regardless of race, creed, age, or sex.

Policy H-24 **Fair Employment and Housing.** Promote the enforcement of the policies of the California Department of Fair Employment and Housing. The City declares that all persons regardless of race, creed, age, or sex, will have equal access to sound and affordable housing.

Goal 8 **Public Participation.** Ensure participation of all economic segments of the community in the development of housing policy for Morro Bay.

Policy H-25 **Public Participation.** Encourage the participation of all citizens of Morro Bay in the development of policies for the city.

As discussed in Section 2, *Project Description*, the 5th cycle Housing Element is up-to-date and in compliance and does not require updates or additional review as part of the General Plan and LCP Update. However, the 6th cycle Housing Element may be appended to the Blueprint portion of the General Plan and LCP Update in the future.

Measure F

Measure F is a voter-approved growth management ordinance that limits the city to 12,200 residents. Measure F limits the amount of water for commercial and industrial building permits to no more than 130 percent of the residential allocation. Therefore, to exceed the current growth limit, Morro Bay would be required to secure additional water resources and a majority of voters must elect to remove the limit.

4.11.2. Impact Analysis

a. Methodology

Population and housing trends in the city were evaluated by reviewing the most current data available from the U.S. Census Bureau, DOF, the current Morro Bay General Plan, and SLOCOG RHNP. Impacts related to population are generally social or economic in nature. Under CEQA, a social or economic change generally is not considered a significant effect on the environment unless the changes are directly linked to a physical change.

b. Significance Thresholds

The following thresholds are based on Appendix G to the *CEQA Guidelines*. For purposes of this EIR, impacts related to population and housing are considered significant if implementation of the General Plan and LCP Update would:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
2. Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.

For purposes of this analysis, "substantial" population growth is defined as growth exceeding SLOCOG population forecasts for the City of Morro Bay. "Substantial" displacement would occur if allowed land uses would displace more residences than would be accommodated through growth accommodated by the project.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project induce unplanned substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Impact PH-1 THE GENERAL PLAN AND LCP UPDATE WOULD NOT RESULT IN GROWTH IN THE PLANNING AREA THAT IS SUBSTANTIALLY GREATER THAN PROJECTED IN THE SLOCOG REGIONAL GROWTH FORECAST. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The General Plan and LCP Update would designate land uses and define the type of development that can occur throughout the city through the planning horizon year of 2040. Table 4.11-5 presents the 2016 and projected 2040 population and housing estimates for the city based on the San Luis Obispo Council of Governments (SLOCOG) *2050 Regional Growth Forecast for San Luis Obispo County* and the proposed General Plan and LCP Update.

Table 4.11-5 Morro Bay Population and Housing Projections

City of Morro Bay	Existing (2016)[a]	General Plan and LCP Update 2040 Projections[b]	Change 2016 to 2040	Percent Change	SLOCOG Regional Growth Forecast 2040 Projections[c]	Change 2016 to 2040	Percent Change
Population (# of residents)	10,714	12,062	1,348	12.6%	12,092	1,378	12.9%
Housing (# of units; total/occupied)	6,414/ 4,988	7,295	881	13.7%/ 17.7%	5,660[1]	678[2]	13.6%

Notes:
1. SLOCOG 2040 Housing Unit Projections based on occupied units.
2. Change in occupied units from 2016 to 2040.
Sources:
a. DOF 2018
b. Draft *Plan Morro Bay* (General Plan and LCP Update)
c. SLOCOG 2016

As shown in Table 4.11-5, the General Plan and LCP Update projections anticipate that the city will grow by approximately 1,348 new residents and 881 new housing units while SLOCOG projects that the city will grow by approximately 1,378 new residents and 678 occupied housing units. Both the City and SLOCOG population projections are equivalent to an average annual population growth

rate of approximately 0.5 percent through the year 2040. The General Plan and LCP Update projections anticipate overall growth in housing units by approximately 13.5 percent by 2040 and SLOCOG projections similarly anticipate overall growth in occupied housing units by approximately 13.6 percent by 2040. Overall, the anticipated population growth in the city through 2040 under the General Plan and LCP Update is similar to but less than the SLOCOG population growth projections for the city.

In addition, the land use plan and policies in the General Plan and LCP Update focus on working within the existing framework of the city, with limited vacant land, to creating a balance of uses that improves housing options and affordability in the city, while providing for sufficient services that support anticipated population growth. Opportunities to accommodate population growth through General Plan and LCP Update implementation include accommodating greater density in areas such as downtown and future redevelopment of the Morro Bay Power Plant and existing wastewater treatment plant areas, as well as in parts of downtown and the adjacent SR 1 corridor, North Main Street, and SR 41 areas.

The following goal and policies in the General Plan and LCP Update Land Use Element would ensure that growth in the city is managed and occurs in a manner consistent with community values and resources available.

Goal LU-3 Morro Bay grows in a manner that maintains community identity and well-being.

Policy LU-3.1 **Growth Limits.** Continue to limit the amount of development, including future population growth accommodated by Plan Morro Bay to a level supported by adequate and long-term sustainable available land, water supply, and other infrastructure and service capacity.

Policy LU-3.3 **Future Growth.** Accommodate future growth of housing and jobs in Morro Bay that is consistent with vision, values, policies, and actions of this plan through both infill and potential limited expansion of the sphere of influence.

Policy LU-3.7 **Limited Outward Expansion.** Allow for some limited outward expansion beyond the city's existing limits to achieve large-scale conservation of parcels and a small amount of rural-scale residential use and visitor-serving amenities to serve conservation lands. Standards applied to the future sphere of influence (SOI) area include keeping development off of ridgelines and preserve views of the city's backdrop of undeveloped open land. (See also Policies C-9.1 through C-9.5 and Implementation Actions C-30 and C-31.)

Implementation of these General Plan and LCP Update policies would minimize potential adverse effects associated with substantial population growth facilitated by the General Plan and LCP Update by accommodating growth in underutilized areas of the city and limiting growth to a level supported by available resources.

The General Plan and LCP Update does not directly specify a maximum population for Morro Bay. However, any growth (including any potential expansion of the SOI) in Morro Bay must be consistent with Measure F, limiting the city population to 12,200 residents. To exceed this number, Morro Bay would be required to secure additional water resources and a majority of voters would have to elect to remove the limit. Several actions have been developed to implement the General Plan and LCP Update, including Action LU-6, which proposes to reopen public discussions about the Measure F 12,200-person limit and undertake a process to either affirm, amend, or repeal Measure

F when the city's population reaches 11,700. Therefore, the policies in the General Plan and LCP Update as well as the constraints of Measure F would prevent substantial population growth in the city such that it would result in adverse effects on the environment. This impact would be less than significant.

Mitigation Measures

Mitigation measures are not required.

Threshold 2:	Would the project displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere?

Impact PH-2 IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE WOULD NOT DISPLACE SUBSTANTIAL NUMBERS OF EXISTING HOUSING OR PEOPLE, NECESSITATING THE CONSTRUCTION OF REPLACEMENT HOUSING ELSEWHERE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

As shown in Table 4.11-5, the General Plan and LCP Update would enable development in Morro Bay through the year 2040 that could add up to 881 residential units to the city beyond the existing 2016 housing stock. The maximum possible number of residential units is determined by the maximum densities allowed for each land use designation and the amount of land area within that designation. However, the maximum number of units is unlikely to be reached because every residential parcel in Morro Bay would need to be developed to its maximum potential to reach the maximum number of units. Most of the planning area in Morro Bay is built out and existing buildings are generally in good condition. Therefore, consistent with General Plan and LCP Update Land Use Element Policy LU-3.5 to "Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay," development and redevelopment under the General Plan and LCP Update would primarily occur on the Morro Bay Power Plant and City wastewater treatment plant sites, as well as in parts of downtown and the adjacent SR 1 corridor, North Main Street, and SR 41 areas. Focusing development in these areas would maximize the use of underutilized parcels and minimize displacement of existing housing and people that could otherwise result in development pressure on the periphery of the city. Additionally, directing new growth in these areas would utilize existing transportation and utility infrastructure.

In addition to Goal LU-3 and Policies LU-3.1, LU-3.3, and LU-3.7 listed under Impact PH-1, the following goals and policies of the Land Use Element of the General Plan and LCP Update would minimize the potential impacts associated with displacement of people and/or housing in the city:

Goal LU-1 The community form of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.

Policy LU-1.1 **Land Use Pattern.** Maintain the current pattern of Morro Bay's land use to preserve the distinct character areas and community form, while enhancing and transforming areas with greatest potential for change to improve economic activity and align them with the community vision. (See Figure LU-4 Land Use Map.) New development shall be located within, contiguous with, or in close proximity to existing developed areas with adequate public services and where it will not have significant effects, either individually or cumulatively, on coastal resources.

Policy LU-1.6 **Innovative Housing Design.** Remove barriers to and create opportunities for innovative or nontraditional housing forms such as tiny houses, cohousing, and intergenerational housing.

Policy LU-1.7 **Mobile Home Parks.** Protect low-income housing opportunities offered by mobile home parks.

Policy LU-3.4 **High-Quality Jobs.** Support high-quality new development and redevelopment that provides for new economic activities, creates working family jobs that allow for upward mobility, improves housing affordability, and helps retain young individuals and families in the community.

Policy LU-3.5 **Infill Development.** Promote infill development on vacant or underutilized properties in the city as the preferred strategy for most new development in Morro Bay.

With incorporation of these goals and policies, the General Plan and LCP Update would result in a net increase in housing availability in the city, including affordable housing, and would provide housing to accommodate future growth.

Additionally, the City's Housing Element serves as a tool to identify and provide for the housing needs of the community. It identifies recent demographic and employment trends that may affect existing and future housing demand and supply. California law requires the Housing Element to establish policies and programs that support the provision of an adequate housing supply for citizens of all income levels. The Housing Element addresses the City's ability to meet the regional housing needs as determined by the State of California. As the Housing Element is up-to-date and in compliance, it does not require updates or additional review as part of the General Plan and LCP Update, but may be appended to the Blueprint in the future. Nevertheless, any development facilitated by the General Plan and LCP Update would be required to be consistent with applicable policies in the Housing Element.

Displacement of existing residential units could still occur during redevelopment under the General Plan and LCP Update. Although no residential development that would be displaced by implementation of the proposed General Plan and LCP Update has been identified, if any such temporary displacement did occur, the 881 new residential units that could be added as a result of the General Plan and LCP Update, including a proportion of these as affordable housing in compliance with the City's existing Housing Element and proposed Land Use Element policies, would replace displaced residences.

It is not known when or where displacement or construction of housing in the planning area would occur. Therefore, it cannot be determined what project-specific environmental impacts would result from the construction and operation of replacement housing. As potential residential development or redevelopment projects are identified, additional project specific environmental analysis, as necessary, would be completed at that time to evaluate project-specific impacts to displacement of existing residences. Because the General Plan and LCP Update and General Plan Housing Element include goals and policies to increase overall housing in the city, and there are no current plans for displacement of housing, impacts related to displacement of existing residences from the General Plan and LCP Update would be less than significant.

Mitigation Measures

No additional policy-oriented mitigation would be required to address this impact. As individual development projects are considered for construction, separate environmental review may be required, which could result in the implementation of project-specific mitigation measures.

d. Cumulative Impacts

As described above, the implementation of the General Plan and LCP Update would not contribute to the displacement of existing residences in the city. Additionally, growth facilitated by the General Plan and LCP Update would occur within the bounds of the city's planning area and would be consistent with the regional projections for the city. Therefore, the General Plan and LCP Update would not contribute to cumulative impacts related to displacement in the greater cumulative impact analysis area (San Luis Obispo County), and would not result in significant cumulative population growth impacts beyond the planning area and the incremental population impacts of the proposed General Plan and LCP Update would not be cumulatively considerable.

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4.12 Public Services and Recreation

This section assesses potential impacts to public services including fire and police protection, public schools, libraries, and parks and recreation from the proposed General Plan and LCP Update. Impacts to water, wastewater, and solid waste services are discussed in Section 4.14, *Utilities.*

4.12.1 Setting

a. Fire Protection

Fire protection, first response emergency medical services, ocean fire and rescue, and technical rescue services in Morro Bay are provided by the Morro Bay Fire Department (MBFD). MBFD also undertakes hazardous material operations along with other services such as training activities, fire prevention and code enforcement, public education and assistance, disaster preparedness, and management of the City's Emergency Operations Center.

Personnel, Facilities, and Equipment

The city is served by one fully staffed fire station (Fire Station 53/Headquarters) at 715 Harbor Street and one non-staffed fire station (Fire State 54) at 460 Bonita Street. Fire personnel for the City of Morro Bay include a fire chief, 11 career fire suppression personnel, a three-quarter-time administrative technician, a full-time fire marshal, and up to 20 part-time reserve firefighters. MBFD operates two fire engines, one quint (75-foot ladder truck), one rescue vehicle, one command vehicle, two utility vehicles, and a mass casualty trailer. In addition to the City-owned fire engines, MBFD operated one engine provided by the State Office of Emergency Services (OES). In exchange for the use of the OES engine, the City agrees to staff and respond the engine to emergencies beyond City jurisdiction when requested (Fire-Apparatus webpage, City of Morro Bay, accessed January 25, 2018; 2020 McLean, personal communication).

Aid Agreements

MBFD participates in both mutual aid and automatic aid agreements with neighboring communities. These reciprocal agreements give the MBFD authority to rapidly deploy resources to areas outside jurisdictional boundaries when the need arises. MBFD Firefighters and paramedics respond cooperatively with the Morro Bay Harbor Patrol and U.S. Coast Guard to provide emergency services for incidents occurring offshore.

MBFD shares use of the San Luis Obispo Emergency Command Center operated by a central County office, which dispatches for seven other fire departments.

Response Times

MBFD's goal is to maintain an average response time of five minutes 90 percent of the time. MBFD has divided the city into nine response zones or districts and averaged its response time to each zone. The department uses three additional zones (10, 11, and 12) to identify automatic or mutual aid calls outside the city limits. Response time incorporates the sum of dispatch time, fire fighter reflex time and driving time (City of Morro Bay 2004).

The Insurance Service Office (ISO), a national rating service sponsored by fire insurance carriers to measure firefighting capability to reduce structural fire losses, provides rankings to firefighting

capability, including response time, on a classification scale of 1-10, with Class 1 being the best level of service and Class 10 being no service at all. The ISO assigned the City of Morro Bay a Class 4 rating in 2013.

2014 was the busiest year for MBFD to date, with 1,908 incidents. MBFD experienced a 3.6 percent increase over the previous year's incidents in 2014, with a 10-year average of two percent increase annually (City of Morro Bay 2015).

Wildland Fire Hazards

San Luis Obispo County has a Mediterranean climate, with warm dry summers and relatively cool, moderately wet winters. Because summers are generally warm and dry, the risk of wildfires is highest in late summer and early fall. Fog and cool weather that are common in the coastal regions help to maintain moisture levels in vegetation along the coast, which helps to minimize fire risk. However, the hot and dry conditions of the Santa Lucia Mountains and the inland plains and valleys of the County can dry vegetation, increasing fire risk.

Vegetation in Morro Bay is mostly limited to low-growing grasses and scattered shrubs, characteristic of disturbed north coastal grasslands habitat. High humidity levels and cool ocean influenced temperatures also limit the potential for wildfires to occur. Areas of the city near Morro Bay State Park contain some native vegetation that present a moderate wildland/urban intermix fire hazard.

CAL FIRE determines fire hazard severity zones based on the potential fire hazard that is expected to prevail there. Factors in determining fire hazard severity zones include fuel (material that can burn), slope, and weather. CAL FIRE identifies three zones, based on increasing hazard severity: moderate, high, and very high. Moderate hazard zones are typically identified as either wildland areas supporting areas of typically low fire frequency and relatively modest fire behavior, or are developed/urbanized areas with a very high density of inflammable surfaces including roadways, irrigated lawn/parks, and low total vegetation cover (less than 30 percent) that is highly fragmented and low in flammability (e.g., irrigated, manicured, managed vegetation). There is one area within the limits of the City of Morro Bay with very-high fire hazard. The majority of the developed portion of Morro Bay is located outside of a mapped fire hazard severity zone. Wildland fire hazards are discussed in more detail in Section 4.7, *Hazards and Hazardous Materials*.

Climate Change and Future Fire Potential

The San Luis Obispo County Hazard Mitigation Plan identifies climate change as resulting in a warming trend that will result in longer, hotter, and drier fire seasons in the County. The region has been experiencing longer, hotter, and drier summers, which desiccates vegetation; this can result in larger and more intense wildfires that can impact agriculture and cities, particularly affecting the urban areas within the wildland/urban interface. This trend is expected to continue as a result of climate change. In addition, drought conditions in California increase the risk of wildfires for Morro Bay and surrounding areas.

b. Police Protection

The Morro Bay Police Department (MBPD) provides police protection services within the planning area. MBPD has two divisions: the Operations Division which includes code enforcement, equipment/ fleet management, investigations, patrol operations, special operations, and training programs; and the Support Services Division which includes business and support operations, public

safety communications, police finances, police records, and property and evidence. MBPD also runs or participates in a variety of community-based programs, including a police volunteer program, a police Explorer program, and an active neighborhood watch program.

Personnel, Facilities, and Equipment

According to the Community Baseline Assessment for the General Plan and LCP Update, the MBPD headquarters are located at 850 Morro Bay Boulevard. MBPD currently operates with a police chief, a commander, a support services manager, five sergeants, a detective, ten officers, one full-time and one part-time records clerks, and one part-time property and evidence technician (2020 Johnson, personal communication). This staffing reflects a reduction since 2010 due to budget constraints (Appendix B). MBPD officers serve a variety of roles including patrol, school resource officer, detectives, explorer advisor, regional SWAT team operator, bicycle patrol, and drug recognition evaluator.

Aid Agreements

Morro Bay has mutual aid agreements with neighboring communities including Los Osos, Cayucos, Cambria, and San Luis Obispo County. As of mid-2014, the MBPD conducts dispatching with the San Luis Obispo Sheriff's Office as the result of an agreement for both fire and police dispatching. The regionalized dispatching is intended to provide enhanced coordination for multiple jurisdictional responses during emergencies, improved organizational efficiency using multiple dispatchers, and increased access for the community (Appendix B).

Types of Calls

In 2014, the most recent reporting year, MBPD had 10,865 individual items to respond to, including calls for service and actions initiated by police officers. Officers made 578 arrests, wrote 1,247 police reports, and investigated 22 traffic collision reports (MBPD 2014; MBPD 2019).

c. Schools

The San Luis Coastal Unified School District (SLCUSD) provides elementary school (Kindergarten through 12th Grade) public education services to Morro Bay. There are 15 schools in SLCUSD, two of which are located in the General Plan and LCP Update planning area: Del Mar Elementary and Morro Bay High School. Middle-school aged children (grades 6-8) attend Los Osos Middle School, which is in the unincorporated community of Los Osos, south of the City of Morro Bay.

Enrollment

Table 4.12-1 identifies the enrollments and staffing for the 2017-2018 school year for the schools in the planning area. Table 4.12-2 shows enrollment trends for these two schools.

Table 4.12-1 2017-2018 Enrollment for SLCUSD Schools in Morro Bay

School Name	Grades	Enrollment	Teachers	Average Class Size
Del Mar Elementary	TK-5	375	24	23.4
Morro Bay High	9-12	821	44	25.8

Sources: California Department of Education 2018a, 2018b

Table 4.12-2 Enrollment Trends for SLCUSD Schools in Morro Bay

School Name	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	% Change 2009-2010 to 2017-2018
Del Mar Elementary	448	438	463	484	456	443	398	409	375	-16.3%
Morro Bay High	857	849	845	852	825	867	860	813	821	-4.2%

Source: California Department of Education 2018c

Based on the data presented in Table 4.12-1, the average class size for Del Mar Elementary School is 23.4 and the average class size for Morro Bay High School is 25.8, and the student to teacher ratio was 15.6 to 1 at Del Mar Elementary School and 18.6 to 1 at Morro Bay High School during the 2017-2018 school year. As shown in Table 4.12-2, enrollment at both Del Mar Elementary School and Morro Bay High School decreased between the 2009-2010 and 2017-2018 school years.

Facilities Master Plan

During the 2013-14 school year, SLCUSD updated its Facilities Master Plan. This process included updating educational specifications, conducting a needs assessment, and developing a vision for potential facility plans throughout SLCUSD. The Facilities Master Plan provides macro-level information about the buildings, grounds, existing conditions, and enrollment within SLCUSD and uses this information to determine the most optimal facilities for teaching and learning for each of the schools in SLCUSD. According to the facility data and assessment for Del Mar Elementary School in the SLCUSD Facilities Master Plan, Del Mar Elementary School facilities total 49,552 square feet and require an additional 8,653 square feet to meet SLCUSD's standard elementary program model. According the facility data and assessment for Morro Bay High School in the SLCUSD Facilities Master Plan, Morro Bay High School facilities total 176,775 square feet, which exceeds SLCUSD's standard high school program model by 48,576 square feet (SLCUSD 2014). In recent years Morro Bay High School has expanded facilities with the addition of a pool and expansion, renovation, and construction of other facilities through Measure D funding.

d. Public Libraries

Library services are provided in the city by the Morro Bay Library. The library, located at 625 Harbor Street, is part of the San Luis Obispo County Libraries network of information centers serving six of the seven incorporated cities and all of the unincorporated communities in the County. Morro Bay Library offers circulation of books, magazines, newspapers, government publications, and other special publications, in addition to providing free internet access on library computers and via Wi-Fi (County of San Luis Obispo 2018).

e. Parks, Recreation, and Open Space

The Open Space/Recreation land use designation comprises over 5,100 acres of recreation and open space area in Morro Bay's planning area, including 50 acres of local parkland and three linear miles of public beaches. Residents and visitors use these sites for both passive and active recreation, including organized sports, surfing, running, walking, and picnics, and children's play areas. Open

space in the planning area consists of resource-based parks and community-based parks, which are described in greater detail below.

Community-Based Open Space

Community-based open space in Morro Bay is designated for developed parks located in neighborhoods and commercial areas. Community-based open space is provided in approximately 12 parks in the city and includes playgrounds, picnic areas, outdoor shade shelters, playing fields and courts, and other man-made structures. Approximately half of the community-based parks are City-owned, while the rest are funded from a variety of other sources.

Resource-Based Open Space

Resource-based open space in Morro Bay is primarily managed to protect and preserve natural resources while providing scenic and passive uses for residents and visitors. These are generally unimproved areas that preserve open space, such as environmentally sensitive habitat areas, coastlines, and wetlands. Resource-based open space areas can be City-owned, State-owned, or privately owned lands. The City manages three resource-based parks in Morro Bay, while the State operates two state parks, a state beach, and a state marine recreation management area.

Table 4.12-3 identifies the existing open space in the planning area by category and acreage.

Table 4.12-3 Existing Open Space Area by Type in Morro Bay Planning Area

Type	Approximate Acreage
City-owned community-based parks	28
City-owned resource-based parks	5
Other community-based parks	14
Other resource-based parks	5,084

Source: Community Baseline Assessment for the General Plan and LCP Update (Appendix B)

Under the California Quimby Act, cities can require land or in-lieu fees in order to achieve a minimum of three acres per 1,000 residents, with the possibility of increasing the requirement to a maximum of five acres per 1,000 residents if the City already provides more than three acres per 1,000 residents. As shown in Table 4.12-3, the City owns and operates approximately 33 acres of accessible open space and parkland, providing an existing park service ratio of 3.1 acres per 1,000 residents for the 2016 population of 10,714.

f. Regulatory Setting

Fire Protection

Disaster Mitigation Act (2000-Present)

Section 104 of the Disaster Mitigation Act of 2000 (Public Law 106-390) requires a state mitigation plan as a condition of disaster assistance. There are two different levels of state disaster plans: “Standard” and “Enhanced.” States that develop an approved Enhanced State Plan can increase the amount of funding available through the Hazard Mitigation Grant Program. The Act has also established new requirements for local mitigation plans.

National Fire Plan (NFP) 2000

The National Fire Plan was developed under Executive Order 11246 in August 2000, following a landmark wildland fire season. Its intent is to actively respond to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

California Fire Plan

The Strategic California Fire Plan is the State's road map for reducing the risk of wildfire. The plan was updated in 2012 and directs each CAL FIRE Unit to prepare a locally specific Fire Management Plan. In compliance with the California Fire Plan, individual CAL FIRE units are required to develop Fire Management Plans for their areas of responsibility. These documents assess the fire situation within each of CAL FIRE's 21 units and six contract counties. The plans include stakeholder contributions and priorities and identify strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work with the local fire problem. The plans are required to be updated annually.

California State Multi-Hazard Mitigation Plan, draft (updated 2013)

The purpose of the State Multi-Hazard Mitigation Plan (SHMP) is to significantly reduce deaths, injuries, and other losses attributed to natural and human-caused hazards in California. The SHMP provides guidance for hazard mitigation activities emphasizing partnerships among local, state, and federal agencies as well as the private sector. The California Office of Emergency Services (OES) prepares the State of California Multi-Hazard Mitigation Plan (SHMP). The SHMP identifies hazard risks and includes a vulnerability analysis and a hazard mitigation strategy. The SHMP is Federally required under the Disaster Mitigation Act of 2000 in order for the State to receive federal funding. The Disaster Mitigation Act of 2000 requires a State mitigation plan as a condition of disaster assistance.

Wildland-Urban Interface Building Standards

On September 20, 2007 the Building Standards Commission approved the Office of the State Fire Marshal's emergency regulations amending the California Code of Regulations, Title 24, Part 2, known as the 2007 California Building Code (CBC). These codes include provisions for ignition-resistant construction standards in the wildland urban interface.

California Fire and Building Codes

The California Building Code, Title 24, Part 2 provides building codes and standards for the design and construction of structures in California. Part 9 of Title 24 is known as the California Fire Code. By establishing minimum requirements, the code, "safeguards the public health, safety and general welfare from the hazards of fire, explosion or dangerous conditions, […] and provides safety and assistance to fire fighters and emergency responders." The provisions of the Building and Fire Codes apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California.

Government Code 65302.5: General Plan Fire Safety Element Review

This statute requires the State Board of Forestry and Fire Protection to provide recommendations to a local jurisdiction's General Plan fire safety element at the time that the General Plan is amended. While not a direct and binding fire prevention requirement for individuals, General Plans that adopt the Board's recommendations will include goals and policies that provide for contemporary fire prevention standards for the jurisdiction.

San Luis Obispo County and San Luis Obispo County Flood Control and Water Conservation District Local Hazard Mitigation Plan

The San Luis Obispo County and San Luis Obispo County Flood Control and Water Conservation District Local Hazard Mitigation Plan identifies measures that the County will take to lower the hazard risk to property and life. Wildfire hazard mitigation features prominently in the plan due to the relatively rural nature of the County and its high fire risk, as identified by CAL FIRE.

CAL FIRE/San Luis Obispo County Fire Community Wildfire Protection Plan

The CAL FIRE/San Luis Obispo County Fire Community Wildfire Protection Plan (CWPP) makes the connection between fuel breaks, fire breaks, road-side fuel treatments, defensible space, and fuel reduction, providing communities and agencies with guidance on wildfire prevention and protection.

Police Protection

California Commission on Peace Officer Standards and Training (POST)

The California Commission on Peace Officer Standards and Training (POST) advocates for, exchanges information with sets selection and training standards for, and works with law enforcement and other public and private entities. POST was established by the Legislature in 1959 to identify common needs that are shared by representatives of law enforcement.

Schools

California Code of Regulations

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the State.

California State Assembly Bill 2926 (AB 2926) – School Facilities Act of 1986 – was enacted by the State of California in 1986 and added to the California Government Code (Section 65995). It authorizes school districts to collect development fees, based on demonstrated need, and generate revenue for school districts for capital acquisitions and improvements. It also established that the maximum fees which may be collected under this and any other school fee authorization are $1.50 per square foot ($1.50/ft^2) for residential development and $0.25/ft^2 for commercial and industrial development.

AB 2926 was expanded and revised in 1987 through the passage of AB 1600, which added Section 66000 *et seq.* of the Government code. Under this statute, payment of statutory fees by developers serves as total mitigation under CEQA to satisfy the impact of development on school facilities. However, subsequent legislative actions have alternatively expanded and contracted the limits placed on school fees by AB 2926.

California Senate Bill 50 (SB 50)

As part of the further refinement of the legislation enacted under AB 2926, the passage of SB 50 in 1998 defined the Needs Analysis process in government Code Sections 65995.5-65998. Under the provisions of SB 50, school districts may collect fees to offset the costs associated with increasing school capacity as a result of development. The fees (Level One fees) are addressed based upon the proposed square footage of residential, commercial/industrial, and/or parking structure uses. Level Two fees require the developer to provide one-half of the costs of accommodating students in new schools, while the state would provide the other half. Level Three fees require the developer to pay the full cost of accommodating the students in new schools and would be implemented at the time the funds available from Proposition 1A (approved in 1998) are expended. School districts must demonstrate to the State their long-term facilities' needs and costs based on long-term population growth in order to quality for this source of funding. However, voter approval of Proposition 55 in 2004 precludes the imposition of the Level Three fees for the foreseeable future. Therefore, once qualified, districts may impose only Level Two fees, as calculated according to SB 50 (Greene 1998).

Parks and Recreation

Quimby Act

The Quimby Act was established by the California legislature in 1965 to provide parks for growing communities in California. The Act authorizes cities to adopt ordinances addressing park land and/or fees for residential subdivisions for the purpose of providing and preserving open space and recreational facilities and improvements. The Act requires the provision of a minimum of three acres of park area per 1,000 persons residing within a subdivision. The Act also specifies acceptable uses and expenditures of such funds.

State Public Park Preservation Act

This primary instrument for protecting and preserving parkland is the State Public Park Preservation Act. Under the Public Resource code, cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This provides no net loss of parkland and facilities.

State Street and Highway Code

The State Street and Highway Code assists in providing equestrian and hiking trails within the right-of-way of county roads, streets, and highways.

4.12.2 Impact Analysis

a. Methodology and Significance Thresholds

According to Appendix G to the *CEQA Guidelines*, impacts related to public services from the proposed project would be significant if it would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other objectives for:

    a. Fire Protection;

b. Police Protection;

c. Schools;

d. Parks; and

e. Other Public Facilities.

According to Appendix G to the *CEQA Guidelines*, impacts related to recreation from the proposed project would be significant if it would:

2. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
3. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other objectives for fire protection, police protection, schools, parks, or other public facilities?

Impact PUB-1 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD RESULT IN AN INCREASE IN THE CITY'S POPULATION. THIS WOULD INCREASE DEMAND FOR FIRE, POLICE, SCHOOL, AND EMERGENCY MEDICAL SERVICES AND POTENTIALLY CREATE THE NEED FOR NEW POLICE, FIRE, SCHOOL, OR OTHER SERVICE FACILITIES. HOWEVER, COMPLIANCE WITH POLICIES IN THE GENERAL PLAN AND LCP UPDATE, PAYMENT OF CITY-REQUIRED PUBLIC FACILITIES IMPACT FEES, AND MANAGEMENT OF FUTURE GROWTH WOULD AVOID ADVERSE ENVIRONMENTAL EFFECTS ASSOCIATED WITH THE PROVISION OF NEW OR PHYSICALLY ALTERED FIRE, POLICE, SCHOOL AND OTHER PUBLIC FACILITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Development facilitated by the proposed General Plan and LCP Update would result in an increase to the city's population, which would result in an incremental increase in demand for fire and police protection, and other public services such as library services, potentially creating the need for new or expanded facilities supporting these public services. Additionally, increased residential development as a result of the General Plan and LCP Update would increase demand on public schools in the planning area, as shown in Table 4.12-4. Potential environmental impacts associated with an increase in population in the city are also discussed in Section 4.11, *Population and Housing*.

Table 4.12-4 Projection of Students from New Residential Development

Grade Level	Projected # New Units	Student Yield Rates	Projected Students
K-6	881	0.209	184
9-12		0.093	82

Source: SLCUSD 2016

Note: Student yield rates comprise the average of the student yield rates for single-family and multi-family rates for the respective grade levels.

As shown in Table 4.12-4, development facilitated by the General Plan and LCP Update would result in an increase of 184 elementary age students and 82 high school age students to Del Mar Elementary and Morro Bay High School, respectively. According to the SLCUSD 2016 Developer Fee Justification Study and based on 2015-2016 school year enrollment rates, the coastal areas of SLCUSD, including Morro Bay, had available school capacity for 480 additional students in the K-5/6 grade levels and 409 additional students in the 9-12 grade levels. As shown in Table 4.12-2, enrollment in the SLCUSD schools in Morro Bay has decreased since the 2015-2016 school year, which would allow for additional capacity. Therefore, the General Plan and LCP Update would not be expected to directly result in the need for new or expanded schools, the construction of which could result in adverse impacts to the environment. Nevertheless, as detailed in the SLCUSD 2016 Developer Fee Justification Study, SLCUSD has identified a need to reconstruct, replace, renovate and modernize existing school facilities to adequately house incoming students from new residential development and meet the standard of educational programs currently provided by SLCUSD. In recent years Morro Bay High School has expanded facilities with the addition of a pool and expansion, renovation, and construction of other facilities through Measure D funding.

The Community Vision section of the General Plan and LCP Update establishes a Vision and Values statement for the city to provide a comprehensive vision for Morro Bay in the future and identify the community's key priorities. The community values include a Resident Services Value to provide a range of public services such as police, fire, schools, parks, and recreation services that support a diverse and multigenerational community. The General Plan and LCP Update Land Use Element includes the following goals and policies that would facilitate development in a manner that provides for the service needs while achieving the vision for the community.

Goal LU-3 Morro Bay grows in a manner that maintains community identity and well-being.

Policy LU-3.1 **Growth Limits.** Continue to limit the amount of development, including future population growth accommodated by *Plan Morro Bay*, to a level supported by adequate and long-term sustainable available land, water supply, and other infrastructure and service capacity.

Policy LU-3.3 **Future Growth.** Accommodate future growth of housing and jobs in Morro Bay that is consistent with vision, values, policies, and actions of this plan through both infill and potential limited expansion of the sphere of influence.

Additionally, in the event that new facilities or extended services are necessary, the following goals and policies from the Land Use, Community Design, Public Safety, and Environmental Justice Elements of the General Plan and LCP Update would serve to protect the environment upon development in the planning area by ensuring that development occurs in areas intended for these uses and in a manner that protects the resources in these areas.

Goal LU-1 The community for of Morro Bay reflects its vision and values, promoting a strong economy and high quality of life.

Policy LU-1.2 **Realistic Development Capacity.** Protection of sensitive habitats, natural landforms, scenic resources, and other coastal resources shall be a priority in all City actions and decisions, and all development standards (including with respect to height, setback, density, lot coverage, etc.) shall be interpreted as maximums (or minimums) that shall be reduced (or increased) to protect and enhance such resources and meet LCP objectives to the maximum extent feasible. Development shall only be authorized when the proposed use is

allowed per the applicable land use designation, and when it meets all applicable LCP policies and standards.

Goal CD-1 The individual identity of each of Morro Bay's character areas is embraced and represented by new and renovated development.

Policy CD-1.2 **Compatible New Development.** Require new development projects to be compatible with the vision for the area in which it is located, as described in the Vision for Community Character Areas, above, including ensuring that new development is located within existing developed areas and built in a manner that respects and responds to their unique natural and built environments.

GOAL PS-2 Development is protected from natural disasters and hazards to the greatest extent possible.

Policy PS-2.6 **Plan Consistency**. Work with fire districts, other agencies, and property owners to ensure consistency with related plans including the Morro Bay and San Luis Obispo County Emergency Operations Plans, and to coordinate efforts to prevent wildfires and grassfires through fire protection measures such as consolidation of efforts to abate fuel buildup, and access to firefighting equipment and water service.

Policy PS-2.6 **Additional Fire Protection Standards for All Development**. In addition to other hazard requirements that may apply, the following fire protection standards apply to all development:

a. New Development and Fire Safety. New development shall meet all applicable fire safety standards and shall be sited and designed to minimize fuel modification and brush clearance to the maximum feasible extent, and to avoid such activities within ESHA and ESHA buffers on- site and on neighboring property, as well as parkland. All such requirements shall be applied as conditions of approval applicable for the life of the development.

b. Existing Development and Fire Safety. Removal of major vegetation adjacent to existing development for fire safety purposes shall only be allowed upon a finding that fuel modification and brush clearance techniques are required in accordance with applicable fire safety regulations and are being carried out in a manner which reduces coastal resource impacts to the maximum feasible extent. In addition to the foregoing requirements, removal of ESHA, or removal of materials in an ESHA buffer, shall only be allowed for fire safety purposes: if it is not already prohibited by coastal permit conditions; if there are no other feasible alternatives for achieving compliance with required fire safety regulations; and if all ESHA and related impacts are mitigated in a manner that leads to no net loss of ESHA resource value.

Goal EJ-1 Morro Bay residents enjoy a high quality of life that contributes to their mental, physical, and social well-being.

Policy EJ-1.3 **Services for All.** Ensure the accessibility of facilities and services that meet the cultural, linguistic, gender, and sexual orientation needs of client populations.

The General Plan and LCP Update does not directly specify a maximum population for Morro Bay. However, growth (including any potential expansion of the SOI) in Morro Bay must be consistent with Measure F, limiting the city population to 12,200 residents. To exceed this number, Morro Bay would be required secure additional water resources and a majority of voters would need to elect to remove the limit. Several actions have been developed to implement the General Plan and LCP Update, including Action LU-6, which proposes to reopen public discussions about the Measure F 12,200-person limit and undertake a process to either affirm, amend, or repeal Measure F when the city's population reaches 11,700.

Compliance with the goals and policies in the General Plan and LCP Update, payment of City-required public facilities impact fees, including SLCUSD-imposed residential developer fees, as well as the constraints of Measure F, would prevent substantial population growth in the city that would result in adverse impacts related to the provision of new or expanded public services and facilities. Additionally, future development facilitated by the General Plan and LCP Update would be required to pay City-required public facilities impact fees to offset the impact of developments on public services and facilities. New public service facilities that would be constructed in the city would require project-specific environmental analysis and implementation of any necessary project-specific mitigation prior to being considered for approval. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 2:	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
Threshold 3:	Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact PUB-2 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INCREASE THE CITY'S POPULATION WITH COMMENSURATE INCREASES IN DEMAND FOR PARKS AND RECREATION FACILITIES. ADDITIONAL PARKLAND HAS BEEN PLANNED SUCH THAT THE PARK SERVICE RATIO WOULD SATISFY THE CITY'S REQUIREMENT TO PROVIDE A MINIMUM OF THREE ACRES OR PARKLAND PER 1,000 RESIDENTS, CONSISTENT WITH QUIMBY ACT REQUIREMENTS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Development facilitated by the proposed General Plan and LCP Update would result in an increase to the city's population which would result in an incremental increase in demand on existing public parks or other recreational facilities. The City currently owns and operates approximately 33 acres of accessible open space and parkland, providing an existing park service ratio of 3.1 acres per 1,000 residents for the 2016 population of 10,714. Although there are over 3,000 acres of State- and privately-owned parks and beaches in and around the city that provide additional recreational opportunities to city residents and visitors, State- and privately-owned facilities are not typically relied upon as city recreational facilities that count toward the applicable Quimby Act parkland standard of three acres per 1,000 residents. The General Plan and LCP Update would not directly expand the City-owned public parks and recreational areas. Based on the 2040 projected population of 12,062, the park service ratio would be reduced to approximately 2.8 acres per 1,000 people under buildout conditions without additional provision of parkland. However, as shown in Section 2,

Project Description, the planned Morro Bay Power Plant/WWTP redevelopment areas would designate additional land as Open Space/Recreational land use, allowing for potential future development of City owned and operated open space and parkland (refer to Figure 2-4).

The Community Vision section of the General Plan and LCP Update establishes a Vision and Values statement for the city to provide a comprehensive vision for Morro Bay in the future and identify the community's key priorities. The community values include a Natural Environment Value to ensure that parks and recreation spaces are resilient and accessible to all community members. The community values also include a Resident Services Value to provide a range of public services such as parks and recreation services that support a diverse and multigenerational community. The General Plan and LCP Update Open Space Element includes the following goals and policies that would facilitate development in a manner that provides for the parks and recreational service needs while achieving the vision for the community.

Goal OS-1 The public has access to plentiful and well-maintained parks, beaches, and recreational activities throughout Morro Bay.

Policy OS-1.1 **Quimby Act.** Continue to achieve a ratio of at least 3.0 acres of parks per 1,000 residents.

Policy OS-1.3 **California Coastal Trail Alignment.** Create a plan for the implementation of the California Coastal Trail. Ensure a continuous main spine of the California Coastal Trail throughout the length of the Morro Bay coastal zone, along with desirable offshoots and spurs, all within sight, smell, and sound of the ocean.

Policy OS-1.4 **Protection from Development.** Ensure that no development or project impedes public access to any park, open space, or beach. Protect, restore, and enhance all existing parks, beaches, open spaces, and trails. Prohibit new non-public recreational access structures on publicly used beaches.

Policy OS-1.5 **Coast Maintenance.** Maintain the beaches, bay, and ocean as natural recreational resources, not only for the city but also for the Central Coast region.

Policy OS-1.6 **Accessible Coast.** Maintain and enhance recreational access to the coast and its recreational facilities, and continue to provide resources that improve accessibility to the beach and shoreline for all users.

Policy OS-1.7 **Shoreline Recreation Variety.** Consider devoting portions of the coast to different preferred recreational uses while maintaining access for all users to meet the needs of both visitors and residents.

Policy OS-1.8 **Promote Recreational Activities and Opportunities.** Increase and enhance access to parks and open space, particularly access points that promote physical activity such as pedestrian- and bicycle-oriented access points.

Policy OS-1.9 **Maintain Open Space**. Improve and update park and open space facilities on a regular basis.

Policy OS-1.10 **Coastal Park Access.** Create new additional parks, open spaces, and pedestrian amenities along the shoreline to extend public accessibility.

Policy OS-1.11 **Private Park Interests.** Encourage local businesses to create parklets in areas where there will not be a significant impact to parking.

Policy OS-1.12 **Park Development.** Seek opportunities to develop and acquire additional parks and open space in underserved areas where needed.

Policy OS-1.15 **Joint Use Agreements.** Continue, renew, and expand (as needed) joint use agreements with the school district to allow community use of school fields and facilities.

Goal OS-2 The multigenerational community has access to a wide variety of recreational opportunities throughout Morro Bay.

Policy OS-2.1 **Assessment of Community Needs.** Update existing facilities to accommodate changing recreation interests and needs.

Policy OS-2.2 **Adequate Recreation Opportunities.** Ensure that recreational parks, trails, and facilities correspond to the development and growth of the city's population.

Policy OS-2.3 **Quality Recreational Facilities.** Ensure that maintenance, restoration, and improvements made to existing facilities accommodate all age levels and varieties of activities.

Goal OS-3 The City coordinates effectively with other public and private entities to support an active community with a diverse range of interconnected open spaces and recreation facilities to promote a healthy, engaged public.

Policy OS-3.1 **Government Funding.** Actively pursue state and federal grants to fund continual improvements to parks and recreational facilities.

Policy OS-3.2 **State Park Collaboration.** Coordinate recreational offerings with implementation of the Morro Bay State Park General Plan and the Morro Strand and Atascadero State Beach General Plan to provide a cohesive recreation system.

Policy OS-3.3 **Developer Partnerships.** Work with developers to incorporate recreational open space as part of future projects.

Policy OS-3.4 **Private Investment.** Facilitate public/private agreements to develop and maintain public open spaces, parks, and conservation areas.

Policy OS-3.5 **Public Facility Collaboration.** Work with the San Luis Coastal Unified School District to identify needs in the community for different recreational opportunities.

Policy OS-3.7 **Innovative Funding Sources.** Explore the availability of funding opportunities from corporate sponsors and private organizations in the area to increase parkland.

Implementation of these General Plan and LCP Update goals and policies, in addition to payment of required City-required park impact fees, and the growth constraints associated with Measure F would ensure that growth in the city would not result in adverse environmental effects associated with the physical deterioration of public parks and recreational facilities. The General Plan and LCP Update does not directly provide new neighborhood, community, or other city parklands that would allow the city to meet the parkland ratio established by the Quimby Act and included in the General Plan and LCP Update as Open Space Element Policy 1.1. However, the planned Morro Bay Power Plant/WWTP redevelopment areas would designate additional land as Open Space/Recreational land use, allowing for potential future development of City owned and operated open space and

parkland. The new Open Space/Recreational land use designated areas, in combination with Quimby Act in-lieu fees intended to provide additional open space and parkland, would allow the city to meet the parkland ratio included in the General Plan and LCP Update as Open Space Element Policy 1.1. Therefore, the General Plan and LCP Update would contribute to the need for new or expanded park or recreational facilities, but would also provide the policy framework and physical opportunities to provide expanded park or recreational facilities. As a result, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

c. Cumulative Impacts

The scope for potential cumulative impacts to public services and recreation includes all projects within the same service area. The analysis in this section examines the potential impacts to public services and parks and recreational facilities in Morro Bay as a result of all potential buildout in the service areas for these resources. Therefore, the analysis of impacts to these services and associated facilities is cumulative in nature. The General Plan and LCP Update would result in less than significant impacts to fire, police, school, public parks and recreation, and other public services and facilities. Therefore, the General Plan and LCP Update would result in less than significant cumulative impacts to these resources.

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4.13 Transportation

This section evaluates the potential impacts to the local and regional circulation system that would result from implementation of the General Plan and LCP Update. This includes an analysis of the potential for the General Plan and LCP Update to increase local and regional traffic volumes, increase hazards due to a design feature, interfere with emergency access, or conflict with applicable alternative transportation systems.

Transportation data in this section is based on the Morro Bay Circulation Element Update Final Technical Report, completed by Central Coast Transportation Consulting (2018). This report is provided as Appendix E to this report, and contains traffic counts, level of service (LOS) calculations, and a detailed description of the traffic forecasting prepared for the analysis.

4.13.1 Setting

The transportation network in Morro Bay encompasses infrastructure, facilities and amenities, and transit services. The system is a connected grid network, with pedestrian and bicycle infrastructure on many of the main streets.

a. Street Network

Roadways in Morro Bay are typically classified as follows:

- **Freeways.** Freeways are intended to carry high volumes and high speed traffic. Access is limited with grade-separated interchanges accommodating flows to and from the freeway mainline. Freeways are designed to maximize mobility, not to serve abutting land uses. The segment of State Route (SR) 1 in Morro Bay between South Bay Boulevard and Atascadero Road operates as a freeway.
- **Expressways.** Expressways are high volume and high speed facilities with access provided at controlled at-grade intersections. Expressways emphasize mobility and are not intended to serve abutting land uses. The segment of SR 1 in Morro Bay from Yerba Buena Street north to the city limits operates as an expressway.
- **Arterials.** Arterials balance mobility and access, carrying moderate volumes at lower speeds and serving abutting land uses. Main Street, Morro Bay Boulevard, and the segments of SR 41 in Morro Bay east of SR 1 operate as arterials. Arterials can also be divided into principal and minor arterials. Principal arterials serve more vehicles and have wider shoulders than minor arterials. Principal arterials can also have a median and partial access controls, while minor arterials always lack a median and have uncontrolled access.
- **Collectors.** Collectors gather traffic from local roads and tie into the arterial roadway network. Collector roadways often pass through residential areas and may have direct driveway access connected to individual residential parcels. Collectors can be divided into major and minor collectors, with the principal distinction between qualitative differences about their distance and the types of land uses served.
- **Local Roads (Streets).** Local roads provide access to abutting land uses and connect to the collector and arterial street network. Local roads typically constitute the largest percentages of roadways in terms of mileage.

Many roadways in Morro Bay are designed to be complete streets, accommodating multiple travel modes and user needs. Figure 4.13-1 shows the functional classifications of the existing roadways in the planning area according to the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA). In some cases the functional classifications used by Caltrans and shown on Figure 4.13-1 differ from the roadway classifications provided above.

b. Pedestrian and Bicycle Facilities

The city's well-established grid network, mild weather, and relatively flat topography support walking and biking. The U.S. Census Bureau estimates that in 2016, 6.1 percent of working-age residents in Morro Bay walked to work, 0.3 percent bicycled to work, and 84.8 percent used vehicles to commute to work (U.S. Census Bureau 2016). Pedestrian and bicycle facilities in Morro Bay are described below.

Pedestrian Facilities

Pedestrian facilities in Morro Bay consist of sidewalks, trails and paths, and crosswalks. Sidewalks are provided along the Embarcadero and along most streets in the downtown area of Morro Bay. Most single-family residential areas in Morro Bay lack sidewalks. Section 12.04.010 of the Morro Bay Municipal Code requires that new developments conform to the City's Standard Drawings and Specifications. The City's Standard Drawings and Specifications require sidewalks for commercial, industrial, and high-density residential uses as well as on arterial, local, and collector roads not bordered by one or more of these land uses. Hillside streets in single-family residential or duplex residential zoning districts are required to provide a flat, walkable surface on one side of the road.

There are four types of crosswalks in Morro Bay: signalized crossings, controlled marked crossings, uncontrolled marked crossings, and unmarked crossings. Signalized crossings provide marked crosswalks and pedestrian signal heads. The three signalized intersections in Morro Bay provide signalized crossings on at least two legs of the intersection. Controlled marked crossings provide striped crosswalks with a stop or yield sign on at least one leg of the intersection. There are 44 controlled marked crossings in Morro Bay, mostly in the downtown area. There are two signalized crossings across SR 1, one at San Jacinto Street and a second at Yerba Buena Street. A crosswalk, green bike lane striping, and rapid flash beacon were recently installed near the Atascadero Road/SR 1 southbound ramp intersection. Uncontrolled marked crossings provide striped crosswalks at mid-block and uncontrolled locations. Unmarked crossings constitute the remainder of crosswalks wherever two public roads intersect, per the California Vehicle Code.

There are several trails and paths in Morro Bay. The Harborwalk is a multi-use bicycle and walking path connecting the Embarcadero to Morro Rock. This path is heavily used by locals and visitors. The California Coastal Trail is a hiking and bicycling trail that spans from Oregon to Mexico. The California legislature formally established the trail in 2001 and provided a general alignment. There is some existing signage for the trail along the Bayfront of the Embarcadero. Additional recreational hiking trails are provided in Morro Bay State Park. These include the Black Hill hiking areas and walking paths along the estuary near the State Park marina.

Bicycle Facilities

Bicycle facilities in Morro Bay are described in four classes of facilities:

Bikeways are facilities that provide primarily for, and promote, bicycle travel. There are four types of bikeway classifications identified by the City. These classes are as follows:

Figure 4.13-1 Existing Roadways in the Planning Area

- **Class I.** Paths or trails, separated from roadways, for the exclusive use of bicycle and pedestrian modes of travel with a minimum of vehicular cross-flow. The Harborwalk path is an example of a Class I bikeway facility. Approximately 3.6 miles of Class I bikeways exist in Morro Bay.
- **Class II.** Striped lane for one-way bicycle travel on a street or highway. Approximately 7.1 miles of Class II bikeways exist in Morro Bay.
- **Class III.** Roads where bicycles and vehicles share the travel lanes of the roadway. These routes are supplemented with signs and pavement legends including sharrows, which are shared-lane markings. The section of Beachcomber Street south of Yerba Buena Street is an example of a Class III bike route with sharrows.
- **Class IV.** Designated lanes for bicycles on roadways, but which are also separated from the roadway traffic by barricades, such as bollards, grade separation, or on-street parking. No Class IV bikeway facilities currently exist in Morro Bay.

c. Public Transit

Regional Transit

The San Luis Obispo Regional Transit Authority (RTA) is a joint powers authority providing fixed-route regional service throughout San Luis Obispo County and serving the Morro Bay Transit Center on Harbor Street in Morro Bay. RTA provides American with Disabilities Act paratransit service through the Runabout, a demand response system operating within three-quarters of a mile of all fixed-route services in San Luis Obispo County. RTA ridership has consistently increased each year since 2007 (Appendix E).

RTA Route 12 runs from Morro Bay to San Luis Obispo with stops in Los Osos, Cuesta College, and California Polytechnic State University (Cal Poly). It runs on one-hour headways on weekdays and two-hour headways on weekends. RTA Route 15 runs from Morro Bay to San Simeon with stops in Cayucos and Cambria. It operates on two- to three-hour headways on weekdays and Saturdays and four-hour headways on Sundays (Appendix E).

Local Transit

The City operates Morro Bay Transit, which provides fixed-route bus service with hourly headways from 6:25 a.m. to 6:45 p.m. on weekdays and 8:25 a.m. to 4:25 p.m. on Saturdays. Curb-to-curb service is provided within three-quarters of a mile of the fixed route on a reservation basis. This route serves the major campgrounds, high school, senior center, grocery store, and neighborhoods throughout Morro Bay (Appendix E).

The Morro Bay Trolley operates three loops from Memorial Day weekend through the first weekend in October. The routes serve north Morro Bay, the downtown area, and the waterfront with headways of less than one hour. Stops are provided at the State Park campground, downtown, the Embarcadero, Morro Rock, and Morro Strand campground (Appendix E).

Ridership on the Morro Bay Transit Fixed Route and Call-A-Ride service increased by about 30 percent from fiscal years 2012 to 2015. However, over the same period, Morro Bay Trolley ridership decreased by about 15 percent (Appendix E).

The Morro Bay Senior Citizens, Inc. operates a senior transportation shuttle on Monday through Thursday from 9:00 a.m. to 4:00 p.m. It serves destinations throughout San Luis Obispo County.

d. Travel Characteristics

Travel Modes and Distance Travelled

U.S. Census Bureau data for mode travel to and from places of employment provide general travel characteristics and patterns of Morro Bay residents. As shown in Table 4.13-1, residents have a higher rate of carpooling, walking to work, and other modes, such as taxicabs or motorcycles, compared to the countywide average. Morro Bay residents have a lower rate of driving alone to work, compared to the countywide average, but also a lower rate of using public transit or bicycling to work.

In comparison to State and countywide trends, the mean travel time of Morro Bay residents to work in 2016 was approximately 21 minutes, with San Luis Obispo County and State commute travel times averaging approximately 22 and 28 minutes, respectively (U.S. Census Bureau 2016).

Table 4.13-1 Travel Mode Comparison for Work Trips

Jurisdiction	Drive Alone	Carpool	Transit	Walk	Bicycle	Work at Home	Other
Morro Bay	70.6%	14.2%	0.8%	6.1%	0.3%	6.2%	1.8%
San Luis Obispo County	74.0%	10.4%	1.6%	4.2%	2.2%	6.7%	0.9%

Notes: Data is provided for 2016 for working age residents. Working age is considered 16 years old.

Source: U.S. Census Bureau 2016

Existing Traffic Volumes and Capacity

Vehicle miles traveled (VMT) measures travel on roadways by all types of motorized vehicles carrying passengers or cargo. Each mile traveled is counted as one vehicle mile regardless of the number of people in the vehicle. VMT is typically expressed as VMT per day. Table 4.13-2 shows daily VMT in Morro Bay's Sphere of Influence (SOI) as of 2016. In this table, the column titled "Daily VMT in SOI" reflects the vehicle miles traveled entirely within city limits and the city sphere of influence. The column titled "Daily VMT in the County" reflects the vehicle miles traveled within the city sphere of influence and those trips that originated in San Luis Obispo County and concluded in Morro Bay, or vice versa. The final column, "Daily VMT in State," reflects vehicle miles traveled within the city sphere of influence, and those trips that originated in Morro Bay and concluded anywhere in California, or vice versa.

Table 4.13-2 Vehicle Miles Traveled in Morro Bay

Trip Type	Daily VMT in SOI (2016)	Daily VMT in County (2016)	Daily VMT in State (2016)
Origin and destination within City SOI	52,256	52,256	52,256
Origin only within City SOI	16,061	48,024	63,788
Destination only within City SOI	16,422	50,924	66,688
Total	84,739	151,205	182,732

Source: Appendix E; SLOCOG and CA Statewide Travel Demand Models

Daily VMT is shown in Table 4.13-2 for trips with both an origin and destination within Morro Bay, and trips with either an origin or destination in Morro Bay but not both. For example, a Morro Bay

resident driving to dinner on the Embarcadero would have an origin and destination within Morro Bay. A Morro Bay resident driving to work in Paso Robles would have an origin only within Morro Bay, while a Paso Robles resident driving to work in Morro Bay would have a destination only within the Morro Bay. A Fresno County resident visiting Morro Bay would have a destination only within Morro Bay, and the trip length and VMT would be adjusted to reflect the portion of the trip occurring outside of San Luis Obispo County.

The VMT estimates provided in Table 4.13-2 were extracted from the San Luis Obispo Council of Governments (SLOCOG) Travel Demand Model calibrated for use in Morro Bay. The SLOCOG model tracks trips within San Luis Obispo County but does not reflect regional trips that continue to destinations outside of San Luis Obispo County. The California Statewide Model was used to determine the average trip lengths for trips leaving San Luis Obispo County, which were then used to forecast the daily VMT. Trips with an origin and destination in Morro Bay were counted as being 100 percent generated by the City. Trips that end or begin in Morro Bay were counted as being 50 percent generated by the City. Trips that pass through Morro Bay but do not begin or end within Morro Bay were excluded from the VMT estimates (Appendix E).

As described above, the primary regional motor vehicle facility in Morro Bay is SR 1. Traffic delays on SR 1 are primarily limited to peak-hour reductions in travel speeds where SR 1 passes Morro Bay. The segment of SR 1 within Morro Bay carries as much as approximately 28,000 daily vehicles (Caltrans 2016).

Table 4.13-3 summarizes the approximately average daily traffic volumes in 2016 on key collector streets that pass through residential areas of Morro Bay. Traffic volumes during peak hour are also shown in this table. Traffic volumes on these roadways are below the carrying capacity of the roadways (Appendix E).

Table 4.13-3 Key Collector Street Traffic Volumes

Roadway Segment	Peak Hour	Daily Traffic (2016)	Average Daily Traffic (2016)
Kern Avenue: Anchor Street to Olive Street	Thursday	1,365	1,277
	Friday	1,285	
	Saturday	1,181	
Piney Way: South Street to Vista Street	Thursday	1,524	1,440
	Friday	1,470	
	Saturday	1,326	
Beachcomber Street: Mindoro Street to Luzon Street	Thursday	355	375
	Friday	353	
	Saturday	416	
Greenwood Avenue: Elena Street to San Joaquin Street	Thursday	307	258
	Friday	287	
	Saturday	180	

Source: Appendix E

Traffic Safety

The California Office of Traffic Safety compares collision rates for cities throughout the State. There are 103 cities in the State that are in the same category as Morro Bay with a population between 10,001 and 25,000. In 2015, the most recent year for which collision rate data is published, Morro Bay was ranked 83 in its category for fatal and injury collisions, indicating that 82 similar-sized cities had higher collision rates and 20 had lower rates (California Office of Traffic Safety 2015). Most of

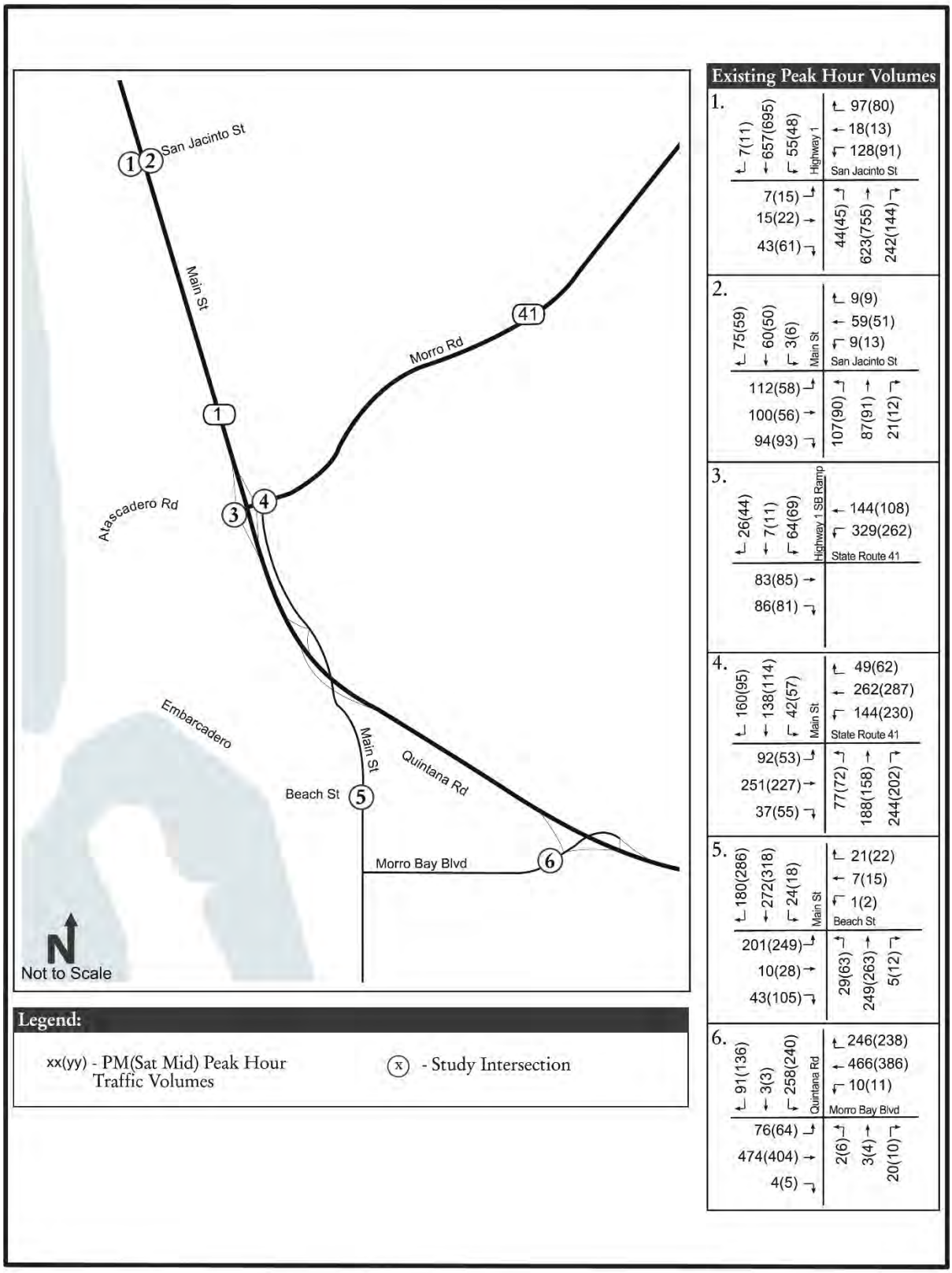
the collisions occur at intersections along SR 1 and along the Main Street and Morro Bay Boulevard corridors (Appendix E).

e. Traffic Study Intersections and Roadway Segments

Intersections are typically the most critical element within a roadway system because they are the points where opposing and intersecting streams of travel must be served, and the locations where the majority of travel delay occurs along a corridor. A variety of right-of-way controls exist to direct traffic through intersections.

The study area for the traffic impact analysis was selected to include the intersections most likely to be impacted by new development in Morro Bay, particularly where major streets intersect each other and/or key access points to regional facilities (Appendix E). The study area consists of the following six intersections located in Morro Bay, shown on Figure 4.13-2.

Figure 4.13-2 Study Intersection Locations and Existing Volumes



1. San Jacinto Street and SR 1.
2. San Jacinto Street and Main Street.
3. SR 41 and SR 1 Southbound Ramps.
4. SR 41 and Main Street.
5. Beach Street and Main Street
6. Morro Bay Boulevard and Quintana Road

Additionally, the study area also included the following six roadway segments in Morro Bay:

1. Embarcadero: North of Beach Street.
2. Embarcadero: North of Pacific Street.
3. Embarcadero: South of Pacific Street.
4. Morro Bay Boulevard: West of Quintana Road.
5. Main Street: South of Radcliff Drive.
6. SR 41: East of Main Street.

Level of Service Definitions

The analysis of peak-hour Level of Service (LOS) has traditionally been the primary indicator of circulation system performance. LOS values range from LOS A to LOS F. LOS A indicates excellent operating conditions with little delay to motorists, whereas LOS F represents congested conditions with excessive vehicle delay. LOS E is typically defined as the operating "capacity" of a roadway. Significant traffic impacts are defined using separate thresholds based on operational changes and multiple level of service values. The City does not have a formal LOS threshold defining acceptable operations, but historically has applied the Caltrans target of LOS C or better for intersections and roadway segments.

Table 4.13-4 defines LOS value ranges based on average delay at signalized and unsignalized intersections. Table 4.13-5 defines LOS thresholds for roadway segments based on LOS scores in the Highway Capacity Manual (HCM) (Transportation Research Board of the National Academy of Sciences 2010).

Table 4.13-4 Peak Hour Traffic Level of Service Definitions

		Average Delay (seconds per motor vehicle)		
LOS	Operational Characteristics	Signalized Intersection	Stop-sign Controlled Intersection	Two-way Stop-sign Controlled Intersection
A	Free-flow conditions with negligible to minimal delays	< 10	0 – 10	0 – 5
B	Good progression with slight delays. Short cycle-lengths typical	> 10 – 20	> 10 – 15	> 5 – 10
C	Relatively higher delays resulting from fair progression and/or longer cycle lengths	> 20 – 35	> 15 – 25	> 10 – 20
D	Somewhat congested conditions. Longer but tolerable delays may result	> 35 – 55	> 25 – 35	> 20 – 30

LOS	Operational Characteristics	Average Delay (seconds per motor vehicle)		
		Signalized Intersection	Stop-sign Controlled Intersection	Two-way Stop-sign Controlled Intersection
E	Congested conditions. Significant delays result from poor progression, long cycle lengths, and high volume-to-capacity ratios	> 55 – 80	> 35 – 50	> 30 – 45
F	Jammed or gridlock type operating conditions. Generally considered unacceptable for most drivers	> 80	> 50	> 45

Source: Highway Capacity Manual (Transportation Research Board of the National Academy of Sciences 2010)

Table 4.13-5 Roadway Segment Level of Service Thresholds

LOS	Average Delay (seconds)*
A	0 – 2.00
B	> 2.00 – 2.75
C	> 2.75 – 3.50
D	> 3.50 – 4.25
E	> 4.25 – 5.00
F	> 5.00

*Delay in seconds per vehicle, pedestrian, bicycle, and transit modes, assuming 60 square feet per person for pedestrian mode.

Source: Highway Capacity Manual (Transportation Research Board of the National Academy of Sciences 2010)

Baseline Level of Service

An analysis of operations at the study intersections and roadway segments was conducted by Central Coast Transportation Consulting. To identify existing conditions, traffic counts were conducted at each of the study intersections and roadway segments in March 2016, during the weekday afternoon (4:00 to 6:00 p.m.) peak travel period (weekday PM) and Saturday midday peak travel period (Saturday MID). The peak hour volume was determined for the weekday PM and Saturday MID peak travel periods. The existing conditions data collection sheets, LOS calculations, and traffic volume figures for each scenario are contained in Appendix E.

Existing 2016 LOS conditions at the six study intersections are summarized in Table 4.13-6. The table summarizes the analyzed weekday PM peak period and Saturday MID peak period conditions. As described above, the City does not have a formal LOS threshold defining acceptable operations, but historically has applied the Caltrans target of LOS C or better as acceptable for intersections. As shown, most study intersections meet the current LOS C standard, with the exception of intersection 3, SR 41 and SR 1 Southbound Ramps, which operates unacceptably under weekday PM peak hour and intersection 4, SR 41 and Main Street, which operates unacceptably under weekday PM and Saturday MID peak hours.

Table 4.13-6 Level of Service at Key Intersections

Intersection	Peak Hour	Delay (seconds per motor vehicle)	LOS
1. San Jacinto Street and SR 1	Weekday PM	18.2	B
	Saturday MID	17.1	B
2. San Jacinto Street and Main Street	Weekday PM	6.7 (13.9)	- (B)
	Saturday MID	5.0 (10.0)	- (A)
3. SR 41 and SR 1 Southbound Ramps	Weekday PM	**7.5 (28.7)**	**- (D)**
	Saturday MID	6.7 (18.2)	- (C)
4. SR 41 and Main Street	Weekday PM	**37.6**	**E**
	Saturday MID	**28.3**	**D**
5. Beach Street and Main Street	Weekday PM	13.9	B
	Saturday MID	23.9	C
6. Morro Bay Boulevard and Quintana Road	Weekday PM	12.7	B
	Saturday MID	10.7	B

Notes:

Operations based on 2016 conditions.

For side-street-stop controlled intersections the worst approach's delay is reported in parentheses next to the overall intersection delay.

Unacceptable operations are shown in bold text.

Source: Appendix E

Existing 2016 LOS conditions for the six roadway segments included in the traffic study are summarized for pedestrians, bicycles, and vehicles in Table 4.13-7. The table summarizes the weekday PM peak period and Saturday MID peak period conditions for both directions on each roadway segment. As described above, the City does not have a formal LOS threshold defining acceptable operations, but historically has applied the Caltrans target of LOS C or better as acceptable for vehicle operations on roadways. However, the City and Caltrans do not have LOS thresholds for pedestrian and bicycle facilities.

As shown in Table 4.13-7, the Embarcadero north of Pacific Street and Morro Bay Boulevard west of Quintana Road operate at unacceptable LOS D for vehicles during both weekday PM and Saturday MID peak hours, in both directions. These are short roadway segments with a high number of stops per mile, which decreases their overall performance. Main Street south of Radcliff Drive and westbound SR 41 east of Main Street have high free-flow speeds and no sidewalks, resulting in pedestrian LOS D. All other segments perform at or above LOS C.

Table 4.13-7 Level of Service for Roadway Segments

			Pedestrian		Bicycle		Vehicle	
Roadway Segment	Peak Hour	Direction	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1. Embarcadero: North of Beach Street	Weekday PM	NB	2.10	B	4.00	B	3.28	C
		SB	1.51	A	2.76	C	3.02	C
	Saturday MID	NB	2.48	B	3.02	C	3.28	C
		SB	1.77	A	2.97	C	3.02	C
2. Embarcadero: North of Pacific Street	Weekday PM	NB	1.32	A	2.86	C	3.72	D
		SB	1.16	A	2.74	B	3.72	D
	Saturday MID	NB	1.51	A	3.38	C	3.72	D
		SB	1.43	A	3.46	C	3.72	D

Roadway Segment	Peak Hour	Direction	Pedestrian LOS Score	Pedestrian LOS	Bicycle LOS Score	Bicycle LOS	Vehicle LOS Score	Vehicle LOS
3. Embarcadero: South of Pacific Street	Weekday PM	NB	1.13	A	2.54	B	3.28	C
		SB	1.12	A	2.68	B	3.28	C
	Saturday MID	NB	1.32	A	3.12	C	3.28	C
		SB	1.27	A	3.12	C	3.28	C
4. Morro Bay Boulevard: West of Quintana Road	Weekday PM	EB	2.37	B	2.43	B	3.62	D
		WB	2.53	B	2.50	B	3.62	D
	Saturday MID	EB	2.27	B	2.38	B	3.62	D
		WB	2.47	B	2.47	B	3.62	D
5. Main Street: South of Radcliff Drive	Weekday PM	NB	2.56	B	2.34	B	3.28	C
		SB	3.79	D	2.48	B	3.02	C
	Saturday MID	NB	3.04	C	2.58	B	3.28	C
		SB	3.94	D	2.55	B	3.02	C
6. SR 41: East of Main Street	Weekday PM	EB	3.39	C	0.75	A	3.16	C
		WB	3.32	C	0.71	A	3.16	C
	Saturday MID	EB	3.31	C	0.71	A	3.16	C
		WB	3.56	D	0.82	A	3.16	C

Notes:

Operations based on 2016 conditions.

Source: Appendix E

Volume to Capacity Ratio

Volume to capacity ratio (V/C) is a measurement of the operating capacity of a roadway or intersection where the number of vehicles passing through is divided by the number of vehicles that could theoretically pass through when at capacity. If vehicles (V) divided by capacity (C) is less than one the facility has additional capacity. V/C increases with project traffic, but the LOS score relies on other factors that affect delays, including roadway design and intersection spacing. Therefore, the LOS score and grade for roadway segments are insensitive to vehicular volumes until V/C exceeds one.

f. Regulatory Setting

Federal

The U.S. Department of Transportation (USDOT) provides a number of grant programs, primarily for the construction and upgrading of major highways and transit facilities. Many of these grants are administered by the state and regional governments. Use of federal grant funding also invokes the National Environmental Protection Act (NEPA) in some cases.

State

Caltrans has jurisdiction over state highways. Caltrans constructs and maintains all state highways and sets design standards that are often copied by local governments.

Caltrans Authority over the State Highway System

Caltrans is responsible for planning, design, construction and maintenance of all interstate freeways and state routes. It sets design standards that are often used by local governments. Caltrans

requirements are described in their Guide for Preparation of Traffic Impact Studies (Caltrans 2002), which covers the information needed for Caltrans to review impacts to State highway facilities, including freeway and arterial segments, on- and off-ramps, and signalized intersections. Caltrans builds, maintains, and operates the State Highway system in California, with a goal to allow for the safe and efficient use of the State transportation system for all users. Caltrans has set standards for the operational goals of its facilities pertaining to intersection, arterial segment, and freeway segment LOS. These standards are set forth in the Caltrans Guide for the Preparation of Traffic Impact Studies. This document establishes procedures to uniformly review the operational standards of Caltrans-maintained facilities in terms of measures of effectiveness.

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D." As such, satisfactory operation for Caltrans intersections is the same as at City intersections. Caltrans has determined that a significant project impact occurs for any signalized intersection where project traffic causes the LOS to deteriorate from satisfactory (LOS C or better) to unsatisfactory (LOS D, E, or F); or the addition of project traffic causes an increase in delay at an intersection already operating at unsatisfactory LOS (D, E, or F).

Statewide Transportation Improvement Plan

The Statewide Transportation Improvement Plan (STIP) is a capital improvement program that plans transportation projects related to state facilities in California for the next five years. The program is updated every two years with new construction projects as more funding is provided. The California Transportation Commission approves the fund estimate and then Caltrans and regional planning agencies submit plans for transportation improvement projects. If the projects are programmed in the STIP, then relevant agencies can begin the implementation process.

SENATE BILL 743

Senate Bill (SB) 743, which was signed into law in 2013, tasked the State Office of Planning and Research (OPR) with establishing new criteria for determining the significance of transportation impacts under CEQA. SB 743 requires the new criteria to "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." It also states that alternative measures of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated." SB 743 changes the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact (see Pub. Resource Code, § 21099, subd. [b][2]). In addition to new exemptions for projects that are consistent with specific plans, the draft SB 743 guidelines replace congestion based metrics, such as auto delay and level of service, with VMT as the basis for determining significant impacts, unless the guidelines provide specific exceptions.

SB 743 provides opportunities to streamline CEQA for qualifying urban infill development near major transit stops in metropolitan regions statewide. A transit-oriented infill project can be exempt from CEQA if consistent with a specific plan for which an EIR was prepared and also consistent with the use, intensity, and policies of a Sustainable Communities Strategy or Alternative Planning Strategy that is certified by the California Air Resources Board (CARB) as meeting its greenhouse gas reduction targets. A City or County may designate an "infill opportunity zone" by resolution if it is consistent with the general plan and any applicable specific plan and is a transit priority area within the adopted Sustainable Communities Strategy or Alternative Planning Strategy. This infill

opportunity zone is then exempt from level of service standards in the congestion management plan. In August 2014, the Governor's Office of Planning and Research circulated its draft changes to the *CEQA Guidelines* implementing SB 743 for public comment. Revised draft guidelines were released in November 2017.

Statewide implementation of SB 743 is now required. Therefore, this EIR relies on VMT to evaluate transportation impacts, and also includes a discussion of the City's existing LOS.

California's Complete Streets Act

The California Complete Streets Act, adopted in 2008, requires that cities and other public agencies incorporate "complete street" policies when updating their General Plan Circulation Element, to ensure that Complete Streets principles are incorporated. Complete Streets Law was signed into law as Assembly Bill (AB) 1358. It requires that cities plan for the needs of all users, including bicyclists and pedestrians, when updating local general plans. Caltrans specifically adopted Deputy Directive 64, which addresses the needs of people of all ages and abilities concerning transportation planning. It also recognizes that transportation improvement projects are opportunities to improve safety, access, and mobility for motorists, bicyclists, pedestrians, and transit users. The Complete Streets Implementation Action Plan provides an overview of the program (Caltrans 2010).

The current Morro Bay General Plan was adopted in 1988 prior to the Complete Streets Act. A stated goal of the General Plan and LCP Update is to make Morro Bay a pleasant and safe place to walk and bike.

Regional

San Luis Obispo Council of Governments, Regional Transportation Plan

The San Luis Obispo Council of Governments (SLOCOG) is required by State and federal law to prepare, update, and adopt a Regional Transportation Plan (RTP) every four years. The most recent update to the RTP was completed by SLOCOG in 2019 (SLOCOG 2019b). The 2019 RTP addresses all modes of travel and identifies and prioritizes expenditures from anticipated funding for all modes of transportation including highways, streets and roads, transit, rail, bicycle and pedestrian, as well as transportation demand management strategies. All transportation projects that use State and federal funds, or that could significantly affect transportation within the San Luis Obispo County, must be included in the RTP. The 2019 RTP identifies active transportation projects, non-highway system projects, highway system projects, and a park and ride project in Morro Bay.

The 2019 RTP includes the following goals:

- Preserve the transportation system.
- Improve intermodal mobility and accessibility for all people.
- Support a vibrant economy.
- Improve public safety and security.
- Foster livable, healthy communities and promote social equity.
- Practice environmental stewardship.
- Practice financial stewardship.

Local

2011 Morro Bay Bicycle and Pedestrian Master Plan

The Morro Bay Bicycle and Pedestrian Master Plan, adopted in 2012, describes existing conditions and identifies goals, objectives, and planned improvements to serve bicycle and pedestrian modes of travel in Morro Bay (City of Morro Bay 2011). Goals and objectives provide the context, direction and support for specific recommendations discussion in the Master Plan. The goals provide broad vision statements and serve as the foundation of the Master Plan, while objectives provide more detailed and measurable statements. Goals of the Master Plan are as follows:

- Adopt a "Complete Streets" policy requiring bicycle and pedestrian improvements in all transportation and development (private or public) projects subject to discretionary review.
- Complete the bicycling and walking systems suggested in this plan, recognizing these projects are Economic Generators for the city.
- Develop a city-wide educational program for non-motorized use, including a paper maps, pathways for play and road safety education.
- Collaborate with businesses and business organizations to promote bicycle use and walking as part of a Visitor Serving Strategy emphasizing bike/walking based tourism.
- Provide short and long term bike parking at targeted locations while further developing the "Racks with Plaques" Program.
- Improve safety, educational, and artistic amenities along existing and future paths.

The majority of the planned bikeways under the 2007 BTP would be Class I and Class II bikeways. As described above, Class I bikeways are paths or trails, separated from roadways, for the exclusive use of bicycles and pedestrians. Class II bikeways are striped lanes for one-way bicycle travel on streets and highways.

4.13.2 Impact Analysis

a. Methodology

The following text describes the methodology applied to the analysis of transportation and circulation impacts. The year 2040 was chosen as the year for the future conditions analysis, as 2040 is the planning horizon year of the General Plan and LCP Update.

Study Scenarios

Traffic operations were evaluated for weekday PM peak hour (4:00 p.m. to 6:00 p.m.) and Saturday midday (Saturday MID) peak hour at the study intersections roadway segments for the following traffic scenarios:

- Existing Conditions (2016)
- Buildout Conditions (2040)
- Buildout Plus Project Conditions (2040)

The Buildout Conditions scenario reflects buildout of the City's current General Plan land uses. The Buildout Plus Project Conditions scenario reflects the updated land uses proposed as a part of the General Plan and LCP Update.

Analysis of Peak Hour LOS

The analysis of peak hour LOS under the future 2040 conditions of the Buildout Conditions scenario and Buildout Plus Project Conditions scenario was conducted utilizing the SLOCOG Travel Demand Model. The SLOCOG Model estimates traffic using employees for most commercial uses. Because most land use planning is based on building square footage instead of employees it was necessary to convert the planned commercial square footage to an equivalent number of employees using conversion factors. The conversion factors were developed using an inventory of existing uses and existing employees using land use data provided by SLOCOG (Appendix E).

The SLOCOG link-level model outputs were extracted for the study intersections and locations and used to develop turning movement forecasts using the difference method, where the buildout model's growth over the base year is added to the base year's traffic counts. The raw forecasts were then reviewed for reasonableness and adjusted where needed to ensure conservation of flow between closely spaced intersections (Appendix E).

Consideration of Roadway Network Improvements

The intersection of SR 41 and Main Street (study intersection 4) was assumed to provide a roundabout incorporating the northbound SR 1 on- and off-ramps consistent with the configuration described in the *State Route 1/State Route 41/Main Street Intersection Control Evaluation Step 2 Report* (Omni-Means 2016). This intersection was evaluated using the Sidra software package due to the six-leg configuration. The remaining intersection lane configurations and traffic control types were assumed to remain the same under the Buildout Conditions scenario as the Existing Conditions scenario (Appendix E).

b. Significance Thresholds

The following criteria are based on Appendix G of the *CEQA Guidelines*. Impacts would be significant if implementation of the General Plan and LCP Update would do any of the following:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
2. Conflict or be inconsistent with *CEQA Guidelines* Section 15064.3, subdivision (b), Criteria for Analyzing Transportation Impacts;
3. Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment); and/or
4. Result in inadequate emergency access.

As described above, the City does not have a formally adopted LOS threshold defining acceptable intersection and roadway segment operations for vehicles, but historically has applied the Caltrans target of LOS C or better as acceptable. Neither the City nor Caltrans have an adopted LOS threshold for pedestrian and bicycle facilities. In the absence of a Caltrans threshold, for purposes of this analysis LOS D was also used as the performance threshold for pedestrian and bicycle facilities. LOS D was used as the threshold for these facilities because, as described in Table 4.13-4, delays under LOS D are tolerable for pedestrian and bicycle transportation modes.

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Impact T-1 **IMPLEMENTATION OF THE GENERAL PLAN AND LCP UPDATE WOULD INCREASE VEHICLE TRAFFIC VOLUMES, WHICH HAVE THE POTENTIAL TO INTERFERE WITH PEDESTRIAN AND BICYCLE TRAVEL ON OR ALONG ROADWAYS. THE GENERAL PLAN AND LCP UPDATE INCLUDES GOALS AND POLICIES TO IMPROVE SAFETY, ACCESS, AND PERFORMANCE OF PUBLIC TRANSIT, BICYCLE, AND PEDESTRIAN TRANSPORTATION MODES. IMPLEMENTING SPECIFIC PEDESTRIAN CIRCULATION IMPROVEMENT MEASURES AT AFFECTED FACILITIES WOULD FURTHER IMPROVE THE PERFORMANCE OF PEDESTRIAN TRANSPORTATION MODES. THEREFORE, IMPACTS TO PEDESTRIAN OPERATIONS WOULD BE REDUCED TO A LESS THAN SIGNIFICANT LEVEL WITH MITIGATION.**

Table 4.13-8 summarizes the LOS for pedestrian and bicycle modes at the roadway segments included in the study area under the Existing Conditions and Buildout Plus Project Conditions scenarios.

Table 4.13-8 Comparison of Pedestrian and Bicycle Level of Service for Roadway Segments with General Plan and LCP Update

			Pedestrian				Bicycle			
			Existing Conditions (2016)		Buildout Plus Project Conditions (2040)		Existing Conditions (2016)		Buildout Plus Project Conditions (2040)	
Roadway Segment	Peak Hour	Direction	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1. Embarcadero: North of Beach Street	Weekday PM	NB	2.10	B	**3.27**	**F**	4.00	B	3.35	C
		SB	1.51	A	3.40	C	2.76	C	3.53	D
	Saturday MID	NB	2.48	B	**4.55**	**F**	3.02	C	3.64	D
		SB	1.77	A	**4.60**	**E**	2.97	C	3.74	D
2. Embarcadero: North of Pacific Street	Weekday PM	NB	1.32	A	1.64	A	2.86	C	3.53	D
		SB	1.16	A	1.74	A	2.74	B	3.73	D
	Saturday MID	NB	1.51	A	1.83	A	3.38	C	3.69	D
		SB	1.43	A	2.34	B	3.46	C	4.03	D
3. Embarcadero: South of Pacific Street	Weekday PM	NB	1.13	A	1.40	A	2.54	B	3.38	C
		SB	1.12	A	1.56	A	2.68	B	3.60	D
	Saturday MID	NB	1.32	A	1.47	A	3.12	C	3.47	C
		SB	1.27	A	1.84	A	3.12	C	3.80	D
4. Morro Bay Boulevard: West of Quintana Road	Weekday PM	EB	2.37	B	**4.59**	**E**	2.43	B	2.99	C
		WB	2.53	B	3.55	D	2.50	B	2.80	C
	Saturday MID	EB	2.27	B	**4.29**	**E**	2.38	B	2.94	C
		WB	2.47	B	3.44	C	2.47	B	2.77	C
5. Main Street: South of Radcliff Drive	Weekday PM	NB	2.56	B	**4.43**	**E**	2.34	B	2.96	C
		SB	3.79	D	**5.00**	**F**	2.48	B	2.88	C
	Saturday MID	NB	3.04	C	**6.09**	**F**	2.58	B	3.21	C
		SB	3.94	D	**5.31**	**F**	2.55	B	2.94	C
6. SR 41: East of Main Street	Weekday PM	EB	3.39	C	**5.43**	**F**	0.75	A	1.29	A
		WB	3.32	C	**6.12**	**F**	0.71	A	1.39	A
	Saturday MID	EB	3.31	C	**5.20**	**F**	0.71	A	1.25	A
		WB	3.56	D	**7.04**	**F**	0.82	A	1.50	A

Notes:

Unacceptable operations are shown in bold text.

Source: Appendix E

As shown in Table 4.13-8, bicycle travel on study area roadway segments would operate at LOS D or better during the weekday PM and Saturday MID peak hours under the Buildout Plus Project Conditions scenario. Pedestrian travel would operate at LOS E or LOS F on the following roadway segments under the Buildout Plus Project Conditions scenario:

- Segment 1. Embarcadero: North of Beach Street would operate at LOS F in the northbound direction during weekday PM and Saturday MID peak hours, and at LOS E in the southbound direction during the Saturday MID peak hour.
- Segment 4. Morro Bay Boulevard: West of Quintana Road would operate at LOS E in the eastbound direction during weekday PM and Saturday MID peak hours.
- Segment 5. Main Street: South of Radcliff Drive would operate at LOS F in the southbound direction during weekday PM and Saturday MID peak hours, at LOS F in the northbound direction during the Saturday MID peak hour, and LOS E in the northbound direction during weekday PM peak hour.
- Segment 6. SR 41: East of Main Street would operate at LOS F in both the northbound and southbound directions during the weekday PM and Saturday MID peak hours.

As shown in Table 4.13-8, under Existing Conditions scenario, pedestrian travel on Main Street: South of Radcliff Drive operates at LOS D in the southbound direction during Weekday PM and Saturday MID peak hours, and SR 41: East of Main Street would operate at LOS D in the southbound direction during Saturday MID peak hour. However, the General Plan and LCP Update would further degrade the LOS classification for pedestrian travel in 2040 on these roadway segments to LOS F. Pedestrian LOS measures pedestrian comfort and convenience based on survey data ranking the quality of the pedestrian experience on different facilities. Pedestrian LOS is not a measure of delay.

The General Plan and LCP Update Circulation Element includes several goals and policies to ensure acceptable access and performance for all modes of travel. These goals and policies would enhance the City's alternative transportation modes while continuing to accommodate automobile travel. For example, the following policies would enhance multimodal transportation and complete streets in Morro Bay:

Policy LU-1.3 **Access to Daily Needs.** Create sustainable development patterns characterized by mixed uses, walkable neighborhoods, and multimodal connections that allow residents to meet their daily needs for food, goods and services, employment, and other resources.

Policy LU-8.10 **Multimodal Access.** Emphasize access for public transit and active transportation in downtown and along the waterfront.

Policy LU-8.11 **Multimodal Connections.** Improve pedestrian connections between the downtown and waterfront areas, and increase the pedestrian appeal of downtown.

Policy ED-1.10 **Prioritize Access.** Situate new nonresidential development in easily accessible areas. Ensure that buildings can be reached by walking, biking, and public transit.

Policy CIR-1.1 **Balanced Transportation.** Work to complete a balanced multimodal transportation system that meets the needs of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities.

Policy CIR-1.2 **Access Improvement.** Use infrastructure improvements within public rights-of-way as an opportunity to improve street design and multimodal access.

Policy CIR-1.3 **System Connectivity.** Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.

Policy CIR-1.4 **Future Enhancements.** Identify streets in the city that can be made "complete," and plan for new bikeways, sidewalks, and crosswalks on these streets by reallocating how space within the public right-of-way is used.

Policy CIR-1.5 **Regional Transit.** Coordinate with the San Luis Obispo Regional Transit Authority to ensure local transit connects smoothly with regional transit and possible future route and schedule expansions.

Policy CIR-1.6 **Local Transit Improvement.** Continue to improve the local Morro Bay Transit Deviated Fixed Route and Call-A-Ride services and ensure connections to regional transit and active transportation facilities.

Policy CIR-1.8 **Capital Improvement Program.** Use the City's Capital Improvement Program (CIP) process to prioritize, fund, and build roadway and bikeway improvements, and to address phasing and construction of traffic infrastructure throughout the city.

Policy CIR-1.11 **Adequate Capacity.** Maintain adequate street capacity and reduce congestion for all modes of transportation on the street and freeway system. Address congestion along corridors by enhancing the public transportation system, promoting mixed-use development patterns to reduce vehicle miles traveled (VMT), and implementing transportation demand management strategies to increase mobility options.

The following policies would promote active transportation by addressing safety concerns:

Policy CIR-2.1 **Compact Development.** Support mixed-use, compact-style, and other land use development patterns within existing developed areas so as to facilitate easy active transportation and transit use. (See also Policies LU-3.1, LU-3.3, LU-3.6, and LU-3.7.).

Policy CIR-2.2 **Street End Pedestrian Connections.** Create safer and more distinct lateral access connections across the street ends on the west side of the Embarcadero at Dunes, Harbor, Morro Bay Boulevard, Front, Pacific, Marina, and Driftwood Streets, including by relocating parking from these areas. (See also Policies LU-4.1, LU-4.5, LU-4.6, LU-7.1 through LU-7.6, and OS-1.6 and Implementation Action LU-19).

Policy CIR-2.3 **Pedestrian Safety.** Provide for accessible, safe, and convenient paths and crossings along major streets for all users, including the disabled, youth, and the elderly. (See also Policies LU-8.5 and OS-3.6.)

Policy CIR-2.4 **Active Transportation Amenities.** Provide facilities and amenities for active transportation users at public facilities, including bicycle storage and seating areas. (See also Policies LU-8.4 and OS-1.8.)

Policy CIR-2.5 **Prioritizing Improvements.** Prioritize infrastructure improvements that benefit bicycle and pedestrian safety and convenience around community facilities and locations in pedestrian-oriented areas. (See also Policy OS-1.8 and Implementation Action OS-1.)

Policy CIR-2.6 **Destination Facilities.** Require and place access areas and facilities for bicycle, pedestrian, and transit travel in front of major destinations, such as shopping centers, parks, and schools. Facilities may include any or a combination of the following: designated passenger drop-off and pickup zones, benches, lighting, secure bike parking, shelters, and street trees. (See also Policies LU-2.3 and PS-2.1.)

Policy CIR-2.7 **Traffic Calming.** Develop and implement strategies to calm traffic on streets that have a high amount of pedestrian and bicycle traffic, or are in neighborhoods with residences, schools, parks, or other areas frequented by children.

Implementation and adherence to the above policies and implementation programs in the General Plan and LCP Update would promote pedestrian and bicycle transportation modes and improve performance and safety of the transportation system for pedestrian, bicycle, and transit users. For example, Policy CIR-2.7 would implement strategies to calm traffic on streets with high amounts of pedestrian and bicycle use, which would reduce delays associate with vehicle traffic, such as delays at intersection crosswalks. With implementation of these policies, the General Plan and LCP Update would result in a less than significant impact to the performance of transit and bicycle facilities. However, impacts to the performance of pedestrian facilities would result in a potentially significant impact.

Mitigation Measures

The intersection improvements described in Mitigation Measure T-1 would improve operations for vehicles at key intersections in the study area, resulting in improved operations for alternative transportation modes throughout the study area. In addition, Mitigation Measure T-2, which describes pedestrian circulation improvement measures at affected facilities, would improve operations for pedestrian modes.

T-1 Pedestrian Facility Improvements

The following pedestrian facility improvements shall be added to the list of “Planned Circulation Improvements” in the General Plan and LCP Update Circulation Element.

- Embarcadero North of Beach Street: Provide sidewalks and a vehicular connection shifting traffic away from Beach Street for the redeveloped Morro Bay Power Plant site.
- Morro Bay Boulevard: Provide a landscaped buffer at least two feet wide between the sidewalk and travel lanes.
- Main Street south of Radcliffe Drive: Provide continuous sidewalks to provide acceptable pedestrian operations.
- SR 41 east of Main Street: Provide sidewalks with a landscaped buffer when adjacent properties are redeveloped.

In addition, Policy CIR-1.8 shall be revised as follows:

Policy CIR-1.8 Capital Improvement Program. Use the City's Capital Improvement Program (CIP) process to prioritize, fund, and build roadway, ~~and~~ bikeway, and pedestrian improvements, and to address phasing and construction of traffic infrastructure throughout the city.

As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to improve operations for pedestrians. Implementation of identified goals and policies to improve performance and safety of the transportation system for pedestrian, bicycle, and transit users would ensure that potential impacts associated with the performance of alternative transportation facilities would maintain acceptable operation of pedestrian modes.

Significance After Mitigation

Mitigation Measures T-1 and T-2 and applicable policies in the General Plan and LCP Update would improve pedestrian operations at affected roadway segments. Therefore, impacts to pedestrian operations would be reduced to a less than significant level after implementation of Mitigation Measures T-1 and T-2 and all applicable policies in the General Plan and LCP Update.

Threshold 2: Would the project conflict or be inconsistent with *CEQA Guidelines* Section 15064.3, subdivision (b), Criteria for Analyzing Transportation Impacts?

Impact T-2 THE GENERAL PLAN AND LCP UPDATE ANTICIPATES LAND USE GROWTH THAT WOULD RESULT IN A LONG-TERM INCREASE IN VEHICLE MILES TRAVELED (VMT) WITHIN THE CITY'S SPHERE OF INFLUENCE (SOI). THE GENERAL PLAN AND LCP UPDATE CIRCULATION ELEMENT INCLUDES GOALS AND POLICIES THAT REDUCE RELIANCE ON PASSENGER VEHICLES, FACILITATE PEDESTRIAN AND BICYCLE TRANSPORTATION, AND ESTABLISH LOCAL TARGETS FOR VMT REDUCTION. HOWEVER, FUTURE DEVELOPMENT IN MORRO BAY WOULD RESULT IN INCREASED PER SERVICE POPULATION VMT, AND NO FEASIBLE MITIGATION IS AVAILABLE THAT WOULD FULLY ADDRESS THE ANTICIPATED INCREASE IN VMT. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Table 4.13-9 shows estimated daily VMT under Existing (2016), Buildout (2040), and Buildout Plus Project (2040) conditions. Daily VMT and daily per service population are evaluated to provide a comparison of overall VMT to efficiency of VMT relative to potential land use scenarios.

Table 4.13-9 VMT in Morro Bay (Existing, Buildout and Buildout Plus Project)

Trip Type	Daily VMT in SOI	Daily VMT in SOI/ Service Population [1]	Daily VMT in County	Daily VMT in County/ Service Population [1]
Existing (2016)				
Origin and destination within City SOI	52,256	3.2	52,256	3.2
Origin only within City SOI	16,061	1.0	48,024	3.0
Destination only within City SOI	16,422	1.0	50,924	3.2
Total	84,739	5.3	151,205	9.4

Trip Type	Daily VMT in SOI	Daily VMT in SOI/ Service Population [1]	Daily VMT in County	Daily VMT in County/ Service Population [1]
Buildout (2040)				
Origin and destination within City SOI	63,301	3.6	63,301	3.6
Origin only within City SOI	18,268	1.0	53,405	3.0
Destination only within City SOI	18,535	1.1	58,616	3.3
Total	100,104	5.7	175,322	10.0
Buildout Plus Project (2040)				
Origin and destination within City SOI	123,487	3.9	123,487	3.9
Origin only within City SOI	82,925	2.6	720,021	22.8
Destination only within City SOI	91,287	2.9	782,939	24.7
Total	297,699	9.4	1,626,447	51.4

1. Service Population describe the number of residents plus the number of employees. Consistent with Sections 4.6 and 4.16 of this EIR, this analysis uses a service population of 16,114 for Existing conditions, 17,500 for Buildout (2040) conditions, and 31,648 for Buildout Plus Project (2040) conditions.
Source: Appendix E; SLOCOG and CA Statewide Travel Demand Models

The City of Morro Bay has not yet adopted significance thresholds for evaluating potential VMT impacts. In the absence of a locally-adopted threshold, the Office of Planning and Research has published the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory, December 2018). The Technical Advisory recommends analyzing VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. The Technical Advisory recommends that general plans may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed a threshold of 15 percent lower per capita or per employee VMT than existing development. The Technical Advisory includes evidence connecting this level of reduction to the State's emissions goals.

The increase in total daily VMT is attributable to the increase in employment associated with substantial commercial growth envisioned in the General Plan and LCP Update land use plan. This increase would modify regional travel patterns, resulting in increased daily VMT per service population in the Morro Bay SOI and in San Luis Obispo County. As shown in Table 4.13-9, the land use growth evaluated under Buildout Plus Project conditions would result in an increase in daily VMT and daily per service population VMT over Existing conditions, which would result in a potentially significant transportation impact based on the VMT threshold described in the OPR Technical Advisory.

The General Plan and LCP Update Circulation Element includes goals and policies related to reducing VMT in Morro Bay. In addition to goals and policies described in Impact T-2, above, which would enhance the City's alternative transportation modes, reducing reliance on passenger vehicles and facilitating pedestrian and bicycle transportation, the following policies would establish local targets for VMT reduction and improve access to bicycle sharing, park and ride, and transit options:

Goal CIR-3 Traffic monitoring considers all methods of travel, with emphasis on active and sustainable transportation methods.

Policy CIR-3.2: VMT Thresholds. Achieve State-mandated reductions in VMT by establishing and adopting a VMT standard.

Policy CIR-3.3: Updating Guidelines. Regularly update guidelines for transportation impact analyses to ensure consistency with established metrics and standards.

Policy CIR-4.7: Alternative Options. Require or establish EV charging stations, bike sharing and park and ride locations throughout Morro Bay and in particular close to transit and amenities.

Consistent with Policy CIR-3.2 and CIR-3.3, individual development projects in Morro Bay would require focused, project-level environmental review, and would require mitigation to reduce VMT where potential environmental impacts are identified. Project-level analysis of potential future VMT impacts would be based on VMT thresholds established by the City consistent with General Plan and LCP Update Circulation Element Policy CIR-3.2. Based on the outcome of project-level environmental review of new development in Morro Bay, such new development may require implementation of project-specific mitigation measures to reduce identified VMT impacts. While the individual potential impacts of future development in Morro Bay are speculative, the overall potential impacts of the increase in VMT in the Morro Bay SOI and in San Luis Obispo County identified for the General Plan and LCP Update would be potentially significant.

Mitigation Measures

Future development in Morro Bay would result in increased long-term VMT, even with implementation of identified goals and policies that would reduce VMT to an extent. No additional feasible mitigation is available that would fully address the anticipated increase in VMT resulting from the General Plan and LCP Update.

Significance After Mitigation

Implementation of the goals and policies in the General Plan and LCP Update would contribute to reducing VMT in Morro Bay. However, no additional feasible mitigation is available that would fully address the anticipated increase in VMT. Therefore, impacts associated with increased VMT in the Morro Bay SOI and in San Luis Obispo County would remain significant and unavoidable after implementation of all applicable policies in the General Plan and LCP Update.

Threshold 3:	Would the project substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?

Impact T-3 THE GENERAL PLAN AND LCP UPDATE IS A PROGRAMMATIC GUIDE TO TRANSPORTATION IN MORRO BAY AND DOES NOT INCLUDE PROJECT-LEVEL DESIGN FEATURES. FUTURE ROADWAY IMPROVEMENTS, SITE ACCESS, AND OTHER ROADWAY DESIGN FEATURES WOULD BE DESIGNED AND REVIEWED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND CITY STANDARDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The General Plan and LCP Update is a program-level plan that does not directly address project-level design features or specifications for roadways or other transportation facilities. The City maintains improvement standards that guide the construction of new transportation facilities to minimize design hazards for all users of the transportation system. Land use proposals that would add traffic to streets not designed to current standards are evaluated through the project-level environmental review process. If needed, mitigation measures are identified and individual improvement projects are conditioned to construct or provide funding for physical improvements that would eliminate or minimize hazards. Typical improvements include shoulder widening, adding turn pockets, adding sidewalks or crosswalks, realigning sharp curves, prohibiting certain turning movements, and signalizing intersections, among other measures. New and upgraded roadways needed to accommodate new development would be designed according to applicable federal, State, and local specifications and design standards.

The General Plan and LCP Update Circulation Element includes goals and policies related to infrastructure and right-of-way safety. For example, the following policies would enhance infrastructure and right-of-way safety in Morro Bay:

Goal CIR-1 Residents and visitors can easily move about the city in a variety of safe and active ways.

Policy CIR-1.2 **Access Improvement.** Use infrastructure improvements within public rights-of-way as an opportunity to improve street design and multimodal access.

Policy CIR-1.3: **System Connectivity.** Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.

Goal CIR-2 Morro Bay is a pleasant and safe place to walk and bike.

Policy CIR-2.2: **Street End Pedestrian Connections.** Create safer and more distinct lateral access connections across the street ends on the west side of the Embarcadero at Dunes, Harbor, Morro Bay Boulevard, Front, Pacific, Marina, and Driftwood Streets, including by relocating parking from these areas. (See also Policies LU-4.1, LU-4.5, LU-4.6, LU-7.1 through LU-7.6, and OS-1.6 and Implementation Action LU-19).

Policy CIR-2.3 **Pedestrian Safety.** Provide for accessible, safe, and convenient paths and crossings along major streets for all users, including the disabled, youth, and the elderly.

Policy CIR-2.7: **Traffic Calming.** Develop and implement strategies to calm traffic on streets that have a high amount of pedestrian and bicycle traffic, or are in neighborhoods with residences, schools, parks, or other areas frequented by children.

In addition, development and infrastructure projects in Morro Bay would be required to comply with the Morro Bay Municipal Code and applicable federal, State, and local regulations. Compliance with applicable regulations, as well as the goals and policy included in the General Plan and LCP Update regarding infrastructure safety, would ensure that potential impacts associated with transportation hazards or incompatible uses would remain less than significant.

Mitigation Measures

As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures. Compliance with applicable regulations, as well as the identified goals and policies regarding infrastructure safety, would ensure that potential impacts associated with transportation hazards or incompatible uses would remain less than significant.

Threshold 4: Would the project result in inadequate emergency access?

Impact T-4 DUE TO THE PROGRAMMATIC NATURE OF THE GENERAL PLAN AND LCP UPDATE AND THE POLICIES TO CREATE AN INTEGRATED, MULTI-MODAL TRANSPORTATION SYSTEM THE GENERAL PLAN AND LCP UPDATE WOULD NOT RESULT IN INADEQUATE EMERGENCY ACCESS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Because the General Plan and LCP Update is a program-level planning effort, it does not include or directly address project-level design features or building specifications. Both the current General Plan and the the General Plan and LCP Update include polices that would ensure efficient circulation and adequate access are provided in the city, and that adequate emergency access be provided.

Goal CIR-1 Residents and visitors can easily move about the city in a variety of safe and active ways.

Policy CIR-1.2 **Access Improvement.** Use infrastructure improvements within public rights-of-way as an opportunity to improve street design and multimodal access.

Policy CIR-1.11 **Adequate Capacity.** Maintain adequate street capacity and reduce congestion for all modes of transportation on the street and freeway system. Address congestion along corridors by enhancing the public transportation system, promoting mixed-use development patterns to reduce vehicle miles traveled (VMT), and implementing transportation demand management strategies to increase mobility options.

Policy CIR-1.12: **Climate Change Impacts on Transportation.** Require ongoing evaluation of the transportation infrastructure system and its ability to withstand future effects of climate change. Identify future points to begin incorporating resilient strategies and materials into design, using the most up-to-date guidance from the Federal Highway Administration.

Goal PS-4 Response to emergencies is quick, efficient, and effective.

Policy PS-4.1: **Update Emergency Response Plan.** Regularly update the Morro Bay Emergency Response Plan with updated evacuation routes and hazard information. Publicize evacuation routes and other relevant emergency procedures.

Policy PS-4.5 **Transportation Requirements.** Establish minimum road widths and clearances around structures to improve transportation in the event of an emergency.

Future development under the General Plan and LCP Update, as part of the City's project approval process, would be required to comply with existing regulations, including General Plan policies and Zoning regulations that have been developed to minimize impacts related to emergency access. The City would implement the General Plan programs that require the City's coordination with local emergency response providers.

In addition, Fire Department review of new development applications for adequate emergency access and evacuation routes as required as part of the City's development review process. Adherence to the State and City requirements combined with implementation of applicable General Plan and LCP Update policies listed above, would ensure adequate emergency response is maintained in Morro Bay. Therefore, potential impacts to emergency response would be less than significant.

Mitigation Measures

As individual development projects are proposed, focused, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures. Compliance with applicable State and City requirements, as well as the identified goals and policies to minimize impacts related to emergency access, would ensure that potential impacts related to emergency response would remain less than significant.

d. Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on transportation and circulation throughout the cumulative impact analysis area, which consists of San Luis Obispo County. The traffic data for both the Buildout Plus Project Conditions scenario and Buildout Conditions scenario, which were used for this analysis, reflect cumulative development as part of the overall buildout conditions of the region in the future.

The cumulative traffic impacts of the General Plan and LCP Update were determined by a comparison of the Existing Conditions scenario and the Buildout Plus Project Conditions scenario. As shown in Table 4.13-9, the cumulative land use growth evaluated under Buildout Plus Project conditions would result in an increase in daily VMT and daily per service population VMT. As discussed in Impact T-2, the individual potential impacts of future development in Morro Bay are speculative; however, the cumulative impact of the increase in VMT in the Morro Bay SOI and in San Luis Obispo County identified for the General Plan and LCP Update would be potentially significant. Future development in Morro Bay would result in increased long-term VMT, even with implementation of identified goals and policies that would reduce VMT to an extent. Consistent with Policy CIR-3.2 and CIR-3.3, individual development projects in Morro Bay would require focused, project-level environmental review, and would require mitigation to reduce VMT where potential environmental impacts are identified. Implementation of the goals and policies in the General Plan and LCP Update would contribute to reducing VMT in Morro Bay, but no additional feasible mitigation is available that would fully address the anticipated increase in VMT resulting from the General Plan and LCP Update. Therefore, cumulative transportation impacts would remain significant and unavoidable.

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4.14 Utilities

This section evaluates potential effects on utilities related to adoption and implementation of the General Plan and LCP Update by identifying anticipated demands and existing and planned service availability and determining whether any necessary facility upgrades would result in adverse environmental effects. For purposes of this EIR, utilities include: a) water supply; b) wastewater; c) solid waste and d) stormwater facilities. Potential cumulative impacts related to stormwater are evaluated and discussed in Section 4.8, *Hydrology and Water Quality.*

4.14.1. Setting

a. Water Supply

The City of Morro Bay is the primary water provider for residents and businesses in the planning area. The municipal water service area for the city is shown on Figure 4.8-2 in Section 4.8, *Hydrology and Water Quality*.

Morro Bay Municipal Water System

The City of Morro Bay manages the potable water and wastewater systems within a service area that generally corresponds with the city limits. Within the service area, the City's water system consists of approximately 72 miles of active water distribution pipelines up to 16-inches in diameter, ten treated water storage tanks, three booster pump stations, four Pressure Reducing Valve (PRV) stations, and six pressure zones (City of Morro Bay 2018c).

Water Sources and Supply

Morro Bay relies on two sources for its water supply: groundwater from the Morro Valley Basin, and imported water from the California State Water Project (SWP) conveyed by the Central Coast Water Authority (CCWA) and purchased from San Luis Obispo County. Morro Bay currently does not utilize supplier-produced surface water, storm water, or recycled water (Appendix B). The City is currently in the process of developing a third water supply source by means of a new advanced wastewater treatment facility with the ability to produce highly purified wastewater for potable reuse through groundwater injection and recovery (City of Morro Bay 2018c).

Groundwater

The City has access to and water rights permits for two local groundwater basins: Morro and Chorro Basins. The Chorro Creek water rights include a condition that the City can only pump wells when Chorro Creek flow exceeds 1.4 cubic feet per second (cfs), which can limit the availability of the resource. In total, the City has pumping rights to 1,723.5 acre-feet per year (AFY) from both basins: up to 1.2 cfs and 581 AFY from Morro Basin, and up to 3.171 cfs for Chorro Creek underflow. The City has historically operated seven drinking water wells, four of which are active in the Morro Groundwater Basin. In the Chorro Groundwater Basin, only one is active due to high nitrate levels in the others. The Chorro Basin water has not been used since 2012 for these reasons (Appendix B). The City Council in 2018 adopted Resolution 92-18 which in part directed to begin the process to relinquish water rights in the Chorro Valley, including the discontinuation of stream flow monitoring as recommended in the OneWater planning document due to the costs associated with nitrate removal from this water supply.

The water pumped from the Morro Basin also, at times, exceeds the Maximum Contaminate Level (MCL) for nitrate (45 milligrams per liter as NO_3), due to upstream agricultural application of high nitrate fertilizer. Due to the exceedance of the nitrate MCL the water is treated through the use of the City's Brackish Water Reverse Osmosis (BWRO) system for nitrate removal. The BWRO system uses the same ocean outfall as the decommissioned Seawater Water Reverse Osmosis (SWRO) system (refer to discussion of desalination, below) and is subject to the Coastal Commission permit restrictions for emergency use. Once the City's groundwater recharge and recovery is operational, the hydrogeologic model indicated a reduction in nitrate in the Morro Basin to below the MCL. Should the modeling result be proven out through physical testing during permitting and startup of the groundwater recharge and recovery system, the City will discontinue treatment of groundwater in the BWRO.

Surface Water

According to the Community Baseline Assessment for the General Plan and LCP Update, 97 percent of the City's existing water supply is provided by the SWP. The City is contractually entitled to 1,313 AFY of state water from the County of San Luis Obispo, plus an additional 174 percent drought buffer, or additional supply, to ensure reliability when the SWP has to reduce overall deliveries during dry years (Appendix B).

Desalination

The City constructed the Morro Bay Desalination Plant during a drought emergency in 1992. The plant utilized a SWRO system to desalinate seawater produced from five seawater wells located along the Morro Bay harbor. The desalination plant has been decommissioned per Council Resolution 92-18 and as recommended in the OneWater Morro Bay Plan. City staff had discussed with the California Coastal Commission the possibility for operating the facility under certain emergency conditions. Continued operations of the desalinization facility were determined not to be viable due to costs associated with rebuilding the system.

Future Water Supply and Demand

The OneWater Morro Bay Plan outlines projected water supply under dry-year drought conditions. Over the last decade the City of Morro Bay occasionally has had difficulty meeting water demand due reductions to allocation in State Water compounded by water quality from its Chorro Creek Groundwater Basin resources and in-stream minimum flow requirements. The City has been able to meet demands during a high drought period through a drought buffer agreement with the San Luis Obispo County Flood Control and Water Conservation District (SLOFCWCD). On several occasions the City has utilized the now expired emergency exchange water from the California Department of Corrections and Rehabilitation (CDCR) California Men's Colony water treatment plant. The City is currently under construction for a new Water Reclamation Facility (WRF) that will provide an additional source of water. The WRF is designed to produce highly purified wastewater to augment the City's water supply through groundwater injection and recovery (City of Morro Bay 2018a).

The City's water supply is projected to increase from actual use in 2015 to projected available supply in 2025. Recycled water is expected to become a contributing source of supply by 2025, and projected available supply is expected to remain constant from 2025 through 2040. The majority of demand will be met by imported surface water with the remaining supplies serving as a backup. The City is expected to have an available supply in excess of projected demand through 2040. Table

4.14-1 shows actual water supply and demand for the city in 2015 and projected water supply and demand for the city through 2040.

Table 4.14-1 Water Supply and Demand – Actual (2015) and Projected

Year	2015 (Actual)	2020 (Projected Availability)	2025	2030	2035	2040
Groundwater	138	1,724	581	581	581	581
Surface Water (Purchased Imported Water)	952	1,313	1,313	1,313	1,313	1,313
Recycled Water (IPR GWR)	0	0	850	850	850	850
Total Supply	**1,090**	**3037**	**2744**	**2744**	**2744**	**2744**
Demand	**1,074**	**1,298**	**1,977**	**2,013**	**2,048**	**2,087**

Note: Units in acre-feet per year (AFY). Groundwater sources include 1,724 AFY from well extraction. Starting in 2025, groundwater sources will include 650 AFY recycled water supply from groundwater recharge. Desalinated water includes 645 AFY of treated seawater.
Source: City of Morro Bay 2016a

According to the Community Baseline Assessment for the General Plan and LCP Update, per capita water use in the city has dropped from over 140 gallons per capita per day (gpcd) before 1990 to under 106 gpcd in 2010 as a result of ongoing water conservation measures. Many of the water conservation measures implemented during drought conditions, such as plumbing retrofits and prohibitions against wasting irrigation water, have provided other benefits to the community, resulting in continued, limited water consumption (Appendix B). However, water demand is expected to continue increasing through 2040, with a projected 2,087 acre-feet delivered per year by that time (City of Morro Bay 2016a).

b. Wastewater Collection and Treatment

The City of Morro Bay Public Works Department provides wastewater collection services within the planning area and co-operates its sewer system and wastewater treatment plant through a Joint Powers Authority (JPA) with the Cayucos Sanitary District (CSD). The wastewater system consists of approximately 55 miles of active gravity sewer pipelines, 1.8 miles of force mains, and three pump stations that conveys raw wastewater to the Morro Bay-Cayucos Wastewater Treatment Plant (WWTP) located on Atascadero Road (City of Morro Bay 2018c). The WWTP currently serves a population of approximately 13,300 people within and near the jurisdictional boundary of Morro Bay, and has an average daily flow of 1.089 million gallons per day (Appendix B).

As discussed in the Community Baseline Assessment for the General Plan and LCP Update, the WWTP no longer has adequate treatment capacity and cannot meet current secondary discharge requirement, which results in partially-treated sewage being discharged into the ocean. The City has evaluated options for reconstruction and expansion of the wastewater treatment plant for a number of years and approved a Coastal Development Permit (CDP) for a site near the intersection of South Bay Boulevard and State Route (SR) 1 which is currently under construction. CSD had originally been involved in the reconstruction and expansion plans but elected to withdraw from the process and construct a separate wastewater treatment plant. The replacement of the WWTP wastewater treatment plan is part of a larger set of ongoing projects identified in the OneWater

Plan. According to the Draft Water Reclamation Facility Master Plan for the WRF, the new WRF is planned to accommodate an average daily flow capacity of 0.97 million gallons at full buildout (City of Morro Bay 2016b; City of Morro Bay 2018c).

c. Solid Waste

The City contracts with Morro Bay Garbage (MBG) to provide residential and commercial waste collection services in the planning area. MBG is a subsidiary of Waste Connections Incorporated, which serves the San Luis Obispo Integrated Waste management Authority (IWMA) jurisdictional area. MBG provides collection service for household trash, recyclable materials, and clean green waste, such as untreated wood and cut grass. The estimated volume of waste collected for Morro Bay between 2010 and 2014 ranged between 106.7 and 121.7 tons per year, with no clear trend toward increasing or decreasing during that time (Appendix B).

MBG deposits waste collected in Morro Bay at the Cold Canyon Landfill, one of three landfills in the IWMA jurisdictional area. Cold Canyon Landfill is located an estimated 25 miles southeast of Morro Bay on SR 227. Solid waste transported to the landfill is either sorted and recycled or deposited into the landfill. The estimated permitted landfill capacity of the Cold Canyon Landfill is just over 23 million cubic yards and is estimated to have 62 years of remaining life (Appendix B). The California Department of Resources Recycling and Recovery (CalRecycle) reports per capita disposal rates, measures in pounds per person (both residential population and employed population) to establish compliance with Assembly Bill 939, which requires cities and counties to prepare integrated waste management plans and to divert 50 percent of solid waste from landfills. Disposal rates are in the San Luis Obispo IWMA are not separated by jurisdiction. Between 2010 and 2014, the per capita disposal rates for the IWMA ranged between 4.3 and 4.9 pounds per day, and disposal rates per employee ranged between 11.5 and 13.8 pounds per day (refer to Appendix B).

d. Stormwater Facilities

The City of Morro Bay Public Works staff are responsible for the restoration, protection, and preservation of surface waters and water quality in the city, as well as maintenance, repair, mapping, and evaluation of public drainage systems. Discharges from the City's storm drain system into the creeks, ocean and bay are permitted under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Order No. 2013-0001-DWQ (MS4 General Permit).

e. Regulatory Setting

Federal

Clean Water Act

The federal Clean Water Act, enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the United States and forms the basis for several State and local laws throughout the country. The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. The Clean Water Act gave the U.S. Environmental Protection Agency the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements

for controlling nonpoint-source pollution. At the federal level, the Clean Water Act is administered by the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. At the state and regional levels in California, the act is administered and enforced by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB).

Clean Water Act Section 402

Section 402 of the Clean Water Act requires that all construction sites on an acre or greater of land, as well as municipal, industrial and commercial facilities discharging wastewater or stormwater directly from a point source (e.g., pipe, ditch, or channel) into a surface water of the United States must obtain permission under the NPDES permit. All NPDES permits are written to ensure that the surface water receiving discharges will achieve specified water quality standards.

In California, the NPDES program is administered by the SWRCB through the RWQCBs and requires municipalities to obtain permits that outline programs and activities to control wastewater and stormwater pollution. Discharges from the City of Morro Bay's storm drain system are permitted under NPDES General Permit for Storm Water Discharges From Small Municipal Separate Storm Sewer Systems (MS4s), Permit No. R3-2008-0065 (MS4 General Permit). A discussion of the NPDES permit and other regulations and policies applicable to stormwater management and stormwater discharges is provided in Section 4.8, *Hydrology and Water Quality*.

Title 40 of the Code of Federal Regulations

Title 40 of the Code of Federal Regulations (CFR), Part 258 (Resource Conservation and Recovery Act, Subtitle D), contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the Federal landfill criteria.

State

Water Supply

Drinking water quality in the planning area is regulated by the California Department of Public Health (CDPH), the SWRCB, and the Central Coast RWQCB. The California Code of Regulations, Title 22 (State Drinking Water Standards) is the primary body of State legislation providing water system standards, including those for water supply, storage capacity, and water quality. Other applicable regulations and policies include the Porter-Cologne Water Quality Control Act, the Safe Drinking Water Act, and the SWRCB Non-degradation Policy.

PORTER-COLOGNE WATER QUALITY CONTROL ACT (CALIFORNIA WATER CODE)

The State of California is authorized to administer Federal or State laws regulating water pollution within the State. The Porter-Cologne Water Quality Control Act (Water Code §§ 13000, et seq.) includes provisions to address requirements of the Clean Water Act (CWA). These provisions include NPDES permitting, dredge and fill programs, and civil and administrative penalties. The Porter-Cologne Act is broad in scope and addresses issues relating to the conservation, control, and utilization of the water resources of the State. Additionally, the Porter-Cologne Act states that the quality of all the waters of the State (including groundwater and surface water) must be protected for the use and enjoyment by the people of the State.

CALIFORNIA DEPARTMENT OF WATER RESOURCES

The California Department of Water Resources (DWR) is responsible for preparing and updating the California Water Plan, which is a policy document that guides the development and management of State water resources. The plan is updated every five years to reflect changes in resources and urban, agricultural, and environmental water demands. The California Water Plan suggests ways of managing demand and augmenting supply to balance water supply with demand.

CALGREEN COMPLIANCE

CALGreen is California's first green building code and first in the nation state-mandated green building code. It is formally known as the California Green Building Standards Code, Title 24, Part 11, of the California Code of Regulations. CALGreen also specifies requirements for applications regulated by the California Building Standards Commission (BSC), California Energy Commission (CEC), Division of the State Architect (DSA), Department of Public Health (CDPH), Office of Statewide Health Planning and Development (OSHPD), and DWR. The purpose of CALGreen is to improve public health, safety, and general welfare through enhanced design and construction of buildings using concepts which reduce negative impacts and promote those principles which have a positive environmental impact and encourage sustainable construction practices including water efficiency and conservation, and environmental quality.

URBAN WATER MANAGEMENT PLANNING ACT

The Urban Water Management Planning Act of 1983 amended California Water Code to require all urban water suppliers in California to prepare and adopt an urban water management plan (UWMP) and update it every five years. This requirement applies to all suppliers providing water to more than 3,000 customers or supplying more than 3,000 AFY of water.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT

In September 2014, Governor Browned signed legislation requiring that California's critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act gives local agencies the power to sustainably manage groundwater and requires groundwater sustainability plans to be developed for medium- and high-priority groundwater basins.

WATER CONSERVATION ACT OF 2009 (SB X7-7)

Due to reductions of water available from the San Joaquin Delta, the Legislature drafted the Water Conservation Act of 2009 (SB X7-7) to protect statewide water sources. The legislation called for a 20 percent reduction in water use in California by the year 2020. The legislation amended the Water Code to call for 2020 and 2015 water use targets in the 2010 UWMPs, updates or revisions to these targets in the 2015 UWMPs and allows DWR to enforce compliance to the new water use standards. Beginning in 2016, failure to comply with interim and final targets will make the City ineligible for grants and loans from the State. In addition to an overall statewide 20 percent water use reduction, the objective of SB X7-7 is to reduce water use within each hydrologic region in accordance with the agricultural and urban water needs of each region. Currently, DWR recognizes 10 separate hydrologic regions. Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. The City of Morro Bay is located in the Central Coast Hydrologic Region, which includes all of Santa Cruz, Monterey, San Luis Obispo, and Santa

Barbara Counties, most of San Benito County, and parts of San Mateo County, Santa Clara County, and Ventura Counties (California DWR 2003).

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (ASSEMBLY BILL 1881)

The updated Model Water Efficient Landscape Ordinance (WELO) required cities and counties to adopt landscape water conservation ordinances by January 31, 2010 or to adopt a different ordinance that is at least as effective in conserving water as the updated Model WELO. The City Zoning Code requirement to reduce the amount of water used in landscaping (Chapter 17.48) does not apply to single-family residential projects. In addition to Zoning Code Chapter 17.48, the City follows the State requirements in the Model WELO.

Executive Order B-29-15 required the State to revise the Model WELO to increase water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, on-site stormwater capture, and by limiting the portion of landscapes that can be covered in turf. It also requires reporting on the implementation and enforcement of local ordinances, with required reports due by December 31, 2015 (DWR 2017).

SENATE BILLS 610 AND 221, WATER SUPPLY ASSESSMENT AND VERIFICATION

Senate Bills (SB) 610 and 221 amended the California Water Code to require detailed analysis of water supply availability for certain types of development projects. The primary purpose of SB 610 is to improve the link between the information on water supply availability and certain land use decisions made by cities and counties. Both statutes require detailed information regarding water availability to be provided to city and county decision-makers prior to approval of specified large (greater than 500 dwelling units or 500,000 square feet of commercial space) development projects. Both statutes also require this detailed information to be included in the administrative record that serves as the evidentiary basis for an approval action by the city or county on such projects. Under SB 610 water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects as defined in Water Code 10912 subject to the California Environmental Quality Act (CEQA). Under SB 221 approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply.

Wastewater

CALIFORNIA CODE OF REGULATIONS TITLE 22

The California Department of Public Health sets specific requirements for treated effluent reuse, or recycled water, through Title 22 of the California Code of Regulations. These requirements are primarily set to protect public health. The California Code of Regulations Title 22, Division 4, Chapter 3, Sections 60301 through 60355 regulate recycled wastewater. Title 22 contains effluent requirements for four levels of wastewater treatment, from un-disinfected secondary recycled water to disinfected tertiary recycled water. Higher levels of treatment have higher effluent standards, allowing for a greater number of uses under Title 22, including irrigation of freeway landscaping, pasture for milk animals, parks and playgrounds, and vineyards and orchards for disinfected tertiary recycled water.

Salt concentrations (such as chloride, nitrogen, sodium, etc.) in the effluent are regulated based on the Water Quality Control Plan (Basin Plan) for the San Luis Obispo region, which also considers local groundwater quality. Recycled water quality goals for salts and other constituents vary depending

on the intended irrigation recipients. The RWQCB develops waste discharge requirements based on the Basin Plan, designed to protect beneficial uses of State waters. The RWQCB Basin Plan contains an anti-degradation policy so that existing quality shall be maintained (State Water Resources Control Board 2011).

Solid Waste

ASSEMBLY BILL 341

The purpose of Assembly Bill (AB) 341 is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services and recycling manufacturing facilities in California. In addition to Mandatory Commercial Recycling, AB 341 sets a statewide goal for 75 percent disposal reduction by the year 2020.

ASSEMBLY BILL 939

AB 939 (Public Resources Code 41780) requires cities and counties to prepare integrated waste management plans and to divert 50 percent of solid waste from landfills beginning in calendar year 2000 and each year thereafter. AB 939 also requires cities and counties to prepare source reduction and recycling elements as part of the integrated waste management plans. These elements are designed to develop recycling services to achieve diversion goals, stimulate local recycling in manufacturing, and stimulate the purchase of recycled products.

ASSEMBLY BILL 1826

AB 1826 requires businesses that generate a specified amount of organic waste per week to arrange for recycling services for that waste, and for jurisdictions to implement a recycling program to divert organic waste from businesses subject to the law, as well as report to CalRecycle on their progress in implementing an organic waste recycling program. As of January 1, 2017, businesses that generate four cubic yards or more of organic waste per week shall arrange for organic waste recycling services.

SENATE BILL 1016

SB 1016 requires that the 50 percent solid waste diversion requirement established by AB 939 be expressed in pounds per person per day. SB 1016 changed the CalRecycle review process for each municipality's integrated waste management plan. After an initial determination of diversion requirements in 2006 and establishing diversion rates for subsequent calendar years, the Board reviews a jurisdiction's diversion rate compliance in accordance with a specified schedule. Beginning January 1, 2018, the Board will be required to review a jurisdiction's source reduction and recycling element and hazardous waste element once every two years.

Local

OneWater Morro Bay Plan

The OneWater Morro Bay Plan is an update to the City of Morro Bay's previous water resources planning documents, which is intended to integrate the City's approach to water management by combining water, wastewater and stormwater into one master plan effort. The OneWater Morro Bay Plan serves as a long-range planning document to help the City meet system demands generated by future growth. This includes the City's 2016 "Draft" Water Reclamation Facility Master

Plan, the Master Water Reclamation Plan, the OneWater Morro Bay Plan, the 2015 Sanitary Sewer Management Plan, the 1996 Water Master Plan, the 2006 Wastewater Collection System Master Plan, and the 1983 Stormwater Master Plan, along with various GIS data and City Standards and policies. Water demand projections described in the OneWater Morro Bay Plan account for anticipated future water demands in Morro Bay, and general changes in land uses anticipated by the current General Plan, including but not limited to densification and associated increases in water usage.

Sewer System Management Plan (SSMP)

The SWRCB Waste Discharge Requirements (WDRs) adopted on May 2, 2006, require owners of a wastewater collection system with more than a mile of pipeline have a Sewer System Management Program in order to reduce the number and severity of Sanitary Sewer Overflows (SSO). Accordingly, the City of Morro Bay adopted its SSMP in 2009 and the most recent audit in 2016 indicated that the City is in compliance with WDRs.

Morro Bay Water Shortage Contingency Plan

The City promotes water conservation through the City's Water Shortage Contingency Plan (WSCP) which is found in Morro Bay's municipal code of ordinances within Chapter 13.04 Water Service and Rates. The Morro Bay Water Shortage Contingency Plan features the following policies that affect the municipal water supply.

STAGES OF ACTION

Stage – 1 Normal Water Supply Conditions

The activities performed by the city during this stage include: spring-loaded shut-off nozzles are required for outdoor water use; outdoor irrigation resulting in excessive runoff is prohibited; water may be used as needed for washing and cleaning paved surfaces; water is supplied to customers at restaurants upon request only.

Stage -2 Moderately Restricted Water Supply Conditions

Includes actions taken in stage 1 and: any use that results in excessive gutter runoff is prohibited; water may be used for washing vehicles, boats and buildings with spring-loaded shutoff nozzles, but spraying paved areas is prohibited except for public health or safety; outdoor irrigation is restricted between 10:00 am and 4:00 pm and is only to be performed on designated days; water supplied to customers at restaurants only upon request.

Stage -3 Severely Restricted Water Supply Conditions

Washing boats, marinas, buildings and outdoor paved areas is prohibited except for public health or safety reasons; washing cars may be performed only with the use of a bucket and sponge; emptying and refilling swimming pools and commercial spas is prohibited; the use of potable water for compaction, dust control and construction purposes is prohibited; dysfunctional or leaking water fixtures in public or commercial facilities are required to be repaired within three days; all visitor-serving facilities shall prominently display water conservation educational materials and provide handouts, which outline the mandatory conservation measures being taken.

Stage -4 Critical Water Supply Conditions

Any Water use that results in gutter runoff is prohibited; any water cleanup for public health and safety shall be performed with a bucket and brush; irrigation is to be performed only once per week, and is not allowed between 9:00 am and 5:00 pm; use of fresh water to wash down boats or docks or for other incidental activities is prohibited; Restaurants shall serve water only in response to specific request by customer; emptying and refilling all pools and spas is prohibited; use of potable water for compaction or dust control purposes in construction activities is prohibited; dysfunctional or leaking water fixtures shall be repaired immediately; all visitor-serving facilities shall prominently display these mandatory conservation requirements for the benefit and education of visitors to the community.

Stage – 5 Emergency Water Supply Conditions

The City Council may impose water-rationing requirements as it deems appropriate.

4.14.2. Impact Analysis

a. Methodology and Significance Thresholds

Implementation of the General Plan and LCP Update could have a significant effect on water supplies, wastewater, solid waste, or stormwater conveyance, if demand associated with projected growth would result in any of the following conditions, as listed in Appendix G of the *CEQA Guidelines*:

1. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects
2. Fail to have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years
3. Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
4. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
5. Fail to comply with federal, state, and local statutes and regulations related to solid waste

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project require or result in the relocation of construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects?
Threshold 2:	Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Impact U-1 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INCREASE THE DEMAND FOR WATER SUPPLY. HOWEVER, THE CITY OF MORRO BAY PROJECTS THAT CITY WATER SUPPLY IS SUFFICIENT TO MEET THE PROJECTED WATER DEMAND UNDER BUILDOUT ASSOCIATED WITH THE GENERAL PLAN AND LCP UPDATE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT

The following impact analysis is based on the OneWater Morro Bay Plan, which outlines the availability of water supplies for the city through 2050. Implementation of the proposed General Plan and LCP Update may result in changes to Morro Bay's economy, population, demographics, and environment, resulting in increased strain on the city's water supply. As shown in Table 2-4 and discussed in Section 2, *Project Description*, Morro Bay's population is estimated to be approximately 12,062 people in the year 2040 as a result of development facilitated by the General Plan and LCP Update. This represents an increase of 1,348 people (12.3 percent) from the estimated 2016 population of 10,714. Additionally, nonresidential square footage is estimated to increase by approximately 8.3 million square feet under the General Plan and LCP Update. These increases to population and nonresidential uses would result in an incremental increase in the city's water demand.

The OneWater Morro Bay Plan provides estimates for water supply and demand through 2050 based on a buildout population of 12,200. Table 4.14-2 shows the water supply reliability in the city through a comparison of total projected water demand with the expected water supply in five year increments through 2040. The OneWater Morro Bay Plan is based on a projected 2040 population of 12,149, which is higher than the San Luis Obispo Council of Governments (SLOCOG) *2040 Population, Housing and Employment Forecast* medium growth population projections through 2040 (consistent with the City of Morro Bay 2014-2019 Housing Element Update). As such, the projections in Table 4.14-2 account for the water demand associated with the SLOCOG-projected population of 11,381 in 2040.

Table 4.14-2 Water Supply and Demand Comparison – Actual (2015) and Projected

Year	2015 (Actual)	2020 (Projected)	2025 (Projected)	2030 (Projected)	2035 (Projected)	2040 (Projected)
Supply	1,090	3,037	2,163	2,744	2,744	2,744
Demand	1,074	1,298	1,977	2,013	2,048	2,087
Remaining Supply	16	1,739	186	731	696	657

Note: Units in AFY.
Source: City of Morro Bay 2016a

As shown in Table 4.14-2, the city's projected water supply would meet projected demand through 2040 under normal conditions.

The water projections in the OneWater Morro Bay Plan are based on SLOCOG population projections that forecast a population that is less than the projected population under buildout of the General Plan and LCP Update. Table 4.14-3 shows the city's projected water supply compared to projected demand under single-dry-year and multiple-dry-year conditions, with demand for Year 2040 shown using both SLOCOG population projections and General Plan and LCP Update population buildout projections.

Table 4.14-3 Water Supply and Demand Comparison – Multiple Dry Years

		2020	2030	2040 (SLOCOG population projection)	2040 (General Plan and LCP Update population buildout projection)
First Year	Supply totals	3,682	4,982	4,982	4,982
	Demand totals	1,298	2,013	2,087	2,212
	Difference	2,384	2,969	2,895	2,770
Second Year	Supply totals	3,203	4,503	4,503	4,503
	Demand totals	1,298	2,013	2,087	2,212
	Difference	1,905	2,490	2,416	2,219
Third Year	Supply totals	1,620	2,920	2,920	2,920
	Demand totals	1,298	2,013	2,087	2,212
	Difference	322	907	833	708

Note: Units in AFY. Groundwater sources include 1,724 AFY from well extraction and starting in 2025, 650 AFY recycled water supply from groundwater recharge. Desalinated water includes 645 AFY of treated seawater.
Source: City of Morro Bay 2016a

As shown in Table 4.14-3, the projected remaining supply would be sufficient to meet the demand of development and the population increase facilitated by the General Plan and LCP Update through 2040 under single-dry-year and multiple-dry year conditions.

The General Plan and LCP Update identifies a series of major strategies and physical improvements that should occur to ensure a sustainable water supply to support economic development, land use changes, and development in the planning area through 2040 (the planning horizon). The General Plan and LCP Update Land Use Element contains the following goals and policies, which are consistent with the purpose of the OneWater Morro Bay Plan to encourage the sustainable use and management of water supplies in the planning area.

Goal LU-3 Morro Bay grows in a manner that maintains community identity and well-being.

Policy LU-3.1 **Growth Limits.** Continue to limit the amount of future population growth accommodated by Plan Morro Bay to a level supported by available land, water supply, and other infrastructure and service capacity.

Goal C-7 Morro Bay water is safe, available, and used in an environmentally responsible manner.

Policy C-7.1 **Water Supply.** Diversify the City's water supply.

Policy C-7.2 **Water Supply Monitoring.** Monitor demands on the water system and continue to limit future growth to correspond to the available water supply.

Policy C-7.3 **Water Restrictions.** Continue to impose restrictions on water use.

Policy C-7.4 **Sustainable Water Supply and Wastewater Capacity.** Development shall only be approved if it is first clearly demonstrated that the development will be served by an adequate existing water allocation and sustainable long-term public water supply, as well as adequate wastewater capacity. Consistency with Housing Element Program H-1.1 shall be maintained to prioritize allocation of water to projects containing affordable housing on existing legal lots of record. In addition, priority shall be given to Coastal Act priority uses.

Policy C-7.5 **New Development and Reuse Projects.** Manage new development and reuse projects and existing land uses to mitigate impacts and/or facilitate improvements to the City's water systems.

Policy C-7.6 **Improve Water System.** Maintain and improve water supply and distribution facilities as required to facilitate buildout. Ensure that any new or updated wastewater and water reclamation facility maximizes its ability to produce recycled water and/or to contribute to sustainable City water supplies as much as possible.

Policy C-7.7 **Water Conservation Features.** New development shall incorporate and utilize feasible and innovative water conservation features. Minimize economic hardship on existing residents and businesses.

Policy C-7.8 **Water Conservation Practices.** Continue to encourage maximum water conservation in existing land uses, and provide incentives that encourage building owners and homeowners associations to complete water efficiency retrofits. Minimize economic hardship on residents and businesses.

Policy C-7.9 **Recycled Water.** Encourage the use of recycled water for construction, grading, and other non-contact uses where recycled water is available or expected to be available. Development approval shall, as appropriate, include the option for re-plumbing for greywater use in the future. There is not currently a City source for recycled water.

Policy C-7.10 **Public Education.** Partner with and provide information to community organizations, residents, and businesses regarding methods to reduce water use.

Policy C-7.11 **Desalination Plant.** Continue to operate the desalination plant as needed for emergency or non-routine purposes to ensure that the City's minimum water quality and quantity standards are met.

Policy C-7.14 **Pollutant Runoff.** Reduce pollutants in runoff from agriculture and new development by requiring the use of the most effective best management practices currently available. All runoff shall be filtered and treated to remove expected pollutants prior to being directed to infiltration areas and/or stormwater systems. Where runoff cannot be adequately accommodated on-site through on-site systems, any excess runoff shall be conveyed inland in a nonerosive manner. Also encourage green infrastructure on designated "Green Streets" where stormwater and runoff would be managed, captured and cleansed in public rights-of-way. Main Street should be studied for potential as a Green Street.

Policy C-7.15 **Water Quality.** To reduce the potential for degradation or impairment of water quality, development shall reduce potential pollutants in stormwater and irrigation runoff and require the following:

- To the maximum extent feasible, development shall include specific measures to help reduce potential pollutants and water quality impairment, including controlling the disposal of chemicals and hazardous materials, controlling the use of pesticides and herbicides, maintaining existing stormwater capture programs, applying low-impact development designs, and requiring on-site retention and/or reuse of runoff. The City shall utilize ecologically responsible pest control methods and integrated pest management to the extent feasible on public property and encourage this practice on private property.
- Drainage plans and erosion, sediment, and pollution control measures shall be required as conditions of approval in every application for new development that has the potential to impair water quality.
- Construction phase stormwater pollutant controls shall be required for development with the potential for water quality impairment, including erosion controls, sediment traps and filtering of off-site stormwater flows, capture of site-generated pollutant sources, street sweeping of dirt tracked off-site, litter control, post-construction monitoring, and other best management practices. Construction-phase water quality impacts shall be avoided by minimizing the disturbed area, phasing grading activities, implementing soil stabilization and pollution prevention measures, and preventing unnecessary soil compaction. Development with the potential for water quality impairment shall, at a minimum, be designed to meet National Pollutant Discharge Elimination System stormwater runoff requirements.
- Additionally, development shall be planned, sited, and designed in a manner that maintains or enhances on-site infiltration, reduces runoff, minimizes the transport of pollutants in runoff generated from the development, and recharges groundwater. Development shall ensure that

runoff is appropriately collected, filtered, and treated by best management practices to minimize pollutant loading to the maximum degree feasible.

Policy C-7.16 **Developments of Water Quality Concern.** Developments of water quality concern, including gas stations/car washes, industrial development, and others that have a greater potential for adverse impacts to water quality and hydrology due to the extent of impervious surface area, type of land use, wastewater streams, and/or proximity to coastal waters, shall require additional and context-specific best management practices to protect and enhance water quality.

Based on the water supply projections presented in the OneWater Morro Bay Plan, the city's water supply would be sufficient to meet the projected demand of the development envisioned in the General Plan and LCP Update. In addition, project-specific WSAs would be required to be prepared by proponents of future development projects in the city in accordance with SB 610. Compliance with applicable General Plan and LCP Update Land Use Element goals and policies to encourage the sustainable use and management of water supplies in the planning area would ensure that impacts associated with water demand would be less than significant.

Mitigation Measures

Mitigation measures are not required.

Threshold 1:	Would the project require or result in the relocation of construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects?
Threshold 3:	Would the project result in a determination that by the wastewater treatment provider which serves or may serve the project that it has does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impact U-2 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INCREASE DEMAND FOR WASTEWATER COLLECTION AND TREATMENT, AND THE MORRO BAY-CAYUCOS WASTEWATER TREATMENT PLANT WOULD NOT HAVE TREATMENT CAPACITY TO MEET THIS DEMAND. HOWEVER, THE CITY IS CONSTRUCTING A NEW WATER RECLAMATION FACILITY, WHICH IS DESIGNED TO MEET EXISTING NEEDS AND FUTURE DEMAND. DEVELOPMENT OF THE NEW WATER RECLAMATION FACILITY, AND IMPLEMENTATION OF THE GOALS AND POLICIES OF THE GENERAL PLAN AND LCP UPDATE WOULD ENSURE SUFFICIENT WASTEWATER TREATMENT CAPACITY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The projected growth envisioned in the General Plan and LCP Update would require an increase in wastewater capacity to meet the collection and treatment demand from new development. As discussed in Section 2, *Project Description*, the population of the planning area is estimated to be 12,062 in 2040. This increase of 1,348 residents equates to a 12.3 percent increase above the existing (2016) population. The city's WWTP currently serves a population of approximately 13,300 people and has an average daily flow of 1.089 million gallons per day (Appendix B).The General Plan and LCP Update recognizes that the city's WWTP is outdated and no longer has adequate capacity for the existing population, resulting in primary-treated sewage being discharged into the ocean at an estimated one million gallons per day. As such, the existing WWTP would not have capacity to

serve an increased population in the planning area. As described in Section 4.14.1(a), the City is currently constructing a new WRF to replace the existing WWTP. The WRF has been designed to receive, store, and treat the full influent wastewater flows from uses in the planning area in accordance with the effluent requirements of the NPDES permit program, and is expected to be operational by 2023. According to the Draft Water Reclamation Facility Master Plan for the WRF, the new WRF is planned to accommodate an average daily flow capacity of 0.97 million gallons per day at full buildout. Operations at the WRF are expected to begin in 2023 (City of Morro Bay 2018b; City of Morro Bay 2018c). Based on this expected operational timeframe for the new WRF and the long-term planning horizon for the proposed General Plan and LCP Update, development facilitated by the General Plan and LCP Update, and new population that may result from General Plan buildout, is not expected to result in substantial new demand on the city's wastewater treatment facilities prior to the buildout of the new WRF (beyond that anticipated under the 1988 General Plan during this period). Existing flows as well as future additional wastewater flows in the planning area as a result of population growth under the General Plan and LCP Update would be met by the capacity of the new WRF.

In addition, in 2018 the City has adopted the OneWater Morro Bay master plan for integrated management of water, wastewater, and stormwater. OneWater Morro Bay will update, replace, and expand upon the city's existing water management plans and policies to help the City meet system demands generated by future growth (Appendix B; City of Morro Bay 2018c). The following policies in the General Plan and LCP Update Conservation Element, as well as policies C-7.14 through C-7.16, as described in Impact U-1 above, would ensure proper management of wastewater systems and infrastructure for new development and redevelopment in the planning area.

Policy C-7.18 **Wastewater Marine Impacts.** Wastewater disposal systems which minimize or eliminate marine resource pollution, and which provide for reclamation of wastewater for reuse, shall be required. New development, including redeveloped structures, shall connect to the public wastewater treatment system.

Policy C-7.19 **Infrastructure Relocation.** The City shall consider the relocation of critical water and wastewater infrastructure, as necessary and feasible, to protect those services from the effects of sea level rise and other coastal hazards.

According to the General Plan and LCP Update, the city's existing WWTP no longer provides adequate capacity for the existing city population. However, the city is constructing a new WRF, which is designed to meet existing needs and future demand associated with General Plan buildout based on a buildout population of 12,200, including development facilitated by the General Plan and LCP Update. Completion of the new WRF, as well as implementation of the OneWater Morro Bay master plan and the policies in the General Plan and LCP Update Conservation Element would ensure adequate wastewater systems and infrastructure to meet future demands. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Threshold 4:	Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
Threshold 5:	Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Impact U-3 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD INCREASE SOLID WASTE SENT TO AREA LANDFILLS. HOWEVER, COLD CANYON LANDFILL WOULD HAVE CAPACITY TO SERVE THE DEVELOPMENT ENVISIONED IN THE GENERAL PLAN AND LCP UPDATE. GOALS AND POLICIES IN GENERAL PLAN AND LCP UPDATE WOULD INCREASE THE AMOUNT OF WASTE THAT IS DIVERTED FROM THE LANDFILL AND ENCOURAGE REUSE AND RECYCLING. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The City of Morro Bay uses Cold Canyon Landfill for solid waste disposal. As of 2016, Cold Canyon Landfill has an estimated 62-year capacity for the region. Disposal rates of solid waste in the San Luis Obispo IWMA are not separated by jurisdiction and are measured in pounds per person. According to CalRecycle, between 2010 and 2014, annual disposal rates in the IWMA ranged from an estimated 4.3 to 4.9 pounds per person. As shown in Table 2-4 in Section 2, *Project Description*, the estimated population of planning area would be 12,062 by 2040, an increase of 1,348 residents from the 2016 population.

Based on an average daily residential waste generation of 4.6 pounds per person and the 2016 population of 10,714, existing solid waste generation in the planning area is approximately 49,280 pounds (approximately 25 tons) per day. Based on an average daily residential waste generation of 4.6 pounds per person and projected population of 12,062, the estimated daily solid waste generation in the planning area in 2040 would be approximately 55,485 pounds (approximately 28 tons) per day, or an increase of 6,205 pounds (approximately 3 tons) per day. Cold Canyon Landfill has a maximum daily throughput of 1,650 tons per day. Therefore, the projected increase in solid waste generation in the planning area would increase disposal at the Cold Canyon Landfill by approximately 0.2 percent. The Cold Canyon Landfill has capacity to accommodate this increase in solid waste generation without experiencing a reduction in the current estimated 62-year capacity for the region.

In compliance with the statewide goal for 75 percent disposal reduction by the year 2020 set by AB 341, Goal C-7 of the General Plan and LCP Update Conservation Element establishes a city goal of becoming a zero waste community. Implementation of this goal would help achieve statewide goals for solid waste reduction, including those established by AB 341. In addition to Goal C-7, the General Plan and LCP Update Conservation Element includes the following policies related to solid waste reduction:

Goal C-8 Morro Bay is a zero waste community.

- **Policy C-8.1** **Disposal Rates.** Continue to reduce disposal rates to zero.
- **Policy C-8.2** **Waste Reduction and Diversion.** Incentivize household waste reduction and diversion.
- **Policy C-8.3** **Diversion in Multi-Family and Visitor-Serving Uses.** Improve waste diversion options in multi-family and visitor-serving accommodations.
- **Policy C-8.4** **Public Education.** Provide public information regarding waste reduction and diversion strategies to households.

Policy C-8.5 **Partnerships.** Partner with local businesses and organizations to reduce waste in the community through public information, programs, and incentives.

The projected increase in solid waste generation as a result of development facilitated by the General Plan and LCP Update would not exceed the capacity of Cold Canyon Landfill, or reduction in the current estimated 62-year capacity for the region. Additionally, the General Plan and LCP Update contains goals and policies to reduce and divert waste consistent with state goals for solid waste reduction. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

c. Cumulative Impacts

The scope for potential cumulative impacts to utilities and service systems includes all projects within the same utility service area. The analysis in this section examines the potential impacts to water supply, wastewater, and solid waste utilities and service systems in Morro Bay as a result of all potential buildout in the service areas for these utilities. Although the City currently co-operates its sewer system and wastewater treatment plant through a JPA with CSD, and CSD had originally been involved in the reconstruction and expansion plans for wastewater treatment facilities in the area, CSD has elected to withdraw from the process and construct a separate wastewater treatment plant (Appendix B). Additionally, because Morro Bay is limited by water rights permits to pump a maximum of 1,724 AFY of groundwater in normal years (City of Morro Bay 2016a), water use as a result of the General Plan and LCP Update would not result in impacts to the basins from which the city withdraws beyond those previously identified in this section. Therefore, the analysis of impacts to these services and associated facilities is cumulative in nature. The General Plan and LCP Update would result in less than significant impacts to water and wastewater services and facilities and, therefore, would result in less than significant cumulative impacts to these resources.

Solid waste collected in the planning area is deposited at the Cold Canyon Landfill, one of three landfills in the IWMA jurisdictional area. The IWMA includes San Luis Obispo County, the Cities of Arroyo Grande, Atascadero, Grover Beach, Morro Bay, Paso Robles, Pismo Beach, and San Luis Obispo, as well as numerous community service districts. Therefore, the cumulative impact area for solid waste includes all of these areas, which all contribute to the landfills in the IWMA jurisdictional area. The population increase in the planning area as a result of the General Plan and LCP Update would result in an increase of waste disposal at Cold Canyon Landfill by approximately 0.2 percent, which would not substantially increase daily or annual waste disposal, or result in exceedance of capacity at the Cold Canyon Landfill, resulting in a less than significant contribution of the General Plan and LCP Update to cumulative impacts to waste disposal services in the area. Overall, cumulative impacts to utilities and service systems as a result of General Plan and LCP Update implementation would be less than significant. Potential cumulative impacts related to stormwater are evaluated and discussed in Section 4.8, *Hydrology and Water Quality.*

4.15 Tribal Cultural Resources

This section evaluates potential effects on tribal cultural resources related to implementation of the proposed General Plan and LCP Update.

4.15.1 Setting

The City of Morro Bay was historically occupied by the Obispeño Chumash and the Salinan tribes, and there are likely to be cultural resources in the city due to its location in proximity to various water and food sources. A full discussion of the prehistoric and ethnographic setting of the region is presented in Section 4.4, *Cultural and Paleontological Resources*.

a. Regulatory Setting

State

Assembly Bill 52

California Assembly Bill 52 of 2014 (AB 52) was enacted in July 2015 and expanded CEQA by defining a new resource category, "tribal cultural resources." Assembly Bill 52 states that "A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (California Public Resources Code [PRC] Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 21074(a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria:

a) Listed or eligible for listing in the California Register of Historical Resources (CRHR), or in a local register of historical resources as defined in PRC Section 5020.1(k), or
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

Senate Bill 18

California Government Code Section 65352.3 (adopted pursuant to the requirements of Senate Bill 18 [SB 18]) requires local governments to contact, refer plans to, and consult with tribal organizations prior to making a decision to adopt or amend a general or specific plan. The tribal organizations eligible to consult have traditional lands in a local government's jurisdiction, and are identified, upon request, by the Native American Heritage Commission (NAHC). As noted in the

California Office of Planning and Research's Tribal Consultation Guidelines (2005), "The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places."

b. AB 52 and SB 18 Consultation

The City of Morro Bay conducted SB 18 consultation for the General Plan and LCP Update in 2016. The City confirmed by certified mail receipt in May 2016 that the Northern Chumash Tribal Council (NCTC) received the SB 18 invitation letter dated April 11, 2016. The City did not receive a request from the NCTC to initiate consultation during the required 90 day consultation request period (pursuant to Government Code Section 65352.3), which extended to August 5, 2016.

In June 2016 Karen White with the Salinan Tribe provided a letter stating that Morro Bay area falls within the Salinan Tribe's geographical area of traditional and cultural affiliation boundaries, presenting the Native American history of the city and its vicinity, and requesting that the Salinan Tribe be informed about projects in the city. In July 2016 Patti Dunton with the Salinan Tribe corresponded with City staff and provided a list of Salinan Sacred Sites registered with the NAHC in Morro Bay.

In December 2017 Fred Collins with NCTC corresponded with City staff and provided a letter that presents the Native American history of the city and its vicinity, resource descriptions, and recommended policies for inclusion in General Plan and LCP Update.

The City initiated California Native American tribal consultation, pursuant to AB 52, in August 2018 for the General Plan and LCP Update. No formal responses were received during the required 30 day consultation response period (pursuant to PRC 21080.3.1[b]). However, City staff met with Fred Collins with NCTC to further discuss the General Plan and LCP Update, and received a request for consultation from Mona Tucker, tribal chair of the Northern Chumash Tribe in September 2018, after the close of the 30 day consultation response period. In response to feedback from NCTC City staff included revisions in the Zoning Code regarding the Cultural Resources Overlay described in Policy C-2.4 of the General Plan and LCP Update. City staff did not receive further requests for consultation.

4.15.2 Impact Analysis

a. Methodology and Significance Thresholds

According to Appendix G of the *CEQA Guidelines*, an impact to Tribal Cultural Resources from the proposed General Plan and LCP Update would be significant if the project would:

1) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    a) Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC section 5020.1(k), or
    b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC section 5024.1. In applying the criteria set forth in subdivision (c) of PRC section 5024.1, the

lead agency shall consider the significance of the resource to a California Native American tribe.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project cause a substantial adverse change in the significance of a tribal cultural resource?

Impact TC-1 DEVELOPMENT FACILITATED BY THE GENERAL PLAN AND LCP UPDATE HAS THE POTENTIAL TO IMPACT TRIBAL CULTURAL RESOURCES. IMPLEMENTATION OF THE GOALS AND POLICIES OF THE GENERAL PLAN AND LCP UPDATE WOULD MINIMIZE THE POTENTIAL FOR IMPACTS TO PREVIOUSLY UNIDENTIFIED TRIBAL CULTURAL RESOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH INCORPORATION OF MITIGATION.

Effects on tribal cultural resources can only be known once a specific project has been proposed because the effects are dependent on individual project site conditions and the characteristics of the proposed action. The following General Plan and LCP Update Conservation Element goal and policies include recommended policy language provided in response to SB 18 consultation for the General Plan and LCP Update, which would minimize the potential impact to tribal cultural resources as a result of development facilitated by the General Plan and LCP Update.

Goal C-2 Cultural and historic resources are identified for protection and showcased as a vital part of Morro Bay history.

Policy C-2.1 **Historic and Cultural Resources Strategy.** Develop a plan to address historic and cultural resource issues in Morro Bay, which may include conducting and updating inventories, exploring certification options, and developing context statements.

Policy C-2.2 **Interagency Cooperation.** Work with the Historical Society of Morro Bay and other local groups on historic preservation objectives.

Policy C-2.3 **Protection of Cultural Resources.** Ensure the protection of cultural and archaeological resources during development, construction, and other similar activities. Development shall avoid, to the maximum extent feasible, adversely impacting cultural and/or archaeological resources, and shall include adequate BMPs to address any such resources that may be identified during construction, including mitigation measures sufficient to allow documentation, preservation, and other forms of mitigation.

Policy C-2.4 **Cultural Resources Overlay.** Develop a cultural resources overlay to protect cultural, archaeological and paleontological resources in Morro Bay.

Implementation of these General Plan and LCP Update goals and policies would minimize potential impacts to tribal cultural resources as a result of development facilitated by the General Plan and LCP Update. However, new tribal cultural resources may be identified or established over the course of the implementation of the General Plan and LCP Update through the planning horizon year 2040. Although compliance with applicable regulations and implementation of General Plan and LCP Update goals and policies would minimize impacts to tribal cultural resources, the General Plan and LCP Update does not include policy language or implementation actions to address potential impacts to tribal cultural resources on a project-by-project basis within the planning area.

Therefore, impacts to tribal cultural resources would be potentially significant and additional policy-based mitigation would be required to avoid and/or minimize these potential impacts.

Mitigation Measures

Mitigation Measures CR-1(a) and CR-1(b) in Section 4.3, *Cultural Resources*, are required to address potential impacts to tribal cultural resources. As individual development projects are proposed, project-level environmental review may be required, which could result in the implementation of project-specific mitigation measures to reduce impacts to tribal cultural resources.

Significance After Mitigation

Impacts to tribal cultural resources would be less than significant with implementation of Mitigation Measures CR-1(a) and CR-1(b), which would update the General Plan and LCP Update to include a policy and implementation action to address potential impacts to unique tribal cultural resources on a project-by-project basis by requiring cultural resource studies for projects within the city and the implementation of further requirements to avoid or reduce impacts to those resources.

c. Cumulative Impacts

Tribal cultural resources are regionally specific and determined by the local tribes. However, development in the city would increase under buildout of the General Plan and LCP Update by increasing mobility and growth. The increase in growth in previously undisturbed areas would contribute to regional impacts on tribal cultural resources. Tribal consultation, in accordance with AB 52, would be required on a project-by-project basis to ensure protection of tribal cultural resources. However, tribal territory often crosses the boundaries of multiple jurisdictions within and outside of the region, and there could be individual less than significant impacts to tribal cultural resources that cumulatively would result in a significant impact. Therefore, the potential for cumulative impacts related to tribal cultural resources is potentially significant. However, implementation of the goals and policies listed under Impact TC-1, as well as implementation of Mitigation Measures CR-1(a) and CR-1(b) in Section 4.3, *Cultural Resources*, would minimize potential impacts to tribal cultural resources as a result of development facilitated by the General Plan and LCP Update. Therefore, the General Plan and LCP Update would not result in a considerable contribution to cumulative impacts to tribal cultural resources.

4.16 Energy

This section discusses the project's potential impacts relating to energy. This analysis follows the guidance for evaluation of energy impacts contained in Appendix F and Appendix G of the CEQA Guidelines. The physical environmental impacts associated with the generation of electricity and burning of fuels have been accounted for in Section 4.2, Air Quality, and Section 4.6, Greenhouse Gas Emissions. The project area in this section is defined as the planning area for Morro Bay, which includes all area within the city boundaries, as well as the city's existing Sphere of Influence (SOI) and planned future extension of the SOI.

4.16.1 Setting

Energy use relates directly to environmental quality because energy use can adversely affect air quality and can generate greenhouse gas (GHG) emissions that contribute to climate change. Fossil fuels are burned to create electricity that powers residences, heats and cools buildings, and powers vehicles. Transportation energy use is dependent on the fuel efficiency of cars, trucks, and public transportation; the different travel modes such as auto, carpool, and public transit; and the miles traveled using these modes. Construction and routine operation and maintenance of transportation infrastructure also consume energy.

a. Energy Supply

Petroleum

California is one of the top producers of petroleum in the nation with drilling operations occurring throughout the state but concentrated primarily in Kern and Los Angeles counties. A network of crude oil pipelines connects production areas to oil refineries in the Los Angeles area, the San Francisco Bay area, and the Central Valley. California oil refineries also process Alaskan and foreign crude oil received in ports in Los Angeles, Long Beach, and the San Francisco Bay area. Crude oil production in California and Alaska is in decline, and California refineries have become increasingly dependent on foreign imports (California Energy Commission [CEC] 2020a). Foreign suppliers now produce more than half of the crude oil refined in California (CEC 2016).

Petroleum Infrastructure in the Project Area

Petroleum fuels are generally purchased by individual users such as residents and employees. There are approximately three gasoline stations, but no petroleum refineries in the project area (United States Energy Information System [U.S. EIA] 2020; Google 2019). This figure also shows transmission pipelines in Morro Bay; however, these are natural gas transmission pipelines and not petroleum fuel pipelines (National Pipeline Mapping System [NPMS] 2020). According to the California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR), there are no abandoned, orphaned, or operating oil wells in the project area (DOGGR 2020).

Alternative Fuels

A variety of alternative fuels are used to reduce petroleum-based fuel demand. The use of these fuels is encouraged through various statewide regulations and plans, such as the Low Carbon Fuel Standard and Senate Bill (SB) 32. Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle with transportation fuels including the following:

Hydrogen

Hydrogen is being explored for use in combustion engines and fuel cell electric vehicles. The interest in hydrogen as an alternative transportation fuel stems from its clean-burning qualities, its potential for domestic production, and the fuel cell vehicle's potential for high efficiency, which is two to three times more efficient than gasoline vehicles. Currently, 43 hydrogen refueling stations are located in California; however, none are located in Morro Bay (DOE 2020a).

Biodiesel

Biodiesel is a renewable alternative fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant greases. Biodiesel is biodegradable and cleaner-burning than petroleum-based diesel fuel. Biodiesel can run in any diesel engine generally without alterations; however, fueling stations have been slow to make it available. There are currently 12 biodiesel refueling stations in California, none of which is located in Morro Bay (DOE 2020b).

Electric Vehicles

Electricity can be used to power electric and plug-in hybrid electric vehicles directly from the power grid. Electricity used to power vehicles is generally provided by the electricity grid and stored in the vehicle's batteries. Fuel cells are being explored as a way to use electricity generated onboard the vehicle to power electric motors. There are currently no operating electrical charging stations in Morro Bay (DOE 2020c).

Electricity

California

In 2018, California's in-state electricity generation totaled 80,304 megawatts. Primary fuel sources for the state's electricity generation in 2018 included natural gas, hydroelectric, solar photovoltaic, wind, nuclear, geothermal, biomass, and solar thermal (CEC 2020b). According to the 2018 Integrated Energy Policy Report, California's electric grid relies increasingly on clean sources of energy such as solar, wind, geothermal, hydroelectricity, and biomass. As this transition advances, the grid is also expanding to serve new sectors including electric vehicles, rail, and space and water heating. California has installed more renewable energy than any other state in the United States with 22,250 megawatts of utility-scale systems operational (CEC 2019c).

California's Renewables Portfolio Standard (RPS) establishes increasing renewable energy procurement requirements for electricity utilities and other load-serving entities. The 2018 IEPR Update highlights the RPS targets of 33 percent renewable energy sources by 2020 and 100 percent carbon-free energy sources by 2045, as established by SB 100 (CEC 2019c). The RPS targets under SB 100 include 33 percent renewable sources by 2020, 50 percent renewable sources by 2026, 60 percent renewable sources by 2030, and 100 percent carbon-free sources by 2045 (California Legislative Information 2018).

Pacific Gas & Electric

Pacific Gas and Electric (PG&E) is responsible for providing electric power supply in San Luis Obispo County. PG&E's power system is one of the nation's largest electric and gas utilities and maintains 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2019a). In 2018, PG&E's power mix, including all PG&E-owned generation

plus the company's power purchases, consisted of 39 percent renewable resources (wind, geothermal, biomass, solar, and small hydro), 34 percent nuclear generation, 15 percent natural gas, and 13 percent large hydroelectric facilities (PG&E 2019b). According to PG&E's 2018 Integrated Resource Plan, PG&E anticipates meeting a 2030 energy load demand of between 36,922 gigawatt-hours (GWh) and 37,370 GWh (PG&E 2018).

Monterey Bay Community Power (MBCP), which provides carbon-free electricity, is the default energy provider in Morro Bay. However, residents of Morro Bay have the ability to opt out of MBCP and obtain electric power through PG&E. According to MBCP, approximately 97 percent of accounts in the MBCP service area maintain enrollment in MBCP; the remaining 3 percent of accounts opt out and connect to PG&E (MBCP 2019).

Electric Power Infrastructure in the Project Area

There are no electric power plants in the project area (U.S. EIA 2020).

Natural Gas

California

California's net natural gas production for 2018 was 180.6 billion cubic feet, or approximately 187,282 billion British thermal units (Btu; DOGGR 2018). The 2018 California Gas Report presents a comprehensive outlook for natural gas requirements and supplies for California through the year 2035. California's existing gas supply portfolio is regionally diverse and includes supplies from California onshore and offshore sources, Southwestern United States supply sources, the Rocky Mountains, and Canada. California natural gas demand, including volumes not served by utility systems, is expected to decrease at a rate of 0.5 percent per year from 2018 to 2035. The forecasted decline is due to a combination of moderate growth in the Natural Gas Vehicle market and across-the-board declines in all other market segments: residential, commercial, electric generation, and industrial markets. Gas-fired generation will continue to be the primary technology to meet the ever-growing demand for electric power; however, overall gas demand for electric generation is expected to decline at 1.4 percent per year for the next 17 years due to more efficient power plants, statewide efforts to minimize GHG emissions through aggressive programs pursuing demand-side reductions, and the acquisition of preferred power generation resources that produce little or no carbon emissions (California Gas and Electric Utilities [CGEU] 2018).

Southern California Gas

The project site is in the natural gas service area of Southern California Gas Company (SoCalGas), which spans central and southern California. SoCalGas' service area is equipped with over 101,000 miles of gas transmission and distribution pipelines. Natural gas supplied by SoCalGas is sourced primarily from gas fields in the Permian and San Juan basins in the Southwest as well as from supply sources in the Rocky Mountains, western Canada, and California (CGEU 2018).

In 2018, SoCalGas customers consumed a total of 5,156 million U.S. therms of natural gas. Residential users accounted for approximately 42 percent of SoCal Gas' natural gas consumption. Industrial and commercial users accounted for another 33 percent and 19 percent, respectively. The remainder was used for mining, construction, agricultural, and water pumping purposes (CEC 2020d). According to SoCalGas, residential sales are expected to decline by approximately 1.4 percent per year from 2018 to 2035. Furthermore, commercial sales are expected to decline by 0.7

percent per year from 2018 to 2035. The anticipated decline in both residential and commercial sales is due to aggressive energy efficiency goals and associated programs (CGEU 2018).

Natural Gas Infrastructure in the Project Area

There are no natural gas wells in the project area (DOGGR 2020). No natural gas processing plants are located in the city (U.S. EIA 2020). The project area contains a main transmission line/high pressure distribution line that runs parallel to State Route (SR) 1 (SoCal Gas 2020).

b. Energy Demand

The smallest scale at which energy consumption information is readily available is the county level. Therefore, energy consumption in San Luis Obispo County is used herein to characterize the city's existing consumption of petroleum, electricity, and natural gas as detailed in the following subsections.

Petroleum

As shown in Table 4.16-1, San Luis Obispo County consumed an estimated 150 million gallons of gasoline and 22 million gallons of diesel fuel in 2018, which was approximately 0.7 percent of statewide gasoline consumption and approximately 1.2 percent of statewide diesel fuel consumption (CEC 2020d). Based on San Luis Obispo County's 2018 population of 280,393 (California Department of Finance [DOF] 2019) and 2018 employment of 136,020 (Bureau of Labor Statistics 2020), San Luis Obispo County's annual per service population fuel consumption in 2018 consisted of 360.2 gallons of gasoline and 52.8 gallons of diesel fuel. As shown in Table 4.16-1, the County consumed an average of approximately 46.3 million Btu per service population of transportation fuel in 2018.

Table 4.16-1 2018 Annual Gasoline and Diesel Consumption

Fuel Type	San Luis Obispo County (gallons)	County Per Service Population Consumption (gallons)	County Per Service Population Consumption (MMBtu)
Gasoline	150,000,000	360.2	39.5
Diesel	22,000,000	52.8	6.7
Total	172,000,000	413.1	46.3

Notes: The population of San Luis Obispo County (280,393 persons) is approximately 0.7 percent of the population of California (39,927,315 persons) (California Department of Finance 2019). Diesel and gasoline volumes are expressed in gallons while Btu volumes are expressed in millions of Btu (MMBtu).

Sources: CEC 2020d, DOF 209, Bureau of Labor Statistics 2020.

Electricity

As shown in Table 4.16-2, San Luis Obispo County consumed approximately 1,766 GWh in 2018, which was approximately 2.2 percent of electricity consumption by PG&E customers and approximately 0.6 percent of statewide electricity consumption (CEC 2020d). San Luis Obispo County's 2018 per service population electricity consumption was approximately 4,241 kWh. As shown in Table 4.16-2, the County's per service population electricity consumption was approximately 14.5 million Btu in 2018.

Table 4.16-2 2018 Electricity Consumption

Energy Type	San Luis Obispo County (GWh)	County Per Service Population Consumption (kWh)	County Per Service Population Consumption (MMBtu)
Electricity	1,766	4,241.0	14.5

Notes: The population of San Luis Obispo County (280,393 persons) is approximately 0.7 percent of the population of California (39,927,315 persons) (California Department of Finance 2019). Electricity consumption volumes for Fresno County and California are expressed in megawatt-hours (MWh) while County per service population consumption is expressed in kilowatt-hours (kWh) and millions of Btu (MMBtu).

Sources: CEC 2020d, DOF 209, Bureau of Labor Statistics 2020.

Natural Gas

As shown in Table 4.16-3, San Luis Obispo County consumed approximately 82 million U.S. therms in 2018, which was approximately 1.6 percent of the natural gas consumption by SoCalGas customers and approximately 0.6 percent of statewide natural gas consumption (CEC 2020c). San Luis Obispo County's 2018 per service population natural gas consumption was approximately 196.9 U.S. therms. As shown in Table 4.16-3, the County's per service population natural gas consumption in 2018 was approximately 14.5 million Btu.

Table 4.16-3 2018 Natural Gas Consumption

Energy Type	San Luis Obispo County (US therms)	County Per Service Population Consumption (U.S. Therms)	County Per Service Population Consumption (MMBtu)
Natural Gas	82,000,000	196.9	14.5

Notes: The population of San Luis Obispo County (280,393 persons) is approximately 0.7 percent of the population of California (39,927,315 persons) (California Department of Finance 2019). Natural gas consumption volumes for Fresno County and California are expressed in U.S therms while County per service population consumption is expressed in U.S. therms and millions of Btu (MMBtu).

Sources: CEC 2020d, DOF 209, Bureau of Labor Statistics 2020.

4.16.2 Regulatory Setting

a. Federal Regulations

Energy Independence and Security Act of 2007

The Energy Independence and Security Act, enacted by Congress in 2007, is designed to improve vehicle fuel economy and help reduce the United States' dependence on foreign oil. It expands the production of renewable fuels, reducing dependence on oil and confronting climate change. Specifically, it does the following:

- Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Reduces United States demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020, an increase in fuel economy standards of 40 percent as compared to 2007 levels.

The Energy Independence and Security Act of 2007 also set energy efficiency standards for lighting (specifically light bulbs) and appliances. Development would also be required to install photosensors and energy-efficient lighting fixtures consistent with the requirements of 42 United States Code Section 17001 et seq.

Energy Policy and Conservation Act

Enacted in 1975, this legislation established fuel economy standards for new light-duty vehicles sold in the United States. The law placed responsibility on the National Highway Traffic and Safety Administration (NHTSA) for establishing and regularly updating vehicle standards. The United States Environmental Protection Agency (U.S. EPA) administers the Corporate Average Fuel Economy program, which determines vehicle manufacturers' compliance with existing fuel economy standards. Since the inception of the Corporate Average Fuel Economy program, the average fuel economy for new light-duty vehicles steadily increased from 13.1 miles per gallon for the 1975 model year to 30.7 miles per gallon for the 2014 model year and is proposed to increase to 54.5 by 2025. Light-duty vehicles include autos, pickups, vans, and sport-utility vehicles.

Energy Star Program

Energy Star is a voluntary labeling program introduced by U.S. EPA to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specifications for maximum energy use established under the program are certified to display the Energy Star label. In 1996, the U.S. EPA joined with the Energy Department to expand the program, which now also includes certifying commercial and industrial buildings as well as homes.

Construction Equipment Fuel Efficiency Standard

The U.S. EPA sets emission standards for construction equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068. Emissions requirements for new off-road Tier 4 vehicles were completely phased in by the end of 2015.

b. State Regulations

California Energy Action Plan

The CEC is responsible for preparing the California Energy Action Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The 2008 California Energy Action Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), the CEC and California Air Resources Board (CARB) prepared and adopted a joint-agency report, *Reducing California's Petroleum Dependence,* in 2003. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT. One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. In response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

Integrated Energy Policy Report

SB 1389 requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. The most recent assessment, the *2018 Integrated Energy Policy Report*, contains two volumes. Volume I highlights the implementation of California's innovative policies and the role they have played in establishing a clean energy economy. Volume II provides more detail on several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system (CEC 2019c).

Senate Bill 350

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires a doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

*Calif*ornia Renewable Portfolio Standard and Senate Bill 100

Approved by former Governor Brown on September 10, 2018, SB 100 accelerates the state's Renewable Portfolio Standard program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Assembly Bill 1493: Reduction of Greenhouse Gas Emissions

AB 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." Implementation of new regulations prescribed by AB 1493 required that the state of California apply for a waiver under the federal Clean Air Act. Although the USEPA initially denied the waiver in 2008, USEPA approved a waiver in June 2009, and in September 2009, CARB approved amendments to its initially adopted regulations to apply the Pavley standards that reduce GHG emissions to new passenger vehicles in model years 2009 through 2016. According to CARB, implementation of the Pavley regulations is expected to reduce fuel consumption while also reducing GHG emissions.

On September 19, 2019, the U.S. EPA withdrew California's Clean Air Act preemption waiver and issued the One National Program Rule, which prohibits states from establishing their own separate fuel economy standards or passing laws that substantially affect fuel economy standards. As a

result, California may no longer promulgate and enforce its tailpipe GHG emission standard and zero emission vehicle mandate.

Energy Action Plan

In 2003, the CEC and California Public Utilities Commission set forth their energy policy vision in the Energy Action Plan (EAP). The CEC adopted an update to the EAP in February 2008 (EAP II) that supplements the earlier EAP and examines the state's ongoing actions in the context of global climate change. The nine major action areas in the EAP include energy efficiency, demand response, renewable energy, electricity adequacy/reliability/infrastructure, electricity market structure, natural gas supply/demand/infrastructure, transportation fuels supply/demand/infrastructure, research/development/demonstration, and climate change (California Public Utilities Commission 2008).

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required the CEC to prepare a plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other federal, state, and local agencies. The State Alternative Fuels Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan (Executive Order S-06-06)

Executive Order (EO) S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following in-state production targets to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources:

- Produce 20 percent of biofuels used in California by 2010,
- Produce 40 percent of biofuels used in California by 2020, and
- Produce 75 percent of biofuels used in California by 2050.

EO S-06-06 also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies potential barriers and recommends actions to address them so the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 Plan and provides a more detailed action plan to achieve the following goals:

- Increase environmentally and economically sustainable energy production from organic waste
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications
- Create jobs and stimulate economic development, especially in rural regions of the state
- Reduce fire danger, improve air and water quality, and reduce waste

Title 24, California Code of Regulations

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods. In 2016, the CEC updated Title 24 standards with more stringent requirements effective January 1, 2017. All buildings for which an application for a building permit is submitted on or after January 1, 2017, must follow the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC Impact Analysis for California's 2016 Building Energy Efficiency Standards estimates that the 2016 Standards are 28 percent more efficient than the previous 2013 standards for residential buildings and five percent more efficient for non-residential buildings. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided these standards exceed those provided in Title 24.

California Green Building Standards Code (2019), California Code of Regulations Title 24, Part 11

California's Green Building Code, referred to as CalGreen, was developed to provide a consistent approach to green building in the State. Having taken effect in January 2020, the most recent version of CalGreen lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved energy efficiency and process improvements. It also includes voluntary tiers to further encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design.

2017 Climate Change Scoping Plan

On December 14, 2017, the CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the State's 2030 GHG emissions reduction target of 40 percent below 1990 levels. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of recently adopted policies and legislation. The 2017 Scoping Plan includes a wide variety of goals related to energy efficiency and renewable energy that are intended to help meet the State's 2030 target, including goals specifically targeted at the water sector (CARB 2017).

c. Local Regulations

San Luis Obispo Council of Governments 2019 Regional Transportation Plan

The 2019 Regional Transportation Plan (RTP) is a comprehensive assessment of all forms of transportation available in San Luis Obispo County and the region's blueprint for a transportation system that meets the mobility needs of the region's residents and visitors. The 2019 RTP contains a Sustainable Communities Strategy (SCS) as required by SB 375. Enacted in 2008, SB 375 requires that each Metropolitan Planning Organization include an SCS that provides an integrated land use and transportation plan for meeting GHG emission reduction targets set forth by the California Air Resources Board (CARB). The 2019 RTP and SCS coordinates land use, housing, and transportation

planning to reduce the amount the amount of time people spend on the road. This effort is part of a statewide strategy to reduce GHG emissions to meet regional targets, and may help attract funding for our communities and streamline permitting processes

Climate Action Plan

The following measures and implementation actions from the City of Morro Bay's Climate Action Plan would apply to energy consumption related to the proposed project (Morro Bay 2014):

- **Measure C-1 City Government Energy Efficiency Retrofits and Upgrades.** Establish a target to reduce City government energy use by 10 percent by 2020 and implement cost-effective improvements and upgrades to achieve that target.
  - **Action C-1.1:** Adopt a 10 percent City government energy use reduction target.
  - **Action C-1.2:** Establish a prioritized list of energy efficiency upgrade projects and implement them as funding becomes available.
- **Measure C-3 Renewable Energy Systems on City Property.** Pursue small-scale on-site solar energy systems at City government facilities.
  - **Action C-3.2:** Install small-scale on-site solar PV systems at select City government facilities.
- **Measure C-4 Zero- and Low-Emission City Fleet Vehicles.** Continue to replace official City vehicles and equipment with more efficient and/or alternatively fueled vehicles.
- **Measure E-4 Incentives for Exceeding Title 24 Energy Efficiency Building Standards.** Encourage new development to voluntarily exceed State energy efficiency standards.
  - **Action E-4.2:** Identify, provide and promote incentives (e.g., streamlined permitting, public recognition, etc.) for applicants whose project exceeds State requirements by a specified percent.
- **Measure E-5 Small-Scale On-Site Solar PV Incentive Program.** Facilitate the voluntary installation of small-scale on-site solar PV systems and solar hot water heaters in the community through expanded promotion of existing financial incentives, rebates, and financing programs, and by helping residents and business owners overcome common regulatory barriers and upfront capital costs.
  - **Action E-5.4:** Participate in and promote a single-family residential renewable energy financing program to encourage investment in small-scale on-site solar PV systems.
  - **Action E-5.5:** Continue to participate in and promote the AB 811 CaliforniaFIRST renewable energy financing program for multi-family residential and commercial buildings.
- **Measure TL-5 Electric Vehicle Network and Alternative Fueling Stations.** Continue to work with the APCD, Central Coast Clean Cities Coalition, and neighboring jurisdictions to create and implement the electric vehicle readiness plan.
  - **Action TL-5.2:** Provide streamlined installation and permitting procedures for vehicle charging facilities, utilizing tools provided in the electric vehicle readiness plan (e.g., sample charging permits, model ordinances, development guidelines, outreach programs).
- **Measure TL-6 Smart Growth.** Facilitate mixed-use, higher density, and infill development near transit stops, in existing community centers/downtown, and in other designated areas.
  - **Action TL-6.1:** Provide and promote incentives (e.g., parking reductions, priority permitting, deferred permit fees, etc.) for mixed-use and high-density land use categories located within ¼-mile of a transit stop or park and ride facility with regularly scheduled, daily service.

4.16.3 Impact Analysis

a. Methodology and Significance Thresholds

Significance Thresholds

Appendix G of the CEQA Guidelines considers a project to have a significant impact on energy resources if the project would:

- Result in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Methodology

Public Resources Code Section 21100(b)(3) states that an EIR shall include "mitigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy." The physical environmental impacts associated with the use of energy, including the generation of electricity and burning of fuels, have been accounted for in Section 4.2, Air Quality, and Section 4.6, Greenhouse Gas Emissions.

Energy consumption is categorized herein in terms of "direct" and "indirect" energy. Direct energy accounts for energy consumed during operation of the transportation system and land use scenario envisioned under the General Plan and Local Coastal Program (LCP) Update, such as fuel consumed by vehicles, natural gas consumed for heating and/or power, and electricity consumed for power. Indirect energy is the energy needed for construction and maintenance of the transportation system and land use scenario facilitated by the General Plan and LCP Update. The analysis of direct energy involves the quantification of anticipated transportation fuel, natural gas, and electricity consumption under the General Plan and LCP Update and a qualitative discussion of the efficiency, necessity, and wastefulness of the energy consumption. Analysis of indirect energy involves a qualitative discussion of construction and maintenance energy requirements anticipated under 2040 buildout of the General Plan and LCP Update.

Buildout of the General Plan and LCP Update would generate direct energy consumption from transportation fuel from the anticipated growth of residential, commercial and industrial land uses. Because project-level details regarding the new development under the General Plan and LCP Update are not available, 2040 buildout assumptions for direct energy impacts are used in this analysis to estimate energy usage for land use buildout. As a result, this analysis represents a conservative estimate of future energy consumption in Morro Bay.

Projections for transportation fuel consumption under 2040 buildout conditions were calculated based on the Mobile Source Emission Inventory (EMFAC) 2014 database. As such, direct energy consumption from transportation fuel for the General Plan and LCP Update is discussed based on EMFAC 2014 projections and qualitatively. For 2040 natural gas and electricity consumption under buildout of the land use scenario envisioned by the General Plan and LCP Update, consumption factors were drawn from the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. The CalEEMod data is provided as Appendix C. Additional calculations conducted for this analysis are provided as Appendix F. Transportation fuel, natural gas, and electricity per service population consumption in 2040 is presented in comparison to 2018 per service population consumption for informational purposes.

b. Project Impacts and Mitigation Measures

Threshold:	Would the General Plan and LCP Update result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during construction or operation?

Impact E-1 THE GENERAL PLAN AND LCP UPDATE IS BASED ON A LAND-USE STRATEGY THAT WOULD PROMOTE GREATER ENERGY EFFICIENCY IN COMMUNITY AND MUNICIPAL OPERATIONS. GENERAL PLAN AND LCP UPDATE POLICIES AND IMPLEMENTATION PROGRAMS WOULD ENSURE THAT DEVELOPMENT UNDER THE GENERAL PLAN AND LCP UPDATE WOULD COMPLY WITH EXISTING ENERGY EFFICIENCY REGULATIONS. WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY WOULD NOT OCCUR AND THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The General Plan and LCP Update would result in the use of energy during construction and operation of new development in the planning area. Energy use during construction would be primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators for lighting. Temporary grid power may also be provided to construction trailers or electric construction equipment. Long-term operation of development projects would require permanent grid connections for electricity and natural gas service to power internal and exterior building lighting, and heating and cooling systems. In addition, the increase in vehicle trips associated with potential development would increase fuel consumption.

Indirect Construction and Maintenance Energy Use

Construction and maintenance of future land use development envisioned under the General Plan and LCP Update would result in short-term consumption of energy resulting from the use of construction equipment and processes. CALGreen includes specific requirements related to recycling, construction materials, and energy efficiency standards that would apply to construction of future development envisioned by the General Plan and LCP Update and would minimize wasteful, inefficient, and unnecessary energy consumption. Construction and operation of projects facilitated by the General Plan and LCP Update would be required to comply with relevant provisions of CALGreen and Title 24 of the California Energy Code, which would further avoid wasteful, inefficient, and unnecessary energy consumption.

New Direct Natural Gas and Electricity Consumption

Operation of new development facilitated by the General Plan and LCP Update would consume natural gas and electricity for building heating and power, lighting, and water conveyance, among other operational requirements. Table 4.16-4 shows net new per service population natural gas and electricity consumption under buildout of the General Plan and LCP Update.

Table 4.16-4 Projected 2040 Annual Natural Gas and Electricity Consumption in Morro Bay

Year	Per Service Population Consumption	Direct Energy Consumption (Daily Per Service Population MMBtu)
Natural Gas	**U.S. Therms**	
2018 (SLO County Existing)	196.9	18.3
2040 (Morro Bay Buildout)	123.6	11.5
Electricity	**kWh**	
2018 (SLO County Existing)	4,241.0	14.5
2040 (Morro Bay Buildout)	3,887.1	13.3

Notes: Per service population consumption in 2040 is derived from dividing estimated 2040 buildout energy consumption by service population anticipated by 2040. Per service population energy consumption is expressed in U.S. therms for natural gas, kilowatt-hours (kWh) for electricity, and millions of Btu (MMBtu) for both.

As shown in Table 4.16-4, new per service population natural gas consumption with buildout of the land use scenario envisioned under the General Plan and LCP Update would be approximately 11.5 MMBtu and approximately 13.3 MMBtu for electricity. These estimates represent a decrease in per service population energy consumption. In addition, MBCP procures a greater percentage of its electricity from renewable sources in comparison to PG&E.

The Conservation Element of the General Plan contains goals, policies, and implementation programs that would prevent inefficient, wasteful, and unnecessary energy consumption during construction and operation of development facilitated by the General Plan. The General Plan and LCP Update goals and policies that present the greatest potential for reducing wasteful, inefficient, and unnecessary energy consumption are as follows:

Conservation Element

Goal C-5: Morro Bay is a leader in energy innovation and sustainable usage.

Policy C-5.1: Weatherization Incentive Programs. Promote low-cost or free weatherization programs for disadvantaged residents, including low-income families and elderly individuals.

Policy C-5.2: Energy Efficiency Standards. Construct all new City facilities to be more energy efficient than the minimum energy efficiency standards in the California Building Standards Code, and achieve zero net energy performance for new City facilities when possible.

Goal C-6: Energy available to Morro Bay residences, businesses, and public buildings is renewable and sustainable.

Policy C-6.1: Renewable Energy Incentive Programs. Create incentives that promote renewable and sustainable energy systems as a component of new development or reuse projects.

Policy C-6.2: Renewable Energy in Home and Commercial Uses. Encourage the use of solar energy systems in homes and commercial businesses as a form of renewable energy, including in support of zero net energy goals.

Policy C-6.3: **Renewable Energy in Municipal Uses**. Maximize renewable energy capacity on municipal property and renewable energy use in City-sponsored projects and activities.

Policy C-6.4: **Partnerships**. Support public/private partnerships to implement energy efficiency, energy storage, and microgrid development to achieve cost savings, reduce energy use, and improve energy reliability.

In addition to the above policies and implementation programs, the General Plan and LCP Update encourages urban infill and mixed-use development and multimodal transportation to reduce overall energy consumption and result in greater energy efficiency throughout Morro Bay. Infill and mixed-use developments improve energy efficiency as the resulting development pattern places City residents closer to places of employment, businesses residents patronize, and public transit opportunities. By placing new services and amenities closer to where people live and work, the General Plan and LCP Update would minimize the need to drive and reduce per service population energy consumption and GHGs.

Direct Transportation Energy Use

Daily operation of the regional transportation system uses energy in the form of fuel consumed by propulsion of passenger vehicles, including automobiles, vans and trucks, and transit vehicles, including buses and trains. Increases in motor vehicle trips are primarily a combined function of population and employment growth.

Table 4.16-5 shows daily VMT and estimated fuel consumption translated into energy use (Btu) in the Morro Bay under existing conditions and future 2040 conditions with implementation of the General Plan and LCP Update.

Table 4.16-5 Direct Transportation Energy Use in Morro Bay

Year	Service Population (Residents + Employees	Daily VMT [1]	Direct Energy Consumption (Daily Per Service Population MMBtu)
2016 (Existing)	16,114	84,739	43.6
2040 (Buildout)	17,600 [3]	100,104	26.8
2040 (New Development Only)	15,534	197,595	26.8
2040 (Buildout + New Development)	31,648	297,699	26.8

1. Daily VMT for Existing and Buildout + New Development General Plan and LCP Update were applied to the 2016 and 2040 scenarios, respectively.
2. Daily VMT and county-level fuel consumption information was used to derive a per capita daily Btu per VMT consumption factor. (refer to Table 4.16-1).
3. Assumes population increases to Measure F limit of 12,200 with no substantial increase in employment.

Notes: Per Service Population Btu/VMT factor is expressed in singular Btu while Daily Per Service Population Direct Energy Consumption is expressed in millions of Btu (MMBtu).

As shown in Table 4.16-5 direct transportation energy demand would decrease from 43.6 daily MMBtu per service population to approximately 26.8 daily MMBtu per service population. The reduction from 2016 to 2040, which is observed across all 2040 scenarios shown in Table 4.16-5, is primarily the result of the increase in vehicle fuel efficiency anticipated by 2040 (refer to Section 4.5.1[b] for a discussion of consumption of gasoline and diesel fuel under existing conditions).

The decrease in per service population energy consumption shown in Table 4.16-5is based on a business-as-usual estimate of 2040 VMT and does not account for proposed General Plan and LCP Update Policies from the Circulation Element that would further improve the availability of alternative transportation modes and help reduce congestion and overall demand for transportation fuels. The Circulation Element contains goals and policies to promote a reduction in VMT through support of alternative transportation. While personal automobile travel has been the predominant transportation mode for residents in the City, there are two public transit systems that service Morro Bay: San Luis Obispo Regional Transit Authority (RTA) and Morro Bay Transit (refer to Section 4.13.1[c] for a detailed discussion of existing transit facilities in and around Morro Bay). The Circulation Element identifies priorities for upgrades to bicycle facilities, sidewalks, and other amenities for alternative modes of transportation.

Circulation Element

Goal CIR-1: Residents and visitors can easily move about the city in a variety of safe and active ways.

- **Policy CIRC-1.1: Balanced Transportation**. Work to complete a balanced multimodal transportation system that meets the needs of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities.
- **Policy CIR-1.2: Access Improvement**. Use infrastructure improvements within public rights-of-way as an opportunity to improve street design and multimodal access.
- **Policy CIR-1.3: System Connectivity**. Develop a complete and connected network of accessible sidewalks, crossings, paths, and separated bike lanes that are convenient and attractive throughout the city.
- **Policy CIR-1.4: Future Enhancements**. Identify streets in the city that can be made “complete,” and plan for new bikeways, sidewalks, and crosswalks on these streets by reallocating how space within the public right-of-way is used.
- **Policy CIR-1.5: Regional Transit**. Coordinate with the San Luis Obispo Regional Transit Authority to ensure local transit connects smoothly with regional transit and possible future route and schedule expansions.
- **Policy CIR-1.6: Local Transit Improvement**. Continue to improve the local Morro Bay Transit Deviated Fixed Route and Call-A-Ride services and ensure connections to regional transit and active transportation facilities.
- **Policy CIRC-5.3: Continuous Bicycle Network**. The City shall design a safe and logical bicycle path network that links key destinations within the planning area to promote the use of bicycles as a mode of transportation to reduce greenhouse gas emissions and to encourage exercise.

Goal CIR-2: Morro Bay is a pleasant and safe place to walk and bike.

- **Policy CIR-2.1: Compact Development**. Support mixed-use, compact-style, and other land use development patterns within existing developed areas so as to facilitate easy active transportation and transit use. (See also Policies LU-3.1, LU-3.3, LU-3.6, and LU-3.7.)
- **Policy CIR-2.2: Street End Pedestrian Connections**. Create safer and more distinct lateral access connections across the street ends on the west side of the Embarcadero at Dunes, Harbor, Morro Bay Boulevard, Front, Pacific, Marina, and Driftwood Streets, including by relocating parking from these areas. (See also Policies LU-4.1, LU-4.5, LU-4.6, LU-7.1 through LU-7.6, and OS-1.6 and Implementation Action LU-19).

Policy CIR-2.3: Pedestrian Safety. Provide for accessible, safe, and convenient paths, sidewalks, and crossings along major streets and beach and coastal areas for all users, including the disabled, youth, and the elderly. (See also Policies LU-8.5 and OS-3.6.)

Policy CIR-2.4: Active Transportation Amenities. Provide facilities and amenities for active transportation users at public facilities, including bicycle storage and seating areas. (See also Policies LU-8.4 and OS-1.8.)

Policy CIR-2.5: Prioritizing Improvements. Prioritize infrastructure improvements that benefit bicycle and pedestrian safety and convenience around community facilities and locations in pedestrian-oriented areas. (See also Policy OS-1.8 and Implementation Action OS-1.)

Policy CIR-2.6: Destination Facilities. Require and place access areas and facilities for bicycle, pedestrian, and transit travel in front of major destinations, such as shopping centers, parks, and schools. Facilities may include any or a combination of the following: designated passenger drop-off and pickup zones, benches, lighting, secure bike parking, shelters, and street trees. (See also Policies LU-2.3 and PS-2.1.)

Policy CIR-2.7: Traffic Calming. Develop and implement strategies to calm traffic on streets that have a high amount of pedestrian and bicycle traffic, or are in neighborhoods with residences, schools, parks, or other areas frequented by children.

Goal CIR-3: Traffic monitoring considers all methods of travel, with emphasis on active and sustainable transportation methods.

Policy CIRC-3.2: VMT Thresholds. Achieve State-mandated reductions in VMT by establishing a VMT standard. This standard will be for roadway segments and intersections during PM peak hour.

Implementation of the General Plan and LCP Update goals and policies listed above, as well as other policies and implementation actions contained in the General Plan and LCP Update that would result in indirect energy conservation (such as the promotion of alternative transportation, water conservation, and waste reduction) would promote greater energy efficiency in municipal and community operations and development. Furthermore, the General Plan and LCP Update land-use strategy actively promotes infill and mixed-use development, which would result in increased energy efficiency overall for City residents, businesses, and City operations. Therefore, the General Plan and LCP Update would not result in wasteful, inefficient, or unnecessary consumption of energy. As a result, this impact would be less than significant.

Mitigation Measure

No mitigation is required.

Threshold:	Would the General Plan and LCP Update conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Impact E-2 THE GENERAL PLAN AND LCP UPDATE WOULD NOT CONFLICT WITH ENERGY EFFICIENCY GOALS CONTAINED IN THE CITY OF MORRO BAY CLIMATE ACTION PLAN. CONSTRUCTION AND OPERATION OF PROJECTS FACILITATED BY THE GENERAL PLAN AND LCP UPDATE WOULD COMPLY WITH RELEVANT PROVISIONS OF THE STATE'S CALGREEN PROGRAM AND TITLE 24 OF THE CALIFORNIA ENERGY CODE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The City of Morro Bay's Climate Action Plan contains measures intended to increase energy efficiency and expand the use of renewable energy. As discussed in Section 4.6, Greenhouse Gas Emissions, Impact GHG-1, the General Plan and LCP Update establishes policies to reduce GHG emissions, including updating the Climate Action Plan to ensure future development is consistent with Statewide GHG-reduction targets. The General Plan and LCP Update would revise and update the General Plan land use designations and policy provisions of the City's General Plan, and would result in new infill development, located in close proximity to transit, City services, and employment centers. The Morro Bay CAP Climate Action Measure TL-6 recognizes that energy-efficient designs or growth that facilitates mixed-use, higher density, and infill development near transit stops, in existing community centers, allows for more efficient use of existing infrastructure and improves city-wide efforts to reduce GHG emissions (City of Morro Bay 2014). Therefore, the General Plan and LCP Update would facilitate the consistency of future development projects with both mandatory and voluntary measures of the CAP, resulting in reduced per service population energy consumption. Therefore, the General Plan and LCP Update would not conflict with local plans for renewable energy and energy efficiency.

As described in Impact E-1, construction and operation of new development facilitated by the General Plan and LCP Update would be consistent with General Plan goals and policies to increase energy efficiency and would be required to comply with relevant provisions of CALGreen and Title 24 of the California Energy Code. Therefore, this impact would be less than significant.

Mitigation Measure

No mitigation is required.

4.16.4 Cumulative Impacts

The analysis in this section examines impacts of the General Plan and LCP Update on cumulative energy impacts throughout the County of San Luis Obispo (the cumulative impact analysis area) and is cumulative in nature. Based on the comparisons of General Plan and LCP Update buildout electricity, natural gas, and fuel demand to existing local demand for these resources shown in Table 4.16-4 and Table 4.16-5, energy demand associated with General Plan and LCP Update buildout would result in a decrease in cumulative energy demand over the life of the General Plan and LCP Update. As described in Impact E-1, construction and operation of all new development facilitated by the General Plan and LCP Update would be consistent with General Plan goals and policies to increase energy efficiency and would be required to comply with relevant provisions of CALGreen and Title 24 of the California Energy Code. Furthermore, California's use of non-renewable electricity and natural gas are expected to continue to decline as a proportion of overall energy demand due to stringent energy efficiency measures and a growing acceptance of solar power by residential and commercial customers. A mandated increase in renewable energy use would also serve to offset any increase in non-renewable energy use resulting from the General Plan buildout.

Therefore, the General Plan and LCP Update would not be expected to contribute substantially to a cumulative increase in energy demand, result in wasteful, inefficient, or unnecessary consumption of energy, or result in the need for construction of new major facilities or substantial alteration of existing facilities to meet projected energy demands and cumulative impacts would be less than significant.

5 Other CEQA Required Discussions

This section discusses other issues for which CEQA requires analysis in addition to the specific issue areas discussed in Section 4, *Environmental Impact Analysis*. These additional issues include the project's potential to induce growth and create significant and irreversible impacts on the environment; and energy effects as set forth in *CEQA Guidelines* Appendix F.

5.1 Growth Inducement

CEQA Guidelines Section 15126.2(d) requires that EIRs discuss the potential for projects to induce population or economic growth, either directly or indirectly. CEQA also requires a discussion of ways in which a project may remove obstacles to growth.

5.1.1 Population and Economic Growth

As discussed in Section 2, *Project Description*, buildout of the General Plan and LCP Update could accommodate an estimated 1,348 new residents and 881 new dwelling units in the city beyond 2016 conditions. As shown in Table 4.11-4 in Section 4.11, *Population and Housing*, the anticipated population and housing growth in the city through 2040 under the General Plan and LCP Update is similar to the SLOCOG population and housing growth projections for the city. In addition, the land use plan and policies in the General Plan and LCP Update focus on development within the existing boundaries of the city, with limited vacant land, to create a balance of uses that improves housing options and affordability in the city, while providing for sufficient services that support anticipated population growth.

The General Plan and LCP Update would result in an increase of approximately 8.3 million square feet of nonresidential development that would generate permanent employment opportunities in the city. The General Plan and LCP Update does not specify a maximum population for Morro Bay. However, any growth (including any potential expansion of the SOI) in Morro Bay must be consistent with Measure F, limiting the city population to 12,200 residents. To exceed this number, Morro Bay must secure additional water resources, and a majority of voters must elect to remove the limit. Therefore, despite the increase in employment as a result of nonresidential development facilitated by the General Plan and LCP Update, the constraints of Measure F limit population growth potential in the city. Additionally, the General Plan and LCP Update would generate temporary employment opportunities during construction of future residential and nonresidential projects. Because construction workers would be expected to be drawn from the existing regional work force, construction of future development projects would not be considered growth-inducing.

As discussed in Section 2, *Project Description*, 1.25 percent of the city is undeveloped, with the rest of the city occupied by development or open space. With a lack of developable area, any economic expansion induced by the General Plan and LCP Update is not anticipated to result in direct physical environmental effects beyond those described throughout Section 4 of this EIR, and as a result of development expected to occur under the General Plan and LCP Update. Moreover, the environmental effects associated with future development in or around Morro Bay as a result of the General Plan and LCP Update would be addressed as part of the CEQA environmental review for individual development projects as they are considered by city decision-makers.

5.1.2 Removal of Obstacles to Growth

The City of Morro Bay is located within an urbanized area that is served by existing infrastructure. As discussed in Section 4.14, *Utilities*, and Section 4.8, *Hydrology and Water Quality*, existing infrastructure in Morro Bay would be adequate to serve development under the General Plan and LCP Update. The General Plan and LCP Update calls for redevelopment of the Morro Bay Power Plant and existing wastewater treatment plant properties in the North Embarcadero area and identifies downtown Morro Bay and the North Morro Bay neighborhood as prime areas for intensifying infill development and redevelopment. Despite these anticipated land use changes, the General Plan and LCP Update would generally preserve the existing pattern of land uses in the city. By focusing development within already urbanized areas, implementation of the General Plan and LCP Update would reduce growth pressure in undeveloped areas at the periphery of the city. This would reduce the potential for impacts relating to issues such as biological resources, regional traffic, and air quality as compared to development on lands beyond urban boundaries.

The General Plan and LCP Update planning area includes approximately 100 acres outside of the city limits, but within Morro Bay's Sphere of Influence (SOI). The City's SOI encompasses the city and the area outside of the city under County jurisdiction but indicates the city's potential future boundary and service area. Most of Morro Bay's SOI is part of the Morro Bay Estuary located just outside of the marina, which allows the city to more effectively permit dredging and other estuary maintenance activities. The current SOI also includes a small amount of land at the beachfront at the northern end of the city, west of State Route (SR) 1. Future amendments to the Morro Bay SOI being contemplated as part of the General Plan and LCP Update and evaluated in this EIR, including open space area northeast of the City Limit and the WRF area southeast of the City Limit, would be implemented in coordination with LAFCo and the County of San Luis Obispo and would be required to be consistent with applicable LAFCo policy. Therefore, any future development or land use changes anticipated beyond the city limits would be limited such that those changes do not constitute removal of an obstacle to growth.

In addition, the constraints to population growth associated with Measure F, described in Section 5.1.1, *Population and Economic Growth*, would remain in place until the City can secure additional water resources and a majority of voters have elected to remove the population limit. Therefore, implementation of the General Plan and LCP Update would not remove any existing obstacle to growth.

5.2 Irreversible Environmental Effects

The *CEQA Guidelines* require that EIRs evaluating projects that amend public plans, ordinances, or policies contain a discussion of significant irreversible environmental changes. CEQA also requires decision-makers to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve a project. This section addresses nonrenewable resources, the commitment of future generations to the proposed uses, and irreversible impacts associated with the development that would be facilitated by implementation of the General Plan and LCP Update.

Construction activity associated with planned development that would be accommodated under the General Plan and LCP Update would require the use of building materials and energy, some of which are nonrenewable resources. Consumption of these resources would occur with any development in the region and are not unique to Morro Bay or the General Plan and LCP Update.

The addition of new residential and nonresidential development in the city through 2040 would irreversibly increase local demand for nonrenewable energy resources such as petroleum and natural gas. Increasingly efficient building fixtures and automobile engines as well as implementation of policies included in the General Plan and LCP Update are expected to offset the demand to some degree. Energy consumption associated with buildout of the General Plan and LCP Update is discussed further in Section 5.3, *Energy Effects*.

Growth facilitated by the General Plan and LCP Update would require an irreversible commitment of law enforcement, fire protection, water supply, wastewater treatment, and solid waste disposal services. As discussed in Sections 4.12, *Public Services*, and 4.14, *Utilities*, potential impacts to public services and utilities would be less than significant level with implementation of policies included in the General Plan and LCP Update.

The anticipated increase in vehicle trips associated with buildout of the General Plan and LCP Update would incrementally contribute to local traffic, traffic noise levels, and regional air pollutant emissions. As described in Section 4.13, *Transportation*, additional vehicle trips could result in unacceptable LOS operations at some roadway intersections in the city. Impacts at this these intersections may be significant and unavoidable because intersection improvements may require right-of-way that is unavailable to the city or would not sufficiently improve LOS to the City's LOS standards. Impacts related to air quality were determined to be less than significant with mitigation, except for the impacts related to consistency of the General Plan and LCP Update with the Clean Air Plan. As discussed in Section 4.2, *Air Quality*, of this EIR, the additional vehicle trips associated with buildout of the General Plan and LCP would be inconsistent with Clean Air Plan, and impacts would be significant and unavoidable.

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6 Effects Found to be Less than Significant

Section 15128 of the *CEQA Guidelines* requires an EIR briefly describe any possible effects that were determined not to be significant. The environmental factors discussed below are in response to the checklist questions listed in Appendix G of the *CEQA Guidelines* that were not discussed in the impact sections of the EIR.

6.1 Agricultural Resources

Thresholds of Significance

Pursuant to the *CEQA Guidelines*, Appendix G checklist, potentially significant impacts would occur if the proposed project would result in any of the following:

1. Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract;
3. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g]);
4. Result in the loss of forest land or conversion of forest land to non-forest use; and/or
5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

Assessment of Impacts

Agricultural uses in the planning area are limited and primarily located on the east side of State Route (SR) 1 near the southeast end of the city. A small amount of prime agricultural land is located just south of Morro Creek and SR 41, east of SR 1. The remainder of the agricultural land in Morro Bay is categorized as unique farmland, farmland of local potential, and grazing land. All of the agricultural land in Morro Bay is located in the coastal zone and is protected under the Coastal Act. Additionally, the following policies in the Land Use, Open Space, and Public Safety Elements of the General Plan and LCP Update would serve to protect the existing agricultural resources in the planning area:

Policy LU-5.2 **Agricultural Uses.** Maintain prime agricultural land and other lands suitable for agricultural use in the planning area in long-term agricultural production.

Policy OS-7.2 **Place Value on Agriculture.** Continue to protect high quality agricultural areas within the City's planning area but outside the city limits for future agricultural use.

Policy PS-2.17 **Impacts on Agriculture.** Develop methods to mitigate and manage the impacts of drought on the agricultural industry, including conservation and incentives to grow less water-intensive crops.

These policies would protect the existing agricultural land in the city and ensure that adverse impacts to such resources are avoided or minimized to the extent feasible. Therefore, the project would not convert or conflict with existing zoning for agricultural resources in the planning area.

As described in Section 4.3, *Biological Resources*, Morro Bay has a wide diversity of tree (hardwood and coniferous forests, oak woodlands), shrub (chaparrals, coastal scrubs), and herbaceous (grasslands) terrestrial habitat types. These habitat types do not meet the definition of forest land as defined in Public Resources Code Section 12220(g), or timberland, as defined by Public Resources Code Section 4526. Further, the General Plan and LCP Update planning area does not contain any lands zoned for forest land or timberland production. Therefore, the project would not conflict with existing zoning for, or cause rezoning of, forest land, timber land or conversion of forest land to non-forest use. Impacts to agricultural resources as a result of the General Plan and LCP Update would be less than significant.

6.1.1 Mineral Resources

Thresholds of Significance

Pursuant to the State *CEQA Guidelines*, Appendix G checklist, potentially significant impacts would occur if the proposed project would result in any of the following:

1. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State; and/or
2. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Assessment of Impacts

The landscape of San Luis Obispo County contains a variety of mineral resources. Mining of copper and coal has occurred in the county since the mid-1800s, and chromite, manganese, and mercury were mined in the early 1900s. Quarrying on Morro Rock provided the materials for construction of a jetty close to the north side of the entrance of the harbor and a breakwater to protect the south side of the entrance. In recent years, the principal developed mineral resources of San Luis Obispo County have been gypsum, clay, natural gas, petroleum, mercury, construction stone, sand, and gravel. Of these, sand and gravel remain principal mineral resources to this day.

As described in the Community Baseline Assessment for the General Plan and LCP Update (Appendix B), there are no existing mineral extraction operations in Morro Bay. The state geologist has not designated a mineral resource area of statewide or regional significance pursuant to Sections 2710 et seq. of the Public Resources Code (the Surface Mining and Reclamation Act) in the city. Similarly, the County of San Luis Obispo has not designated any Extractive Resource Areas in or adjacent to the City of Morro Bay. According to the Division of Oil, Gas & Geothermal Resources well data, there are no existing or historic petroleum wells in the city. Therefore, the project would have no impact from the loss of availability of mineral resources.

7 Alternatives

As required by Section 15126.6 of the *CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed General Plan and LCP Update that could feasibly achieve similar objectives but would avoid or substantially lessen significant adverse impacts associated with the General Plan and LCP Update.

The General Plan and LCP Update vision and values, and thus the project objectives, are described in Section 2.4.1, *Objectives of the General Plan and LCP Update*, and in Chapter 2, *Vision*, of the General Plan and LCP Update. The General Plan and LCP Update sets the guiding planning and land use principles for the city.

7.1 Alternatives Development and Screening Process

The analysis of alternatives focuses on the various land use scenarios that incorporate different assumptions regarding the combinations of future land uses in the planning area. Alternatives provided are intended to reduce or avoid significant and unavoidable impacts. As discussed in Section 4.0, *Environmental Impact Analysis*, the General Plan and LCP Update would have significant and unavoidable impacts related to air quality plan consistency (Impact AQ-1), increased vehicle miles traveled (VMT) (Impact T-2), and cumulative transportation impacts. An alternate location alternative is not possible because the General Plan and LCP Update is a plan guiding the growth and development of areas that are located specifically within the jurisdiction of the City. However, within Morro Bay, the alternatives below consider different patterns of land use and infrastructure to accommodate forecasted future growth and regional housing needs.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project/Continue using 1988 General Plan and 1984 LCP
- Alternative 2: Proposed General Plan and LCP Update without Morro Bay Power Plant/WWTP Redevelopment
- Alternative 3: Reduced Commercial Floor Area Ratio

Each alternative is described and analyzed below to determine whether environmental impacts would be similar to, less than, or greater than those of the preferred scenario in the General Plan and LCP Update. As required by CEQA, this section also includes a discussion of the "environmentally superior alternative" among those studied. Table 7-1 describes the buildout characteristics of the General Plan and LCP Update in comparison to each alternative.

Table 7-1 Comparison of Project Alternatives' Buildout Characteristics

Feature	Project	Alternative 1	Alternative 2	Alternative 3
Planning Area (acres)	9,274	9,274	9,274	9,274
Sphere of Influence (acres)	4,314	3,237	4,314	4,314
2040 Total Dwelling Units	7,295	6,757	6,995	7,192
2040 Population	12,062	11,149	11,541	11,867
2040 Total Non-Residential Floor Area [1] (square feet)	10,912,591	2,921,665	5,196,224	9,581,328

1. Does not include square footage of campgrounds

7.2 Alternative Analysis

7.2.1 Alternative 1: No Project/Continue using 1988 General Plan and 1984 LCP

7.2.1.1 Description

Section 15126.6(e) of *the CEQA Guidelines* requires a "no project" alternative be evaluated in an EIR to allow decision makers to compare the impacts of approving a proposed project with the impacts of not approving that project. *CEQA Guidelines* Section 15126.6(e)(3) describes the two general types of no project alternative: (1) when the project is the revision of an existing land use or regulatory plan, policy, or ongoing operation, the no project alternative would be the continuation of that plan; and (2) when the project is not a land use/regulatory plan, such as a specific development on an identifiable property, the no project alternative is the circumstance under which that project is not processed (i.e., no development occurs). Alternative 1 represents the former type of no project alternative and assumes the continued implementation of the 1988 General Plan and 1984 LCP.

This alternative is comprised of a land use pattern that reflects the land use identified in the existing 1988 General Plan. Under this alternative, the proposed General Plan and LCP Update would not be adopted and the existing General Plan and LCP, including the land use map and all of the General Plan and LCP goals and policies, would remain in place through the horizon year of 2040. Thus, any new development in Morro Bay would occur consistent with the existing land use designations and the allowed uses within each designation. Similarly, any new infrastructure would occur as envisioned in the existing 1988 General Plan. Development under this alternative is anticipated to be generally similar in much of the planning area but would not include mixed-use development in the downtown area, or the identified redevelopment of the former Morro Bay Power Plant and City wastewater treatment plant (WWTP) sites, resulting in more non-residential development than under the General Plan and LCP Update. As a result, overall development and anticipated growth would be reduced under the No Project Alternative compared to the General Plan and LCP Update, (refer to Table 7-1).

This alternative assumes that the City's Sphere of Influence (SOI) would not be extended to include 1,077 acres of the planning area beyond the city limits that is identified as a future extension of

Morro Bay's SOI. Therefore, the planning area for this alternative encompasses the existing city limits and SOI.

7.2.1.2 Impact Analysis

Aesthetics

Implementation of Alternative 1 would involve less overall development and associated growth than would occur under the General Plan and LCP Update. Growth envisioned in the General Plan and LCP Update is primarily focused on infill areas within the General Plan Area and mixed-use development in the downtown area and would result in more population and physical growth as compared to the 1988 General Plan. Alternative 1, on the other hand, would continue the currently planned development pattern throughout Morro Bay. For example, Alternative 1 would not provide the potential for expanded mixed use, commercial, and institutional development, as well as recreational and open space opportunities on the former Morro Bay Power Plant and City WWTP sites, which are zoned as industrial under the existing General Plan and Zoning Code. Thus, under Alternative 1, visibility from and of scenic vistas, the city's visual character, and light and glare conditions would not be changed to the extent anticipated under the General Plan and LCP Update. In addition, development under Alternative 1 would not be as dense as the General Plan and LCP Update, impacting fewer aesthetic resources, and reducing the potential change in visual character. Therefore, impacts for Alternative 1 would remain less than significant, similar to the General Plan and LCP Update.

Air Quality

Construction-related emissions of air pollutants would be less under Alternative 1 as compared to the General Plan and LCP Update because less new development would be constructed. Full buildout of the 1988 General Plan would accommodate 6,757 housing units in Morro Bay. This would be approximately 538 fewer housing units than would be accommodated by full implementation of the General Plan and LCP Update. Therefore, the long-term on-site emissions from use of natural gas for residential heating, cooking, and water heating would be reduced compared to the General Plan and LCP Update. In addition, infill and mixed-use development under the General Plan and LCP Update would incrementally increase density in the downtown area. Therefore, Alternative 1 would result in fewer sensitive receptors exposed to toxic air contaminants (TACs) near arterial corridors. The General Plan and LCP Update includes policies that would reduce mobile source emissions by promoting mixed-use and infill development and supporting bike, pedestrian, and mass transit. As a result, the General Plan and LCP Update would reduce the per capita VMT within infill and urban areas of Morro Bay compared to the 1988 General Plan, which does not contain these policies. However, the estimated citywide traffic growth through 2040 under implementation of Alternative 1 would be lower than under the General Plan and LCP Update as a result of the lower projected commercial and residential development under this Alternative, resulting in lower total VMT. Because the majority of air quality emissions are from mobile sources, overall air quality impacts would be less under this alternative than under the General Plan and LCP Update due to the reduced total VMT. Specially, Alternative 1 would be consistent with the VMT growth assumptions in the current SLOAPCD 2001 Clean Air Plan (2001 CAP), whereas the General Plan and LCP Update was found to be inconsistent with the 2001 CAP's assumptions for VMT. Overall, air quality impacts under Alternative 1 would be reduced to a less than significant level.

Biological Resources

Alternative 1 would involve less overall disturbance, with reduced development and associated growth than would occur under the General Plan and LCP Update. While the 1988 General Plan and 1984 LCP include several objectives, policies, and programs aimed toward reducing potential impacts to sensitive biological resources from development, several goals and policies in the proposed General Plan and LCP Update Conservation Element and Open Space Element would maximize retention of sensitive natural habitats and address potential conflicts between resources conservation and recreational uses of open spaces and promote persistence of biological resources in open spaces. Development under both Alternative 1 and the General Plan and LCP Update would be required to comply with applicable federal and state laws and regulations pertaining to the avoidance, minimization, and mitigation of potential impacts to biological resources. Overall, Alternative 1 would result in reduced impacts to biological resources compared to the General Plan and LCP Update because Alternative 1 would result in less overall development. Impacts under Alternative 1 would remain significant but mitigable, similar to the General Plan and LCP Update.

Cultural Resources

Alternative 1 would involve less overall disturbance, with reduced development and associated growth than would occur under the General Plan and LCP Update. While the 1988 General Plan and 1984 LCP include an objective, a policy, and several programs aimed toward reducing potential impacts to sensitive archaeological resources from development, the 1988 General Plan and 1984 LCP does not address potential impacts to historic resources. The goal, policies, and implementation actions in the proposed General Plan and LCP Update Conservation Element and the archaeological overlay in the draft Zoning Code that would protect archaeological and historic resources would not be implemented under Alternative 1. Development under both Alternative 1 and the General Plan and LCP Update would be required to comply with applicable federal and state laws and regulations pertaining to the avoidance, minimization, and mitigation of potential impacts to cultural resources. Overall, Alternative 1 would result in reduced impacts to archaeological and historic resources compared to the General Plan and LCP Update because Alternative 1 would result in less overall development. Impacts under Alternative 1 would remain significant but mitigable, similar to the General Plan and LCP Update.

Geology and Soils

Development envisioned in the proposed General Plan and LCP Update in locations identified in the existing 1988 General Plan as Open Space and Agricultural, including potential future development within the proposed expanded SOI (although future development within the expanded SOI area would be subject to annexation to the City), would not occur under Alternative 1. Therefore, Alternative 1 would result in less ground disturbance than the General Plan and LCP Update. As a result, impacts related to geology and soils would be reduced under Alternative 1. However, Alternative 1 would not implement goals and policies in the General Plan and LCP Update Public Safety Element and Conservation Element developed to minimize risks associated with potential fault rupture, seismic shaking, and other geologic hazards in the planning area, as well as reduce the potential of erosion and loss of topsoil. Alternative 1 would not provide the potential for expanded recreational and open space opportunities on the former Morro Bay Power Plant and City WWTP sites which are zoned as industrial under the existing General Plan and Zoning Code. Both Alternative 1 and the General Plan and LCP Update would require compliance with existing state and federal regulatory requirements to avoid and minimize geology and soil hazards associated with

new development, which would reduce potential impacts. Overall, Alternative 1 would result in reduced potential impacts to geology and soils compared to the General Plan and LCP Update, and impacts under this alternative would be less than significant.

Greenhouse Gas Emissions

Alternative 1 would retain the existing 1988 General Plan and 1984 LCP, and thus would not implement General Plan and LCP Update Land Use, Economic Development, Circulation, and Conservation Element goals and policies that would promote infill and mixed-use development; support bike, pedestrian, and mass transit; establish GHG reduction goals consistent with the State's 2030 and 2050 greenhouse gas emissions reduction goals; and ensure future consistency with the Morro Bay Climate Action Plan (CAP). As a result, implementation of Alternative 1 would not reduce overall per capita GHG emissions in Morro Bay to the extent of the General Plan and LCP Update, and would not ensure that the city's emissions reductions are on the trajectory to meet the state's long term emissions goals, which have been updated since preparation of the Morro Bay CAP. Similarly, Alternative 1 would be less consistent with recently-adopted State plans and regulations for reducing GHG emissions.

The total estimated citywide traffic growth through 2040 under Alternative 1 would be lower than the General Plan and LCP Update due to the reduced non-residential development potential under this alternative. Based on the buildout VMT estimates in the General Plan and LCP Update traffic analysis (Appendix E) and the 2040 population estimates in Table 7-1, Alternative 1 would result in less of a long-term increase in VMT in comparison to the General Plan and LCP Update. While the existing 1988 General Plan does not focus on infill development or GHG emissions to the extent of the proposed General Plan and LCP Update, Alternative 1 would result in fewer total and per capita mobile-source GHG emissions compared with the General Plan and LCP Update. Overall, impacts related to GHG emissions under Alternative 1 would be lower than the General Plan and LCP Update due to the reduced potential for new development and would remain less than significant.

Hazards and Hazardous Materials

Development envisioned in the proposed General Plan and LCP Update in locations identified in the existing 1988 General Plan as Open Space and Agricultural, including potential future development within the proposed expanded SOI (although future development within the expanded SOI area would be subject to annexation to the City), would not occur under Alternative 1. Therefore, Alternative 1 would result in less ground disturbance than the General Plan and LCP Update. As a result, impacts related to hazards and hazardous materials would be reduced under Alternative 1. However, Alternative 1 would not implement goals and policies in the General Plan and LCP Update Public Safety Element developed to minimize impacts related to the use, storage, transport, and release of hazardous materials in the planning area; facilitate compliance with regulatory requirements related to hazardous waste contamination; ensure effective emergency response following a natural or human-caused disaster; and avoid and minimize wildland fire risks. Alternative 1 would retain the existing industrial zoning on the former Morro Bay Power Plant and City WWTP sites, and these sites would be able to redevelop consistent with those uses. Alternative 1 would require compliance with existing local, state, and federal regulatory requirements and policies, including the San Luis Obispo County Environmental Health Services (EHS) Hazardous Materials Program, which would reduce potential impacts related to hazards and hazardous materials, similar to the General Plan and LCP Update. Overall, Alternative 1 would result in reduced potential impacts

related to hazards and hazardous materials compared to the General Plan and LCP Update, and impacts under this alternative would be less than significant.

Hydrology and Water Quality

Development envisioned in the proposed General Plan and LCP Update in locations identified in the existing 1988 General Plan as Open Space and Agricultural, including potential future development within the proposed expanded SOI (although future development within the expanded SOI area would be subject to annexation to the City), would not occur under Alternative 1. Therefore, Alternative 1 would result in less ground disturbance than the General Plan and LCP Update. As a result, impacts related to hydrology and water quality would be reduced under Alternative 1. However, Alternative 1 would not implement goals and policies in the General Plan and LCP Update Public Safety Element and Conservation Element developed to minimize erosion and siltation; limit discharges of pollutants, including pollution associated with drainage, erosion, and stormwater; minimize adverse effects on water quality; and ensure that the risk and damage of flooding is not exacerbated. Alternative 1 would retain the existing industrial zoning on the former Morro Bay Power Plant and City WWTP sites, and these sites would be able to redevelop consistent with those uses. Alternative 1 would require compliance with existing local, state, and federal regulatory requirements and policies, including the Morro Bay Municipal Code, which would reduce potential impacts related to hydrology and water quality, similar to the General Plan and LCP Update. Overall, Alternative 1 would result in reduced potential impacts to hydrology and water quality compared to the General Plan and LCP Update, and impacts under this alternative would be less than significant.

Land Use and Planning

Under Alternative 1, additional development that would occur in Morro Bay would be consistent with the existing 1988 General Plan and 1984 LCP. Both the proposed General Plan and LCP Update and Alternative 1 would provide for the orderly development of Morro Bay, although under different development scenarios. Neither would physically divide an established community or conflict with an applicable habitat conservation plan or natural community conservation plan. As discussed in Section 4.9, *Land Use and Planning*, the General Plan and LCP Update would be consistent with applicable regional land use plans, policies, and regulations, such as the SLOCOG 2014 RTP/SCS and City zoning districts and standards. Alternative 1 would retain the existing 1988 General Plan and 1984 LCP, and thus would not include new General Plan and LCP Update policies, such as Land Use Element policies that promote infill and mixed-use development, Circulation Element policies that promote pedestrian, bicycle, and mass transit improvements, and require the City to develop environmental thresholds to limit VMT growth, and Conservation Element policies that require the City to update GHG emissions reduction targets and pursue new GHG reduction and energy efficiency strategies. Therefore, Alternative 1 would have greater impacts related to long-term land use and planning compared to the General Plan and LCP Update, although impacts would remain less than significant, similar to the General Plan and LCP Update.

Noise

Less construction and associated construction noise and vibration would occur under Alternative 1 as compared to the General Plan and LCP Update. Infill and mixed-use development facilitated by the proposed General Plan and LCP Update would increase noise near existing sensitive receptors and place new sensitive receptors in areas with high noise levels. Alternative 1 would involve less dense development and fewer noise sensitive receptors would be exposed to increased noise levels

associated with infill and mixed-use development. Therefore, Alternative 1 would have reduced noise impacts as compared to the General Plan and LCP Update, and impacts would remain less than significant.

Population and Housing

As discussed in Section 4.11, *Population and Housing*, the anticipated population growth in the city through 2040 under the General Plan and LCP Update is consistent with the SLOCOG population growth projections for the city. Alternative 1 would accommodate less population growth than the General Plan and LCP Update. Therefore, Alternative 1 would be consistent with the SLOCOG population growth projections for the city. In addition, growth in Morro Bay under Alternative 1 would still be required to be consistent with Measure F, limiting the city population to 12,200 residents. Neither Alternative 1 nor the General Plan and LCP Update would displace substantial numbers of people or housing. Therefore, impacts related to population and housing would be less than significant, similar to the General Plan and LCP Update.

Public Services and Recreation

Alternative 1 would involve less overall development and associated growth than would occur under the General Plan and LCP Update. Nevertheless, full buildout of Alternative 1 would result in an increase of 1,348 residents from the estimated 2016 population, resulting in an incremental demand for public services and recreational facilities similar to buildout facilitated by the General Plan and LCP Update. Both Alternative 1 and the General Plan and LCP Update are subject to policies that would ensure that public services continue to be provided to the city commensurate with population growth and need. In addition, project-level development under Alternative 1 would be required to pay City-required public facilities impact fees, and the City would be required to comply with Measure F, which prevents substantial population growth in the city, alleviating some of the demand on public service and recreational facilities. However, the city's existing park service ratio does not achieve the standard of three acres to 1,000 residents, pursuant to the Quimby Act, and Alternative 1 would not provide additional city parkland or recreational facilities to alleviate this deficiency, or provide the policy framework and physical opportunities to provide expanded park or recreational facilities. Impacts related to public services and recreation would be reduced in comparison to the General Plan and LCP Update due to the reduced overall development and would be less than significant.

Transportation

When compared to the proposed General Plan and LCP Update, full buildout of the 1988 General Plan would accommodate approximately 538 fewer housing units, approximately 913 fewer residents, and approximately 8.0 million fewer square feet of new non-residential development. The General Plan and LCP Update includes policies that would reduce per service population VMT compared to the 1988 General Plan by promoting mixed-use and infill development and supporting bike, pedestrian, and mass transit. However, the estimated citywide traffic growth through 2040 under implementation of Alternative 1 would be lower than under the General Plan and LCP Update because of the lower projected commercial and residential development under this Alternative. As a result, the average daily vehicle trips and VMT that would be generated from these additional residents and commercial users under the General Plan and LCP Update would be avoided with this alternative. Therefore, implementation of Alternative 1 would result in reduced traffic volumes compared to the General Plan and LCP Update.

Table 7-2, summarizes the LOS for pedestrian and bicycle modes at the roadway segments included in the study area under the Existing Conditions and Alternative 1 Buildout Conditions scenarios.

Table 7-2 Comparison of Pedestrian and Bicycle Level of Service for Roadway Segments with Alternative 1

			Pedestrian				Bicycle			
			Existing Conditions (2016)		Alternative 1 Buildout Conditions (2040)		Existing Conditions (2016)		Alternative 1 Buildout Conditions (2040)	
Roadway Segment	Peak Hour	Direction	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1. Embarcadero: North of Beach Street	Weekday PM	Northbound	2.10	B	2.06	F	4.00	B	2.69	B
		Southbound	1.51	A	1.44	A	2.76	C	2.69	B
	Saturday MID	Northbound	2.48	B	2.41	F	3.02	C	2.98	C
		Southbound	1.77	A	1.67	A	2.97	C	2.89	C
2. Embarcadero: North of Pacific Street	Weekday PM	Northbound	1.32	A	1.27	A	2.86	C	2.68	B
		Southbound	1.16	A	1.14	A	2.74	B	2.68	B
	Saturday MID	Northbound	1.51	A	1.39	A	3.38	C	3.04	C
		Southbound	1.43	A	1.41	A	3.46	C	3.43	C
3. Embarcadero: South of Pacific Street	Weekday PM	Northbound	1.13	A	1.17	A	2.54	B	2.68	B
		Southbound	1.12	A	1.12	A	2.68	B	2.68	B
	Saturday MID	Northbound	1.32	A	1.23	A	3.12	C	2.87	C
		Southbound	1.27	A	1.27	A	3.12	C	3.12	C
4. Morro Bay Boulevard: West of Quintana Road	Weekday PM	Eastbound	2.37	B	2.60	B	2.43	B	2.53	B
		Westbound	2.53	B	2.72	B	2.50	B	2.57	B
	Saturday MID	Eastbound	2.27	B	2.48	B	2.38	B	2.48	B
		Westbound	2.47	B	2.65	B	2.47	B	2.54	B
5. Main Street: South of Radcliff Drive	Weekday PM	Northbound	2.56	B	2.47	B	2.34	B	2.28	B
		Southbound	3.79	D	3.80	F	2.48	B	2.49	B
	Saturday MID	Northbound	3.04	C	2.90	C	2.58	B	2.52	B
		Southbound	3.94	D	3.95	F	2.55	B	2.56	B
6. SR 41: East of Main Street	Weekday PM	Eastbound	3.39	C	3.45	F	0.75	A	0.77	A
		Westbound	3.32	C	3.91	F	0.71	A	0.95	A
	Saturday MID	Eastbound	3.31	C	3.37	F	0.71	A	0.74	A
		Westbound	3.56	D	4.30	F	0.82	A	1.06	A

Source: Appendix E3

As shown in Table 7-2, bicycle travel on study area roadway segments would operate at LOS D or better during the weekday PM and Saturday MID peak hours under the Alternative 1 Buildout Conditions scenario. Pedestrian travel would operate at LOS F on Embarcadero north of Beach Street (northbound, segment 1), Main Street south of Radcliff Drive (southbound, Segment 5), and SR 41 east of Main Street (southbound and northbound, Segment 6).

Alternative 1 would retain the existing 1988 General Plan and 1984 LCP, and thus would not implement General Plan and LCP Update Land Use, Economic Development, Circulation, and Conservation Element goals and policies that would promote infill and mixed-use development and enhance the City's alternative transportation modes. As a result, implementation of Alternative 1 would not contribute to reducing per service population VMT in Morro Bay to the extent of the General Plan and LCP Update. Due to the reduced development potential of Alternative 1, this alternative would result in less of a long-term increase in VMT in comparison to the General Plan and LCP Update, but this impact would remain significant.

Mitigation Measure T-1, which is required to reduce pedestrian facility impacts associated with the General Plan and LCP Update, would be required for Alternative 1 to improve operations for pedestrians at key intersections in the study area. In addition, Alternative 1 would not include General Plan and LCP Update Circulation Element policies to enhance the city's alternative transportation modes while continuing to accommodate automobile travel. Overall, Alternative 1 would result in reduced traffic volumes and associated transportation impacts in comparison to the General Plan and LCP Update. However, the potential impact to pedestrian facilities, as well as the project-level and cumulative impact associated with increasing local and regional VMT, would remain significant and unavoidable.

Utilities

As discussed in Section 4.14, *Utilities*, the General Plan and LCP Update's potential impacts related to the provision of utilities and service systems would be less than significant. Alternative 1 would result in less development and associated growth and would not include the potential future expansion of the SOI, which is anticipated in the General Plan and LCP Update. As a result, Alternative 1 would result in reduce demand for water, wastewater treatment capacity, and other utilities. However, development pressure may occur in other, less developed areas of the city as a result of Alternative 1 because mixed-use development would not be focused in the downtown area and redevelopment of the former Morro Bay Power Plant and City WWTP sites with expanded mixed use, commercial, and institutional development, and recreational uses would not occur as is anticipated in the proposed General Plan and LCP Update. Overall, impacts to utilities would be reduced in comparison to the General Plan and LCP Update and would remain less than significant.

Tribal Cultural Resources

Alternative 1 would involve less overall disturbance, with reduced development and associated growth than would occur under the General Plan and LCP Update. Development under Alternative 1 would be subject to laws and regulations requiring Native American consultation, protection of human remains, and pre-historic artifacts. Therefore, impacts to tribal cultural resources under Alternative 1 would be reduced in comparison to the General Plan and LCP Update, because Alternative 1 would result in less overall development. Impacts under Alternative 1 would remain significant but mitigable, similar to the General Plan and LCP Update.

Energy

Alternative 1 would retain the existing 1988 General Plan and 1984 LCP, and thus would not implement General Plan and LCP Update Land Use, Economic Development, Circulation, and Conservation Element goals and policies that would promote infill and mixed-use development; support bike, pedestrian, and mass transit; establish GHG reduction goals consistent with the State's 2030 and 2050 greenhouse gas emissions reduction goals; and ensure future consistency with the Morro Bay CAP. As a result, implementation of Alternative 1 would not reduce overall per service population direct and indirect energy consumption in Morro Bay to the extent of the General Plan and LCP Update.

The total estimated citywide traffic growth through 2040 under Alternative 1 would be lower than the General Plan and LCP Update due to the reduced non-residential development potential under this alternative. While the existing 1988 General Plan does not focus on infill development or reducing energy consumption to the extent of the proposed General Plan and LCP Update, Alternative 1 would result in lower total energy consumption compared with the General Plan and LCP Update as a result of the reduced non-residential development potential. Overall, impacts related to energy consumption under Alternative 1 would be lower than the General Plan and LCP Update due to the reduced potential for new development and would remain less than significant.

7.2.2 Alternative 2: Proposed General Plan and LCP Update without Morro Bay Power Plant/WWTP Redevelopment

7.2.2.1 Description

One of the primary long-term strategies of the proposed General Plan and LCP Update land use plan is redevelopment of the former Morro Bay Power Plant and City WWTP sites with uses that respond to their unique site attributes to provide future growth areas for the city within the existing city limit. Under the General Plan and LCP Update land use plan, the former Morro Bay Power Plant and City WWTP sites are planned to accommodate Mixed Use, Public/Institutional, Visitor Serving Commercial, and Open Space/Recreation uses with much of the development being new. Approximately 50 percent of the planned non-residential land use growth (from existing to buildout) and approximately 80 percent of the visitor-serving commercial growth would occur at the former Morro Bay Power Plant and City WWTP sites. The General Plan and LCP Update Land Use Element includes Policy LU-5.4 and Policy LU-5.5, which require the city to develop master plans for these sites and the surrounding areas.

Alternative 2 would remove Policy LU-5.4 and Policy LU-5.5 from the General Plan and LCP Update, and would revise the land use plan to include the former Morro Bay Power Plant and City WWTP sites in Open Space/Recreation, preserving natural areas and resources, and providing future recreational opportunities, consistent with other goals of the General Plan and LCP Update. This alternative would build on the preservation of natural areas within the planning area by reducing the amount of new development compared to the proposed General Plan and LCP Update.

Under Alternative 2, approximately 3.1 million square feet of new commercial development could be constructed in the planning area. This would be 5.7 million fewer square feet of new commercial square footage than could be constructed compared to the General Plan and LCP Update. Additionally, approximately 300 fewer residential units could be constructed within the planning area, as a result of the elimination of the mixed-use overlay in the Morro Bay Power Plant

redevelopment area. A comparison of the development that could occur under Alternative 2 and the General Plan and LCP Update is provided in Table 7-1.

Because 300 fewer dwelling units would be constructed under Alternative 2, population density of the city would be slightly reduced compared to the General Plan and LCP Update. Assuming 1.65 people per household, full buildout of Alternative 2 would result in a population of 11,541 in 2040. This would be approximately 521 fewer residents compared to the year 2040 population under full implementation of the General Plan and LCP Update (12,062 people). Overall, Alternative 2 would reduce the growth in population in Morro Bay through the year 2040 by approximately 4 percent and would reduce the net growth in non-residential development through the year 2040 by approximately 52 percent compared to the General Plan and LCP Update.

7.2.2.2 Impact Analysis

Aesthetics

Alternative 2 would result in an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites as compared to the General Plan and LCP Update. Therefore, the existing visual character of Morro Bay would be altered less under Alternative 2 in comparison to the General Plan and LCP Update because development density would be reduced, and Open Space/Recreation area would be increased. However, providing additional Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites would enhance the overall visual character of these sites in comparison to the existing uses. Additionally, because less new commercial development and fewer residential units would be developed under Alternative 2, and the City would include additional Open Space/Recreation, fewer new sources of light and glare would be created under this alternative. Overall, Alternative 2 would have reduced impacts to aesthetics as compared to the General Plan and LCP Update, and these impacts would be less than significant with mitigation incorporated, similar to the General Plan and LCP Update.

Air Quality

Construction-related emissions of air pollutants would be less under Alternative 2 as compared to the General Plan and LCP Update because less new development would be constructed. Because Alternative 2 would reduce the amount of growth in population in Morro Bay through the year 2040 by approximately 4 percent, and would reduce the amount of growth in non-residential development through the year 2040 by approximately 52 percent compared to the proposed General Plan and LCP Update, the long-term operational emissions from use of natural gas for heating, cooking, and water heating would be reduced compared to the General Plan and LCP Update. In addition, the estimated citywide traffic growth through 2040 under implementation of Alternative 2 would be lower than under the General Plan and LCP Update as a result of the lower projected non-residential and residential development under this Alternative, resulting in lower total VMT. Because the majority of air quality emissions are from mobile sources, overall air quality impacts would be less under this alternative than under the General Plan and LCP Update due to the reduced total VMT. Additionally, Alternative 2 would be more consistent with the 2001 CAP because it would result in less VMT growth and associated ozone precursor emissions than the General Plan and LCP Update. For these reasons, overall air quality impacts for Alternative 2 would be reduced as compared to the General Plan and LCP Update. However, impacts related to 2001 CAP consistency would remain significant and unavoidable, similar to the General Plan and LCP Update.

Biological Resources

Alternative 2 would result in less new development and an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites, compared to the proposed General Plan and LCP Update. Both sites are currently developed with public facilities, and redesignating then as Open Space/Recreation would, over time, be beneficial to biological resources by providing additional habitat for plants and animals, including special status species, in the city.

Under Alternative 2, goals and policies in the Conservation Element and Open Space Element would maximize retention of sensitive natural habitats and address potential conflicts between resources conservation and recreational uses of open spaces and promote persistence of biological resources in open spaces, similar to the General Plan and LCP Update. Development under Alternative 2 would be required to comply with applicable federal and state laws and regulations pertaining to the avoidance, minimization, and mitigation of potential impacts to biological resources. Overall, Alternative 2 would result in reduced impacts to biological resources compared to the General Plan and LCP Update. However, impacts to these resources under Alternative 2 would remain significant but mitigable, similar to the General Plan and LCP Update.

Cultural Resources

Alternative 2 would result in less new development and an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites, compared to the proposed General Plan and LCP Update. Under Alternative 2, the goal, policies, and implementation actions in the Conservation Element would help protect archaeological and historic resources by providing a plan for developing project-level mitigation necessary to address site-specific archaeological and historic resources, similar to the General Plan and LCP Update. Development under Alternative 2 would be required to comply with applicable federal and state laws and regulations pertaining to the avoidance, minimization, and mitigation of potential impacts to cultural resources. Overall, Alternative 2 would result in reduced potential impacts to archaeological and historic resources compared to the General Plan and LCP Update. However, impacts to these resources under Alternative 2 would remain significant but mitigable, similar to the General Plan and LCP Update.

Geology and Soils

Alternative 2 would result in less new development, and an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites, compared to the proposed General Plan and LCP Update. Under Alternative 2, goals and policies in the Public Safety Element and Conservation Element that would minimize risks associated with potential fault rupture, seismic shaking, and other geologic hazards in the planning area, as well as reduce the potential of erosion and loss of topsoil, similar to the General Plan and LCP Update. Development under Alternative 2 would be required to comply with existing state and federal regulatory requirements to avoid and minimize geology and soil hazards associated with new development. Overall, Alternative 2 would result in reduced potential impacts to geology and soils in comparison to the General Plan and LCP Update, and impacts would remain less than significant.

Greenhouse Gas Emissions

Because less new development would be constructed under Alternative 2, construction-source GHG emissions would be reduced as compared to the General Plan and LCP Update. Compared to the

General Plan and LCP Update, buildout of Alternative 2 would result in fewer residential units, less non-residential development, and approximately 521 fewer residents. As a result, Alternative 2 would result in lower operational GHG emissions, including those due to VMT generation as compared to the General Plan and LCP Update. In addition, General Plan and LCP Update policies that would continue to be implemented under Alternative 2 would promote mixed-use and infill development; support bike, pedestrian, and mass transit; and ensure future consistency with the Morro Bay CAP, ensuring that the city's emissions reductions would remain the trajectory to meet the State's long term emissions goals. Overall, Alternative 2 would reduce GHG and climate change impacts in comparison to the General Plan and LCP Update, and these impacts would be less than significant.

Hazards and Hazardous Materials

Alternative 2 would result in a reduction in new development, and an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites, compared to the General Plan and LCP Update. Therefore, Alternative 2 would result in less ground disturbance than the General Plan and LCP Update. As a result, impacts related to hazards and hazardous materials would be reduced under Alternative 2. The goals and policies in the Public Safety Element that would minimize any impacts related to the use, storage, transport, and release of hazardous materials in the planning area; facilitate compliance with regulatory requirements related to hazardous waste contamination; ensure effective emergency response following a natural or human-caused disaster; and avoid and minimize wildland fire risks would continue to be implemented under Alternative 2. Alternative 2 would require compliance with existing local, state, and federal regulatory requirements and policies, including the San Luis Obispo County EHS Hazardous Materials Program, which would reduce potential impacts related to hazards and hazardous materials, similar to the General Plan and LCP Update. Overall, Alternative 2 would result in reduced potential impacts related to hazards and hazardous materials in comparison to the General Plan and LCP Update, and impacts under Alternative 2 would be less than significant.

Hydrology and Water Quality

Alternative 2 would result in a reduction in new development, and an increase in designated Open Space/Recreation area on the former Morro Bay Power Plant and City WWTP sites, compared to the General Plan and LCP Update. Therefore, Alternative 2 would result in less ground disturbance than the General Plan and LCP Update. As a result, impacts related to hydrology and water quality would be reduced under Alternative 2. The goals and policies in the Public Safety Element and Conservation Element that would prevent substantial erosion and siltation, and discharges of pollutants, including pollution associated with drainage, erosion, and stormwater; minimize adverse effects on water quality; and ensure that the risk and damage of flooding is not exacerbated would continue to be implemented under Alternative 2. Alternative 2 would require compliance with existing local, state, and federal regulatory requirements and policies, including the Morro Bay Municipal Code, which would reduce potential impacts related to hydrology and water quality, similar to the General Plan and LCP Update. Overall, Alternative 2 would result in reduced potential impacts to hydrology and water quality in comparison to the General Plan and LCP Update, and impacts under Alternative 2 would be less than significant.

Land Use and Planning

Similar to the General Plan and LCP Update, Alternative 2 would provide for orderly development in Morro Bay with a reduction in both residential and non-residential development, as a result of revising the land use plan to designate the former Morro Bay Power Plant and City WWTP sites as Open Space/Recreation, rather than to accommodate Mixed Use, Public/Institutional, Visitor Serving Commercial uses. Alternative 2 would not divide an established community or conflict with an applicable habitation conservation plan. As discussed in Section 4.9, *Land Use and Planning*, the General Plan and LCP Update would be consistent with applicable regional land use plans, policies, and regulations, such as the SLOCOG 2019 RTP, and City zoning districts and standards. However, because Alternative 2 would result in fewer residential units and jobs Morro Bay, it would be less consistent with the SLOCOG 2014 RTP/SCS, which promotes infill and mixed-use development to facilitate access to pedestrian, bicycle, and mass transit, reducing vehicle trips and GHG emissions. As described above, Alternative 2 would result in reduced GHG emissions compared to the General Plan and LCP Update. Overall, impacts related to consistency with applicable land use plans, policies, or regulations would remain less than significant, similar to the General Plan and LCP Update.

Noise

Alternative 2 would result in reduced commercial, retail, office, and visitor-serving development and fewer residential units than under the General Plan and LCP Update. Therefore, Alternative 2 would result in reduced construction-related noise and vibration impacts as compared to the General Plan and LCP Update.

Because Alternative 2 would reduce the net growth in population in Morro Bay through the year 2040 by approximately 4 percent, and would reduce the net growth in non-residential development through the year 2040 by approximately 52 percent compared to the General Plan and LCP Update, the long-term operational and traffic noise would be reduced compared to the General Plan and LCP Update. With Alternative 2, the former Morro Bay Power Plant and City WWTP sites would be redesignated for Open Space/Recreation use, rather than for commercial, retail, office, visitor-serving, and residential development. Open Space/Recreation uses on these sites would result in less construction noise, traffic noise, and on-site operational noise, and there would be no new noise sensitive receptors that could be exposed to construction or operational noise impacts in these locations. Therefore, noise impacts under Alternative 2 would be reduced compared to impacts under the General Plan and LCP Update due to reduced development. However, noise impacts would remain less than significant with mitigation because Mitigation Measure N-2 to add construction vibration control measure policies to the General Plan would still apply to Alternative 2.

Population and Housing

Alternative 2 would involve less population growth in the planning area than would occur under the General Plan and LCP Update. As discussed in Section 4.11, *Population and Housing*, the anticipated population growth in the city through 2040 under the General Plan and LCP Update is similar to but less than the SLOCOG population growth projections for the city. Alternative 2 would be consistent with SLOCOG growth projections for the city, with less growth anticipated under this alternative than the General Plan and LCP Update. In addition, growth in Morro Bay under Alternative 2 would be required to be consistent with Measure F, limiting the city population to 12,200 residents. Neither Alternative 2 nor the General Plan and LCP Update would displace substantial numbers of

people or housing. Therefore, impacts related to population and housing would be less than significant, similar to the General Plan and LCP Update.

Public Services and Recreation

Alternative 2 would involve less overall development and associated growth than would occur under the General Plan and LCP Update. Nevertheless, full buildout of Alternative 2 would result in an increase of 827 residents from the estimated 2016 city population, resulting in an incremental increase in demand for public services and recreational facilities, similar to buildout facilitated by the General Plan and LCP Update. Redesignating of the former Morro Bay Power Plant and City WWTP sites for Open Space/Recreation use, rather than for commercial, retail, office, visitor-serving, and residential development, would provide opportunity sites for additional city-owned public recreational facilities. The provision of City-owned public recreational facilities under Alternative 2 would increase the city's park service ratio to meet the standard of three per 1,000 residents, consistent with the Quimby Act and Open Space Element Policy 1.1. Both Alternative 2 and the General Plan and LCP Update would include policies that would ensure public services continue to be provided to the city commensurate with population growth and need. In addition, project-level development under Alternative 2 would be required to pay City-required public facilities impact fees, and the City would be required to comply with Measure F, which prevents substantial population growth in the city, alleviating demand on public service and recreational facilities. Overall, impacts related to public services and recreation would be reduced in comparison to the General Plan and LCP Update due to the reduction in new development potential and provision of additional City-owned public recreational facilities and would be less than significant.

Transportation

When compared to the General Plan and LCP Update, Alternative 2 would accommodate approximately 300 fewer housing units, approximately 521 fewer residents, and approximately 5.7 million fewer square feet of new non-residential development. The average daily vehicle trips and VMT that would be generated from these additional residents and commercial users under the General Plan and LCP Update would be avoided with this alternative. Therefore, implementation of Alternative 2 would result in reduced traffic volumes compared to the General Plan and LCP Update.

The project traffic study (Appendix E) notes that the anticipated growth in VMT associated with buildout of the proposed General Plan and LCP Update is primarily attributable to the increase in employment associated with new potential commercial growth under the General Plan and LCP Update. Alternative 2 would reduce the net growth in non-residential development through the year 2040 by approximately 52 percent compared to the General Plan and LCP Update. Therefore, under Alternative 2, citywide traffic growth through 2040 would be reduced by more than half in comparison to the General Plan and LCP Update. However, Alternative 2 would result in greater overall citywide traffic than Alternative 1, which would continue to result in significant and unavoidable project-level and cumulative impacts from new VMT. Therefore, due to the anticipated volume of traffic from new commercial development, the anticipated growth would still result in a decline in operations at pedestrian facilities and increased overall vehicle volumes. Overall, as a result of the reduction in development under Alternative 2, project-level and cumulative transportation impacts would be reduced compared to the General Plan and LCP Update, but the anticipated growth in local and regional VMT would remain significant and unavoidable.

Utilities

As discussed in Section 4.14, *Utilities*, the General Plan and LCP Update's potential impacts related to the provision of utilities and service systems would be less than significant. Because Alternative 2 would reduce the net growth in population in Morro Bay through the year 2040 by approximately 4 percent, and would reduce the net growth in non-residential development through the year 2040 by approximately 52 percent compared to the General Plan and LCP Update, the demand for utility infrastructure and services would be reduced compared to the General Plan and LCP Update. Additionally, as a result of the redesignating of the former Morro Bay Power Plant and City WWTP sites for Open Space/Recreation use rather than for commercial, retail, office, visitor-serving, and residential development, new or increased utility needs in these areas would be reduced. Impacts would be reduced in comparison to the General Plan and LCP Update, and would remain less than significant.

Tribal Cultural Resources

Alternative 2 would involve less overall development and associated growth than would occur under the General Plan and LCP Update. As a result of the re-designation of the former Morro Bay Power Plant and City WWTP sites for Open Space/Recreation use, ground disturbance and excavation required for construction of the development envisioned in the General Plan and LCP Update would be reduced. In addition, goals and policies in the General Plan and LCP Update would continue to protect valuable tribal cultural resources, and Mitigation Measures CR-1(a) and CR-1(b) would update the General Plan and LCP Update to include a policy and implementation action to address potential impacts to unique tribal cultural resources on a project-by-project basis. Overall, tribal cultural resources impacts under Alternative 2 would be less than under the General Plan and LCP Update and impacts would remain less than significant with mitigation with required adherence to laws and regulations requiring Native American consultation, protection of human remains, and pre-historic artifacts, similar to the General Plan and LCP Update.

Energy

Compared to the General Plan and LCP Update, buildout of Alternative 2 would result in fewer residential units, less non-residential development, and approximately 521 fewer residents. As a result, Alternative 2 would result in lower direct and indirect energy consumption. In addition, General Plan and LCP Update policies that would continue to be implemented under Alternative 2 would promote mixed-use and infill development; support bike, pedestrian, and mass transit; and ensure future consistency with the Morro Bay CAP.

The total estimated citywide traffic growth through 2040 under Alternative 2 would be lower than the General Plan and LCP Update due to the reduced development potential under this alternative. Overall, the reduced potential for new development anticipated under Alternative 2 would result in lower energy consumption than the General Plan and LCP Update, and this impact would remain less than significant.

7.2.3 Alternative 3: Reduced Commercial Floor Area Ratio

7.2.3.1 Description

Under the Reduced Commercial Floor Area Ratio (FAR) Alternative, the maximum allowable FAR for the Community Commercial and Visitor-Serving Commercial land use designations would be

reduced from 1.25 to 1.0 to reduce commercial density and overall vehicle miles traveled associated with new non-residential development. Approximately 75 percent of the potential new commercial development identified in Table 2-5 of this EIR is comprised of Community Commercial and Visitor-Serving Commercial land use (approximately 1.1 million square feet of Community Commercial and approximately 5.5 million square feet of Visitor Serving Commercial). Due to the reduction in overall growth, this alternative would incrementally reduce new vehicle traffic. Development under Alternative 3 assumes that all goals and policies put in place by the General Plan and LCP Update will be in force.

Under Alternative 3, approximately 7.5 million square feet of new commercial development could be constructed in the planning area. This would be 1.3 million fewer square feet of new commercial square footage than could be constructed under the General Plan and LCP Update. Additionally, approximately 103 fewer residential units could be constructed within the planning area, as a result of the FAR reduction within the planned mixed-use overlay areas. A comparison of the development that could occur under Alternative 3 and the General Plan and LCP Update is provided in Table 7-1.

Because 103 fewer dwelling units would be constructed under Alternative 3, population density of the city would be slightly reduced compared to the General Plan and LCP Update. Assuming 1.65 people per household, full buildout of Alternative 3 would result in a population of 11,867 in 2040. This would be approximately 195 fewer residents compared to the 2040 population under full implementation of the General Plan and LCP Update (12,062 people). Overall, Alternative 3 would reduce the growth in population in Morro Bay through the year 2040 by approximately 2 percent and would reduce the net growth in non-residential development through the year 2040 by approximately 12 percent compared to the General Plan and LCP Update.

7.2.3.2 Impact Analysis

Aesthetics

Alternative 3 would result in reduced commercial, retail, office, and visitor-serving development and fewer residential units than under the General Plan and LCP Update. Therefore, the existing visual character of Morro Bay would be altered less under Alternative 3 in comparison to the General Plan and LCP Update because development density would be reduced. Potential impacts associated with scenic resources and visual character would also be reduced in comparison to the General Plan and LCP Update. Additionally, because less new commercial development and fewer residential units would be developed under Alternative 3, fewer new sources of light and glare would be created under this alternative. Overall, Alternative 3 would have reduced impacts to aesthetic resources as compared to the General Plan and LCP Update, and these impacts would be less than significant with mitigation implemented, similar to the General Plan and LCP Update.

Air Quality

Construction-related emissions of air pollutants would be less under Alternative 3 as compared to the General Plan and LCP Update because less new development would be constructed. Because Alternative 3 would reduce the amount of growth in population in Morro Bay through the year 2040 by approximately 2 percent, and would reduce the amount of growth in non-residential development through the year 2040 by approximately 12 percent compared to the proposed General Plan and LCP Update, the long-term operational emissions from use of natural gas for heating, cooking, and water heating would be reduced compared to the General Plan and LCP Update. In addition, higher-density non-residential development and mixed-use development under

the General Plan and LCP Update would incrementally increase density in the downtown area. Therefore, Alternative 3 would result in fewer sensitive receptors exposed to TACs near arterial corridors. In addition, the estimated citywide traffic growth through 2040 under implementation of Alternative 3 would be lower than under the General Plan and LCP Update as a result of the lower projected non-residential and residential development under this Alternative, resulting in lower total VMT. Because the majority of air quality emissions are from mobile sources, overall air quality impacts would be less under this alternative than under the General Plan and LCP Update due to the reduced total VMT. Additionally, Alternative 3 would be more consistent with the 2001 CAP because it would result in less VMT growth and associated ozone precursor emissions than the General Plan and LCP Update. For these reasons, overall air quality impacts for Alternative 3 would be reduced as compared to the General Plan and LCP Update. However, impacts related to 2001 CAP consistency would remain significant and unavoidable, similar to the General Plan and LCP Update.

Biological Resources

Alternative 3 would encourage infill development in vacant and underutilized parcels, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. However, a reduction in the commercial FAR would not necessarily reduce the footprints of future commercial development projects as compared to the commercial FAR proposed under the General Plan and LCP Update, because FARs take into account a building's total floor area (including the floor area of each story of a building), not just the footprint of the building. Nonetheless, because most future development in the city would involve infill development in already urbanized areas that do not support substantial biological resources, Alternative 3 would result in similar impacts to biological resources compared to the General Plan and LCP Update. Impacts to biological resources under Alternative 3 would remain significant but mitigable, similar to the General Plan and LCP Update.

Cultural Resources

Alternative 3 would encourage infill development in vacant and underutilized parcels, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. As stated above under *Biological Resources* for Alternative 3, a reduction in FAR would not necessarily reduce the footprints of future development projects as compared to the General Plan and LCP Update. Nonetheless, because most future development in the city would involve infill development in already urbanized areas that may have been previously disturbed, Alternative 3 would result in similar impacts to archaeological and historic resources compared to the General Plan and LCP Update. Goals and policies in the General Plan and LCP Update would continue to protect cultural resources, and Mitigation Measures CR-1(a) and CR-1(b) would update the General Plan and LCP Update to include a policy and implementation action to address potential impacts to cultural resources on a project-by-project basis. Nonetheless, because most future development in the city would involve infill development in already urbanized areas that may have been previously disturbed, Alternative 3 would result in similar impacts to cultural resources than under the General Plan and LCP Update and impacts would remain less than significant with mitigation with required adherence to laws and regulations requiring Native American consultation, protection of human remains, and pre-historic artifacts, similar to the General Plan and LCP Update.

Geology and Soils

Alternative 3 would encourage infill development in vacant and underutilized parcels, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. As stated above under *Biological Resources* for Alternative 3, a reduction in FAR would not necessarily reduce footprints of future development projects as compared to the General Plan and LCP Update. Therefore, potential ground disturbance, as well as impacts related to geology and soils, under Alternative 3 would be similar to the General Plan and LCP Update. The goals and policies in the General Plan and LCP Update Public Safety Element and Conservation Element that would minimize risks associated with potential fault rupture, seismic shaking, and other geologic hazards in the planning area, as well as reduce the potential of erosion and loss of topsoil, would continue to be implemented under Alternative 3. In addition, Alternative 3 would require compliance with existing state and federal regulatory requirements to avoid and minimize geology and soil hazards associated with new development, which would reduce potential impacts. Impacts to geology and soils under Alternative 3 would remain less than significant, similar to the General Plan and LCP Update.

Greenhouse Gas Emissions

Because less new non-residential development would be constructed under Alternative 3, construction-source GHG emissions would be reduced as compared to the General Plan and LCP Update. Compared to the General Plan and LCP Update, buildout of Alternative 3 would result in fewer residential units, less non-residential development, and approximately 195 fewer residents. As a result, Alternative 3 would result in lower operational GHG emissions, including those due to VMT generation, as compared to the General Plan and LCP Update. In addition, General Plan and LCP Update policies that would continue to be implemented under Alternative 3 would promote mixed-use and infill development; support bike, pedestrian, and mass transit; and ensure future consistency with the Morro Bay CAP, ensuring that the city's emissions reductions would remain the trajectory to meet the State's long term emissions goals. Overall, Alternative 3 would reduce GHG and climate change impacts in comparison to the General Plan and LCP Update. GHG emissions impacts would remain less than significant.

Hazards and Hazardous Materials

Alternative 3 would encourage infill development in vacant and underutilized parcels in already urbanized areas of the city, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. As stated above under *Biological Resources* for Alternative 3, a reduction in FAR would not necessarily reduce footprints of future development projects as compared to the General Plan and LCP Update. Therefore, potential ground disturbance, as well as impacts related to hazards and hazardous materials, under Alternative 3 would be similar to the General Plan and LCP Update. The goals and policies in the Public Safety Element that would minimize any impacts related to the use, storage, transport, and release of hazardous materials in the planning area; facilitate compliance with regulatory requirements related to hazardous waste contamination; ensure effective emergency response following a natural or human-caused disaster; and avoid and minimize wildland fire risks would continue to be implemented under Alternative 3. In addition, Alternative 3 would require compliance with existing regulatory requirements and policies, including the San Luis Obispo County EHS Hazardous Materials Program, which would reduce potential impacts related to hazards and hazardous materials, similar to the General Plan and LCP Update. Impacts related to hazards and

hazardous materials under Alternative 3 would remain less than significant, similar to the General Plan and LCP Update.

Hydrology and Water Quality

Alternative 3 would encourage infill development in vacant and underutilized parcels, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. As stated above under *Biological Resources* for Alternative 3, a reduction in FAR would not necessarily reduce footprints of future development projects as compared to the General Plan and LCP Update. Therefore, potential ground disturbance, as well as impacts related to hydrology and water quality, under Alternative 3 would be similar to the General Plan and LCP Update. The goals and policies in the Public Safety Element and Conservation Element that would prevent substantial erosion and siltation, and discharges of pollutants, including pollution associated with drainage, erosion, and stormwater; minimize adverse effects on water quality; and ensure that the risk and damage of flooding is not exacerbated would continue to be implemented under Alternative 3. Alternative 3 would require compliance with existing local, state, and federal regulatory requirements and policies, including the Morro Bay Municipal Code, which would reduce potential impacts related to hydrology and water quality, similar to the General Plan and LCP Update. Impacts to hydrology and water quality under Alternative 3 would remain less than significant, similar to the General Plan and LCP Update.

Land Use and Planning

Similar to the General Plan and LCP Update, Alternative 3 would provide for orderly development in Morro Bay with a reduction both residential and non-residential development, as a result of reducing the commercial floor area ratio. Alternative 3 would not divide an established community or conflict with an applicable habitation conservation plan. As discussed in Section 4.9, *Land Use and Planning*, the General Plan and LCP Update would be consistent with applicable regional land use plans, policies, and regulations, such as the SLOCOG 2014 RTP/SCS, and City zoning districts and standards. However, because Alternative 3 would result in fewer residential units and jobs Morro Bay, it would be less consistent with the SLOCOG 2014 RTP/SCS, which promotes infill and mixed-use development to facilitate access to pedestrian, bicycle, and mass transit, reducing vehicle trips and GHG emissions. As described above, Alternative 3 would result in reduced GHG emissions compared to the General Plan and LCP Update. Overall, impacts related to consistency with applicable land use plans, policies, or regulations would remain less than significant, similar to the General Plan and LCP Update.

Noise

Alternative 3 would result in reduced commercial, retail, office, and visitor-serving development and fewer residential units than under the General Plan and LCP Update. Therefore, Alternative 3 would result in reduced construction-related noise and vibration impacts as compared to the General Plan and LCP Update. Because Alternative 3 would reduce the net growth in population in Morro Bay through the year 2040 by approximately 2 percent, and would reduce the net growth in non-residential development through the year 2040 by approximately 12 percent compared to the General Plan and LCP Update, the long-term operational and traffic noise would be reduced compared to the General Plan and LCP Update. Infill and mixed-use development facilitated by the proposed General Plan and LCP Update would increase noise near existing sensitive receptors and place new sensitive receptors in areas with high noise levels. Alternative 3 would involve less dense

development and fewer noise sensitive receptors would be exposed to increased noise levels associated with infill and mixed-use development. Overall, Alternative 3 would have reduced noise impacts compared to the General Plan and LCP Update, and impacts would remain significant but mitigable.

Population and Housing

Alternative 3 would involve less population growth in the planning area than would occur under the General Plan and LCP Update. As discussed in Section 4.11, *Population and Housing*, the anticipated population growth in the city through 2040 under the General Plan and LCP Update is similar to but less than the SLOCOG population growth projections for the city. Alternative 3 would be consistent with SLOCOG growth projections for the city, with less growth anticipated under this alternative than the General Plan and LCP Update. In addition, growth in Morro Bay under Alternative 3 would be required to be consistent with Measure F, limiting the city population to 12,200 residents. Neither Alternative 3 nor the General Plan and LCP Update would displace substantial numbers of people or housing. Therefore, impacts related to population and housing would be less than significant, similar to the General Plan and LCP Update.

Public Services and Recreation

Alternative 3 would result in reduced commercial, retail, office, and visitor-serving development and fewer residential units than under the General Plan and LCP Update. Development under Alternative 3 would result in incremental increase in demand on public services and recreational facilities, but to a lesser extent than development facilitated by the General Plan and LCP Update because Alternative 3 would result in 1.3 million fewer square feet of new non-residential development and 103 fewer dwelling units than under the General Plan and LCP Update. Both Alternative 3 and the General Plan and LCP Update would include policies that would ensure public services continue to be provided to the city commensurate with population growth and need. In addition, project-level development under Alternative 3 would be required to pay City-required public facilities impact fees, and the City would be required to comply with Measure F, which prevents substantial population growth in the city, alleviating some of the demand on public service and recreational facilities. However, the City's existing park service ratio does not achieve the standard of three acres to 1,000 residents, pursuant to the Quimby Act, and Alternative 3 would not provide additional city parkland or recreational facilities to alleviate this deficiency. Alternative 3 would provide the policy framework and physical opportunities to provide expanded park or recreational facilities, similar to the proposed project. Impacts related to public services and recreation would be reduced in comparison to the General Plan and LCP Update due to the reduction in new development potential and would be less than significant.

Transportation

When compared to the General Plan and LCP Update, Alternative 3 would accommodate approximately 103 fewer housing units, approximately 195 fewer residents, and approximately 1.3 million fewer square feet of new non-residential development. The average daily vehicle trips and VMT that would be generated from these additional residents and commercial users under the General Plan and LCP Update would be avoided with this alternative. Therefore, implementation of Alternative 3 would result in reduced traffic volumes compared to the General Plan and LCP Update.

The project traffic study (Appendix E) notes that the anticipated growth in VMT associated with buildout of the General Plan and LCP Update is primarily attributable to the increase in employment

associated with new potential commercial growth under the General Plan and LCP Update. Alternative 3 would reduce the net growth in non-residential development through the year 2040 by approximately 12 percent compared to the General Plan and LCP Update. Therefore, under Alternative 3, citywide traffic growth through 2040 would be approximately 12 percent lower than growth anticipated under the General Plan and LCP Update. However, Alternative 3 would result in greater overall citywide traffic than Alternatives 1 and 2, which would continue to result in significant and unavoidable project-level and cumulative impacts from new VMT. Therefore, due to the anticipated volume of traffic from new commercial development, the anticipated growth would still result in a decline in operations at pedestrian facilities and increased overall vehicle volumes. Overall, as a result in the reduction in development under Alternative 3, project-level and cumulative transportation impacts would be reduced compared to the General Plan and LCP Update, but the anticipated growth in local and regional VMT would remain significant and unavoidable.

Utilities

As discussed in Section 4.14, *Utilities*, the General Plan and LCP Update's potential impacts related to the provision of utilities and service systems would be less than significant. Because Alternative 3 would reduce the net growth in population in Morro Bay through the year 2040 by approximately 2 percent, and would reduce the net growth in non-residential development through the year 2040 by approximately 12 percent compared to the General Plan and LCP Update, the demand for new or expanded utility services would be reduced compared to the General Plan and LCP Update. However, development under Alternative 3 would occur in the same locations as development under the General Plan and LCP Update, so the demand for new or expanded utility infrastructure for Alternative 3 would be similar to the utility needs of development facilitated by the General Plan and LCP Update. Impacts related to the provision of utility infrastructure and services would remain less than significant, similar to the General Plan and LCP Update.

Tribal Cultural Resources

Alternative 3 would encourage infill development in vacant and underutilized parcels, including redevelopment of the former Morro Bay Power Plant and City WWTP sites, but with a reduction in the commercial FAR. As stated above under *Biological Resources* and *Cultural Resources* for Alternative 3, a reduction in FAR would not necessarily reduce the footprints of future development projects as compared to the General Plan and LCP Update. Nonetheless, because most future development in the city would involve infill development in already urbanized areas that may have been previously disturbed, Alternative 3 would result in similar impacts to tribal cultural resources compared to the General Plan and LCP Update. Goals and policies in the General Plan and LCP Update would continue to protect valuable tribal cultural resources, and Mitigation Measures CR-1(a) and CR-1(b) would update the General Plan and LCP Update to include a policy and implementation action to address potential impacts to unique tribal cultural resources on a project-by-project basis. Nonetheless, because most future development in the city would involve infill development in already urbanized areas that may have been previously disturbed, Alternative 3 would result in similar impacts to tribal cultural resources than under the General Plan and LCP Update and impacts would remain less than significant with mitigation with required adherence to laws and regulations requiring Native American consultation, protection of human remains, and pre-historic artifacts, similar to the General Plan and LCP Update.

Energy

Compared to the General Plan and LCP Update, buildout of Alternative 3 would result in fewer residential units, less non-residential development, and approximately 195 fewer residents. As a result, Alternative 3 would result in lower direct and indirect energy consumption. In addition, General Plan and LCP Update policies that would continue to be implemented under Alternative 3 would promote mixed-use and infill development; support bike, pedestrian, and mass transit; and ensure future consistency with the Morro Bay CAP.

The total estimated citywide traffic growth through 2040 under Alternative 3 would be lower than the General Plan and LCP Update due to the reduced development potential under this alternative. Overall, the reduced potential for new development anticipated under Alternative 3 would result in lower energy consumption than the General Plan and LCP Update, and this impact would remain less than significant.

7.3 Environmentally Superior Alternative

Section 15126.6(e)(2) of the CEQA Guidelines requires that an analysis of project alternatives identify an environmentally superior alternative among the alternatives evaluated in the EIR. In general, the environmentally superior alternative as defined by CEQA should minimize adverse impacts to the project site and its surrounding environment. In some cases, an alternative will avoid one or more impacts identified for a project but introduce other new significant impacts. Therefore, selection of the environmentally superior alternative requires an overall assessment of the changes in the number and type of significant impacts. Therefore, selection of the environmentally superior alternative requires an overall assessment of the changes in the number and type of significant impacts.

This section evaluates the impact conclusions for the General Plan and LCP Update and the three alternatives under consideration. It then identifies the environmentally superior alternative for each issue area. In accordance with the CEQA Guidelines Section 15126.6, if the No Project Alternative is identified as the Environmentally Superior Alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives. Table 7-3 summarizes the environmental advantages and disadvantages associated with the proposed project and the analyzed alternatives.

In conducting the alternatives analysis, consideration must be given as to how, and to what extent, an alternative can meet the project's basic objectives. As discussed in Section 2.0, *Project Description,* the primary objective of the General Plan and LCP Update is to function as a policy document to guide land use decisions within the city planning area through the year 2040.

Table 7-3 Alternative Impact Comparison to the General Plan and LCP Update

Issue	Proposed Project Impact Classification	Alternative 1: No Project/1988 General Plan and 1984 LCP	Alternative 2: Update w/o Power Plant/WWTP Redevelopment	Alternative 3: Reduced Commercial Floor Area Ratio
Major Topics (EIR identifies significant and unavoidable impacts)				
Air Quality	Significant and Unavoidable	Less (Less than Significant)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Transportation (Increased VMT)	Significant and Unavoidable	Less (Significant and Unavoidable)	Less (Significant and Unavoidable)	Less (Significant and Unavoidable)
Transportation (Cumulative)	Significant and Unavoidable	Less (Significant and Unavoidable)	Less (Significant and Unavoidable)	Less (Significant and Unavoidable)
Other Environmental Topics (EIR identifies impacts that are less than significant with or without mitigation)				
Aesthetics	Less than Significant	Less	Less	Less
Biological Resources	Less than Significant with Mitigation Incorporated	Less	Less	Similar
Cultural Resources	Less than Significant with Mitigation Incorporated	Less	Less	Similar
Geology and Soils	Less than Significant	Less	Less	Similar
Greenhouse Gas Emissions	Less than Significant	Less	Less	Less
Hazards and Hazardous Materials	Less than Significant	Less	Less	Similar
Hydrology and Water Quality	Less than Significant	Less	Less	Similar
Land Use and Planning	Less than Significant	Greater	Similar	Similar
Noise	Less than Significant with Mitigation Incorporated	Less	Less	Less
Population and Housing	Less than Significant	Similar	Similar	Similar
Public Services and Recreation	Less than Significant	Less	Less	Similar
Utilities	Less than Significant	Less	Less	Similar
Tribal Cultural Resources	Less than Significant with Mitigation Incorporated	Less	Less	Similar
Energy	Less than Significant	Less	Less	Less

Issue	Proposed Project Impact Classification	Alternative 1: No Project/1988 General Plan and 1984 LCP	Alternative 2: Update w/o Power Plant/WWTP Redevelopment	Alternative 3: Reduced Commercial Floor Area Ratio
Overall		**15 Less, 1 Similar, 1 Greater**	**14 Less, 3 Similar, 0 Greater**	**6 Less, 11 Similar, 0 Greater**

The No Project Alternative (Alternative 1) would be environmentally superior in comparison to the General Plan and LCP Update because it would continue implementation of the existing 1988 General Plan, which would accommodate less development and growth then the General Plan and LCP Update, Alternatives 2, or Alternative 3. Although Alternative 1 would entail continued growth as dictated by the existing 1988 General Plan, this alternative would not implement new policy language included in the General Plan and LCP Update, such as policies intended to provide guidance for future development and reduce long-term community impacts associated with growth. Alternative 1 would eliminate significant and unavoidable impacts to air quality because it would result in substantially less new growth and associated new vehicle traffic and would therefore be consistent with the assumptions in the 2001 Clean Air Plan. However, Alternative 1 would not eliminate the significant and unavoidable project-level or cumulative impacts associated with increased VMT.

Alternative 2, Proposed General Plan and LCP Update without Morro Bay Power Plant/WWTP Redevelopment, would perform similar or better to the General Plan and LCP Update for all environmental resource areas. This alternative would result in no new development on the former Morro Bay Power Plant and City WWTP redevelopment sites, instead designating these sites as Open Space/Recreation. As a result of this reduction in future development and growth, Alternative 2 would result in reduced impacts to issue areas including aesthetic resources, GHG emissions, biological and cultural resources, geology, hazards, hydrology, noise, and transportation. However, Alternative 2 would not eliminate the significant and unavoidable impacts associated with air quality plan consistency or project-level or cumulative impacts associated with increased VMT, because this alternative would still result in substantial new growth and the associated increase in new vehicle traffic.

Alternative 3, the Reduced Commercial Floor Area Ratio Alternative, would perform similar or better to the General Plan and LCP Update for all environmental resource areas. This alternative would result in less new commercial growth and development overall due to the reduction in commercial FAR. As a result of this reduction in future development and growth, Alternative 3 would result in reduced impacts to issue areas including aesthetic resources, GHG emissions, noise, recreation, and transportation. However, Alternative 3 would not eliminate any of the significant and unavoidable impacts associated with the General Plan and LCP Update, because this alternative would still result in substantial new growth and the associated increase in new vehicle traffic.

Based on the information presented herein, Alternative 2 would be the environmentally superior alternative when considering overall environmental impacts relative to the performance metrics. However, designating the former Morro Bay Power Plant and City WWTP redevelopment sites as Open Space/Recreation would be inconsistent with the vision and objectives of the General Plan and LCP Update because it would eliminate urban development from areas the city has determined would contribute substantially to a pattern of compact future development, reducing long-term development pressure on agricultural lands outside the planning area. Additionally, reduced growth

in these targeted redevelopment locations would be inconsistent with the goals of the General Plan and LCP Update to attract new businesses and investors and provide head-of-household jobs and affordable housing options.

After Alternative 2, Alternative 1 is the next most environmentally superior alternative when considering overall environmental impacts relative to the performance metrics. However, as discussed above, this alternative would not meet the basic project objective to provide an updated community vision for Morro Bay by updating the 1988 General Plan, and would not avoid the significant and unavoidable project-level or cumulative impacts associated with increased VMT, and may result in additional long-term impacts associated with the need for expanded utility infrastructure.

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8 References

8.1 List of Preparers

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Appendix A

Notice of Preparation and Comment Letters

NOTICE OF EIR PUBLIC SCOPING MEETING

SUBJECT: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

PROJECT: MORRO BAY GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE

A Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the City of Morro Bay will prepare an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for the proposed Morro Bay General Plan and Local Coastal Program Update. The proposed project is a comprehensive update of the City's General Plan and Local Coastal Program (Plan Morro Bay), as required by State law (Government Code Section 65300). The updated General Plan and Local Coastal Program (Plan Morro Bay) and its implementing programs will serve as the blueprint for future growth and development within the City Planning Area.

PUBLIC COMMENTS

The City of Morro Bay is soliciting the views of responsible and trustee agencies as well as interested persons as to the scope and content of the environmental information to be included in the EIR. All comments to the NOP are due no later than December 8, 2017. Please send your comments to the mailing address or email addresses shown below. Include a return address or email address and a contact name for your agency or group with your comments.

Email comments to:	**Mail comments to:**
Cindy Jacinth Senior Planner City of Morro Bay cjacinth@morrobayca.gov	Cindy Jacinth Senior Planner City of Morro Bay 955 Shasta Avenue Morro Bay, CA 93442

SCOPING MEETING

A public scoping meeting has been scheduled to allow for any interested persons to supply input on issues to be discussed in the Program EIR:

Date: **Tuesday, November 21, 2017**
Time: **4:00 p.m. to 6:00 p.m.**
Place: **Facility Room, Veteran's Memorial Building, 209 Surf Street**

The meeting is an opportunity for City and consultant staffs to gather information from the public regarding the potential environmental impacts of the project that need to be evaluated in the Program EIR. It is not intended to be a hearing on the merits of the project. Therefore, members of the public should limit their comments focused on potential significant changes to the environment that may occur as a direct result of project development.

DOCUMENT AVAILABILITY

Copies of the complete NOP are available at the Morro Bay Library (625 Harbor Street), Community Development Dept, 955 Shasta Ave., and at City Hall (595 Harbor Street).

NOTICE OF PREPARATION

Date: November 8, 2017

To: California Office of Planning and Research, Responsible and Trustee Agencies, and Other Interested Parties

Subject: Notice of Preparation of an Environmental Impact Report

Project: Morro Bay General Plan and Local Coastal Program Update

Lead Agency: City of Morro Bay

Review Period: November 8, 2017 to December 8, 2017 (30 days)

This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the City of Morro Bay as the Lead Agency will prepare an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for the proposed Morro Bay General Plan and Local Coastal Program Update (proposed project). The proposed project is a comprehensive update of the City's General Plan and Local Coastal Program (Plan Morro Bay), as required by State law (Government Code Section 65300). The updated General Plan and Local Coastal Program (Plan Morro Bay) and its implementing programs will serve as the blueprint for future growth and development within the City Planning Area.

A. PROJECT LOCATION AND SETTING

The Project site consists of the Planning Area for the General Plan and Local Coastal Program update (referred to locally as Plan Morro Bay), which contains all land within the Morro Bay City boundaries, as well as lands outside the City to the north, east, and south that bear relation to the City's planning activities as provided in California Government Code Section 65300. The Planning Area encompasses approximately 8,833 acres located in west-central San Luis Obispo County (see **Figure 1**). Existing land uses in the City are shown in **Figure 2**. Morro Bay's City limits and the Planning Area boundary are shown in **Figure 3** and are generally described as follows:

- The City is generally bounded by the Pacific Ocean to the southwest and unincorporated San Luis Obispo County in all other directions. Highway 1 runs southeast-northwest through the right-hand edge of the City. Highway 41 runs east-west and approximately bisects the City north-south.
- The Planning Area boundaries generally coincide with the City limits on the south and west, but to the north the Planning Area extends beyond Toro Creek Road close to the community of Cayucos and more than twice the distance from the

coast to the existing City limits to the east. To the southeast, the planning area extends south of Highway 1 along the Chorro Creek valley (see **Figure 3**).

In the Planning Area, existing on-the-ground land uses include a mix of agriculture (69 percent), residential (8 percent), nonresidential (commercial, office, and industrial) (3 percent), park and open space areas (16 percent), civic/institutional/public (2 percent), roadways, and other infrastructure (<1 percent), and vacant land (<1 percent). Existing land uses in the Planning Area are illustrated in **Figure 2**.

All land surrounding the Project site is located in unincorporated San Luis Obispo County and consists of mostly rural residential and agricultural uses.

B. PROJECT DESCRIPTION

The City of Morro Bay is conducting a comprehensive update of its General Plan and Local Coastal Program (Plan Morro Bay). State law (Government Code Section 65300) requires each city and county to adopt a comprehensive, long-term general plan for its physical development. The City's current General Plan was adopted in 1988 with various amendments made since then, and serves to direct the City's future growth and development as well as its conservation policy. The Local Coastal Program was last updated in 1982 and serves as the City's implementation of the California Coastal Act. The General Plan and Local Coastal Program are being combined into a single document, Plan Morro Bay, which is now being updated to ensure that these guiding policy documents remain useful tools, keep pace with change, and provide workable solutions to current and future issues.

The City has decided to update both the General Plan and the Local Coastal Program at this time. The Local Coastal Program consists of two parts:

- A Coastal Land Use Plan, which is presented as a component of the General Plan.
- A Local Implementation Plan, which is presented as a component of the City's Zoning Ordinance.

The Plan Morro Bay Update Project includes the following components:

1.0 PLAN MORRO BAY

Plan Morro Bay and its implementing programs serve as the blueprint for future growth and development within the Planning Area. These documents contain policies and programs designed to provide decision-makers with a solid basis for future decisions related to land use and development.

Plan Morro Bay documents and presentations developed to date are available at the following website:
http://www.morrobayca.gov/planmb

1.1 Vision & Values Statement

The following community Vision & Values Statement supports the Plan Morro Bay Project:

In 2040, Morro Bay remains a small oceanfront town and thriving year-round destination, known for its natural beauty, creative people, outdoor recreation, working waterfront, and welcoming community spirit. It is a friendly, safe, resilient, and healthy place where people of all ages and economic levels live, work, play, and visit.

The natural environment and wildlife are cherished and conserved and are essential elements that integrate with and define our urban landscape. Our healthy wetlands, iconic Morro Rock, and bustling harbor are complemented by expansive parks, connected bicycle lanes, safe streets, and pathways that are accessible to people of all ages and abilities.

We have a deep appreciation for nature and honor our native, cultural, and maritime heritage. We maintain and support our working waterfront and carefully preserve our estuary, watershed, natural shoreline, and surrounding open space. We adapt to changes in the climate, economy, and culture without compromising our small-town character.

Our vibrant economy is strengthened by sustainable resource practices, a responsive City government, and leading-edge technology that empowers local business owners and attracts new businesses and investors. We are a diverse, multigenerational community where head-of-household jobs, sustainable living wages, and affordable housing options serve as a foundation that allows people of all ages and income levels to thrive.

Modern, well-maintained public amenities and supportive community services nurture our residents, community organizations, and neighborhood groups. We actively participate in government decisions and take pride in volunteerism. We welcome personal expression and creativity, as reflected in our varied visitor attractions, bustling dining scene, vibrant arts culture, community events, public art, and outdoor activities. Our diverse housing, safe and eclectic neighborhoods, and reliable transit system are enhanced through suitable urban infill and mixed-use development that accommodates modest residential and commercial growth.

Mindful of our rich heritage, we take great pride in our community and work together toward a bright future.

1.2 Plan Morro Bay Structure

The General Plan must include subject matter identified in State law for the following State-required elements or topics: Land Use, Circulation, Housing, Conservation, Open Space, Noise, Safety, and Environmental Justice. The Local Coastal Program must address priority issues for the California Coastal Commission. These topics are public access, recreation and visitor serving facilities, water quality protection, Environmentally Sensitive Habitat Areas (ESHA) and other natural resources, agricultural resources, new

development and cultural resources, scenic and visual resources, coastal hazards, shoreline erosion and protective devices, and energy and industrial development.

The updated Plan Morro Bay will be divided into 15 sections and elements, which together address the topics mandated by the State and Coastal Commission, as well as additional topics of interest to the City. The 10 elements are grouped into a Blueprint and a Greenprint. Each section is briefly described below.

1. **Introduction**: Addresses the purpose and scope of the General Plan and Local Coastal Program; background on Morro Bay's history, current demographics, and economic conditions; planning context (other local and regional plans); the relationship of the General Plan and Local Coastal Program to other plans and documents, including the City's Municipal Code; and the geographic area and topics covered in the General Plan/Local Coastal Program.

2. **Vision**: The Community Vision section of Plan Morro Bay establishes a Vision & Values statement for the city. This statement sets forth a comprehensive vision for Morro Bay in the future and identifies the community's key priorities. This statement guides each element of Plan Morro Bay to achieve the goals of the community.

3. **Blueprint:** The Blueprint serves as a framework for development decisions in the city through 2040. This section will guide actions for residents, businesses, decision-makers, City staff members, and project developers in Morro Bay.

    a. **Land Use:** The Land Use Element represents the foundation of the Blueprint and the City's guide to the evolution of development patterns in Morro Bay. This element guides future development and designates appropriate locations for land uses in the city. Land Use Element goals and policies serve as a road map for the future physical development of the community by identifying the general location, distribution, and intensity for a range of residential, commercial, industrial, and institutional land uses in Morro Bay. Land Use Element goals and policies also address coastal-dependent and coastal-related uses.

    b. **Community Design:** The Community Design Element outlines a vision for the aesthetic development of the community and character of Morro Bay. This element establishes the City's long-term community design and development goals to maintain a unique city culture and identity with respect to community form, layout, and community character areas.

    c. **Economic Development:** The Economic Development Element includes goals and policies to maintain and improve job development and retention and to promote economic resiliency. This element addresses the economic implications of future development relative to housing affordability, market surplus and leakage, and demographic trends in Morro Bay through 2040.

d. **Circulation:** The Circulation Element defines the local and regional transportation networks and describes how community members get around the city using streets, sidewalks, transit routes, and bicycle paths. The transportation network is a major determinant of development form and land use. Traffic patterns, congestion, access to transit, ease and safety of walking or bicycling, and other factors help to determine where people decide to live, work, or visit in Morro Bay. This element facilitates the mobility of people and goods throughout Morro Bay using multiple travel modes to promote practices aligned with City goals.

e. **Noise:** The Noise Element addresses existing and future noise conditions in Morro Bay, identifies noise problems and their sources, describes how noise affects community safety, health, and comfort, and establishes policies and programs that limit excessive noise levels and improve noise/land use compatibility. Noise conflicts may affect the desirability of specific regions or neighborhoods within the community, which may interfere with the development goals for the city. Through established noise standards, community form will be preserved and maintained in accordance with City goals.

f. **Community Well-being:** The Community Well-Being Element addresses the community's unique population's health and wellness needs, in addition to environmental equity. Morro Bay has a diverse, multigenerational demographic spread with potential to affect the city's future resiliency. Community Well-Being Element goals and policies assess the local quality of life and population vulnerabilities to help plan for an evolving community.

g. **Housing:** The Housing Element serves as a tool to identify and provide for the housing needs of the community. It identifies recent demographic and employment trends that may affect existing and future housing demand and supply. California law requires the Housing Element to establish policies and programs that will support the provision of an adequate housing supply for citizens of all income levels. The Housing Element is the only element that requires review by the State. The element addresses the City's ability to meet the regional housing needs as determined by the State of California.

4. **Greenprint:** The Greenprint serves as a framework for how the City can use and manage its resources to benefit the community and guide it toward a more resilient and sustainable future. This section links open space, agricultural, and natural resource preservation with the development plans described in the Blueprint. The chapter is grounded in a shared vision from the community, boards and commissions, and City staff and officials for a sustainable community that sets policies and programs to achieve this shared vision. It is implemented by City ordinances, specific plans, programs, and ongoing activities.

a. **Conservation:** The Conservation Element addresses the use and preservation of natural resources to improve the environmental quality of

Morro Bay for years to come. Topics covered in this element include important biological communities, air quality, greenhouse gas emissions, water resources and conservation, energy resources, waste management, visual resources and viewsheds, and coastal resources. Conservation Element goals and policies promote a resilient, sustainable community offering a balance of open spaces, coastal access, and a quality built environment both along the coastline and inland.

b. **Open Space:** The Open Space Element outlines a vision for facilitating coastal access and providing a range of community facilities, parks, and recreation opportunities. This element addresses the protection of natural habitat and wildlife by designating open space areas throughout the community. Open Space Element goals and policies include specific steps to protect and improve Morro Bay's coastal trails, parks, and facilities and to enhance and maintain open spaces in the coastal zone.

c. **Public Safety:** The Public Safety Element minimizes community risks associated with natural and man-made hazards. This element identifies hazards that could be made more severe by the city's location on the coast and anticipated climate change impacts. Public Safety Element goals and policies address natural hazards, coastal adaptation, and emergency response to protect residents, visitors, and wildlife from anticipated impacts.

5. **Implementation:** Sets forth specific actions and tools for implementation of Plan Morro Bay, along with a detailed work program. Describes the process for maintaining and monitoring progress in implementing Plan Morro Bay.

6. **Glossary and Acronyms:** Provides a list of acronyms and definitions for key terms used in Plan Morro Bay.

7. **Appendices**: A series of background reports and technical appendices.

The topics of importance in the Coastal Act to be included in the Local Coastal Plan will be addressed in the elements as identified in **Table 1**.

TABLE 1
TOPICS OF IMPORTANCE IN THE COASTAL ACT

Plan Morro Bay Element	Public Access	Recreation and Visitor Serving Facilities	Water Quality Protection	ESHA & Other Natural Resources	Agricultural Resources	New Development & Cultural Resources	Scenic & Visual Resources	Coastal Hazards	Shoreline Erosion & Protective Devices	Energy & Industrial Develop-ment
Blueprint										
Land Use	X	X			X					X
Community Design										
Economic Development										
Circulation	X									
Noise										
Housing										
Greenprint										
Conservation			X	X		X	X			X
Open Space		X								
Public Safety								X	X	
Community Well-being										

X = Chapter that primarily addresses element requirements

Note: The management of timberlands does not occur in Morro Bay and therefore is not included in the table above as a topic of importance in the Coastal Act.

1.3 Land Use Diagram

The General Plan Land Use Diagram (**Figure 3**) establishes the general pattern of uses in the Planning Area. The maximum permitted land use densities and intensities will be identified in Plan Morro Bay for these land uses. As the density and intensity standards for each land use designation are applied to future development projects and land use decisions, properties will gradually transition from one use to another, and land uses and intensities will gradually shift to align with the intent of Plan Morro Bay. Within the future Sphere of Influence area identified on the Land Use Diagram, future uses may be developed subject to annexation to the City of Morro Bay in compliance with procedures identified by the San Luis Obispo County Local Agency Formation Commission (LAFCO).

Table 2 identifies anticipated land use changes that would occur with implementation of Plan Morro Bay from a 2016 baseline condition. For purposes of the EIR, analysis of potential environmental effects will be based on the net change between 2016 baseline conditions and the proposed Plan Morro Bay (2040).

TABLE 2
ANTICIPATED LAND USE CHANGES

Land Use Designation	Acres (approximate)	Total Estimated Dwelling Units (2040)	Total Estimated Households	Population (2040)	Non-residential Square Feet (2040)
Residential	752.4	6,521		10,783	—
Commercial	281.4	540		893	8,712,030
Industrial	37.2	—		—	729,253
Waterfront Commercial/ Industrial	6.3	—		—	216,145
Mixed Use	33.8	271		447	1,030,854
Open Space & Agriculture	7,569.5	—		25	—
Public/Institutional	152.6	—		—	159,279
Total (2040)	**8,833.2***	**7,347**	**5,800**	**12,149**	**10,837,321**
Existing (2017) Totals	8,833.2*	6,414	5,063	10,714	6,527,860
Change, 2017-2040	**—**	**933**	**737**	**1,435**	**4,309,461**

Notes:

**Totals may not add up due to rounding*

1.4 Policies Addressing Coastal Issues

Policies to address topics of importance to the Coastal Commission in Plan Morro Bay include:

- Encouragement and preservation of waterfront visitor-serving and coastal-dependent uses including commercial fishing.
- Maintain prime agricultural land in the planning area.
- Protect existing lower-cost facilities including lower-cost accommodations.
- Establish a threshold for lower-cost accommodations, below which additional lower-cost accommodations would need to be developed in the City.
- Plan for additional visitor-serving and other opportunities at major waterfront opportunity sites including the Dynegy site and existing wastewater treatment plant site.
- Protect and promote recreational opportunities in the coastal zone.
- Improve lateral and vertical access along the coast and protect existing access.
- Improve multimodal access in the downtown and waterfront and improve the connection between the downtown and waterfront for pedestrians and bicyclists.
- Monitor coastal access parking demand and adjust parking strategies if needed to maintain sufficient parking.
- Prioritize and protect sensitive habitats. Restore key habitat areas when feasible.
- Protect eelgrass and continue to mitigate its loss during development.
- Protect and improve air and water quality.
- Promote energy efficiency.
- Protect views and viewsheds.
- Preserve Morro Bay Estuary.
- Limit the construction of shoreline structures.
- Develop a historic and cultural resources strategy.
- Maintain sufficient parks and open space.
- Provide quality and varied recreational opportunities.
- Maintain the beach for habitat protection along with human use.
- Protect assets in the City vulnerable to human and man-made disasters.
- Implement adaptive strategies to address the threat of sea-level rise over time.

2.0 ZONING CODE AND COASTAL IMPLEMENTATION PLAN AMENDMENTS

To maintain consistency with updated Plan Morro Bay, the Project also includes a comprehensive Zoning Code Update which includes the Coastal Implementation Plan. Amendments planned as part of the Project include:

- Updating the allowed uses in all zones as necessary for consistency with the General Plan Land Use Designations.
- Establishing new zoning district(s) as necessary to implement the updated General Plan.
- Updating other development standards as necessary to implement the updated General Plan. This will include maximum height, setbacks, design standards and other standards.
- Updating administration and permitting to integrate coastal permit processes. Additional coastal-specific issues to be addressed include:
    - Parking and transportation demand management
    - Coastal access, beach use, and special events
    - Visitor-serving uses and tourism
    - Sea-level rise and coastal resilience
    - Stormwater management and water quality
- The Zoning Code Update will also need to address other issues, such as neighborhood compatibility and economic development, consistent with direction in Plan Morro Bay.

C. TYPE OF ENVIRONMENTAL DOCUMENT

The General Plan and Local Coastal Program Update EIR will be prepared as a Program EIR, pursuant to Section 15168 of the CEQA Guidelines. A Program EIR examines the environmental impacts of an overall area that may contain a series of subsequent projects. This type of EIR focuses on the changes in the environment that would result from implementation of the overall Project, including development of land uses and transportation systems identified in the Project, as well as other infrastructure required to serve the Project. The General Plan and Local Coastal Program Update EIR will serve as the environmental review document for subsequent activities in the Program. Use of a Program EIR provides the City (as Lead Agency) with the opportunity to consider broad policy alternatives and program-wide mitigation measures and greater flexibility to address environmental issues and/or cumulative impacts on a comprehensive basis. Consistent with CEQA Guidelines Section 15168(c), the City will review subsequent activities to determine whether the activity is within the scope of the Project covered by the Program EIR or whether an additional environmental document must be prepared. If the City finds, pursuant to CEQA Guidelines Section 15162, that no new effects could occur or no new mitigation measures would be required, the City can approve the

subsequent activity as being within the scope of the Project covered in the Program EIR, and no new environmental document would be required.

D. PROBABLE ENVIRONMENTAL EFFECTS

The EIR will evaluate whether the proposed Project would potentially result in one or more significant environmental effects. The following issues will be addressed in the EIR:

- Aesthetics, Light, and Glare
- Air Quality
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities and Service Systems
- Energy Conservation and Other Required CEQA Topics

E. DEVELOPMENT OF A REASONABLE RANGE OF ALTERNATIVES

Factors determining project alternatives include considerations of project objectives, site suitability, economic viability, and availability of infrastructure. The Program EIR will discuss the rationale for selection of alternatives that are feasible and therefore, merit in-depth consideration, and which are infeasible (e.g., failed to meet Project objectives or did not avoid significant environmental effects) and therefore rejected. Project alternatives have yet to be finalized.

Alternatives will be general in nature since further environmental issue area analyses would be necessary before more specific project alternatives can be identified.

F. EIR AND GENERAL PLAN UPDATE PROCESS

The Draft EIR will incorporate the input received at the scoping meeting and comments submitted on the NOP. The purpose of the Draft EIR is to examine and disclose the potential environmental impacts of the Project and to identify mitigation measures and alternatives that would reduce and/or avoid significant impacts.

The Draft EIR will have a 45-day public review period in which agencies and members of the public will review and comment on the Draft EIR. Comments received on the Draft EIR will be reviewed and addressed in the Final EIR. The Final EIR will be a document consisting of the Draft EIR, errata or changes to the Draft EIR, and responses to comments on the EIR, as well as any additional technical reports or follow-up documentation that may be necessary. The Morro Bay Planning Commission will hold a public hearing on the Final EIR and make a recommendation to the City Council regarding the Final EIR prior to action on the General Plan Update. The City Council will hold a

separate public hearing on the Final EIR and make its own determination on certification of the Final EIR prior to action on the General Plan Update.

G. PUBLIC COMMENTS

The City of Morro Bay is soliciting the views of responsible and trustee agencies as well as interested persons as to the scope and content of the environmental information to be included in the EIR. In accordance with CEQA, agencies are requested to review the project description provided in this NOP and provide comments on environmental issues related to the statutory responsibilities of the agency. The EIR will be used by the City of Morro Bay when considering approval of the proposed project as well as any related discretionary approvals.

All comments to the NOP are due no later than December 8, 2017. Please send your comments to the mailing address or email address shown below. Include a return address or email address and a contact name for your agency or group with your comments.

Email comments to:	**Mail comments to:**
Cindy Jacinth Senior Planner City of Morro Bay cjacinth@morrobayca.gov	Cindy Jacinth Senior Planner City of Morro Bay 955 Shasta Avenue Morro Bay, CA 93442

H. SCOPING MEETING

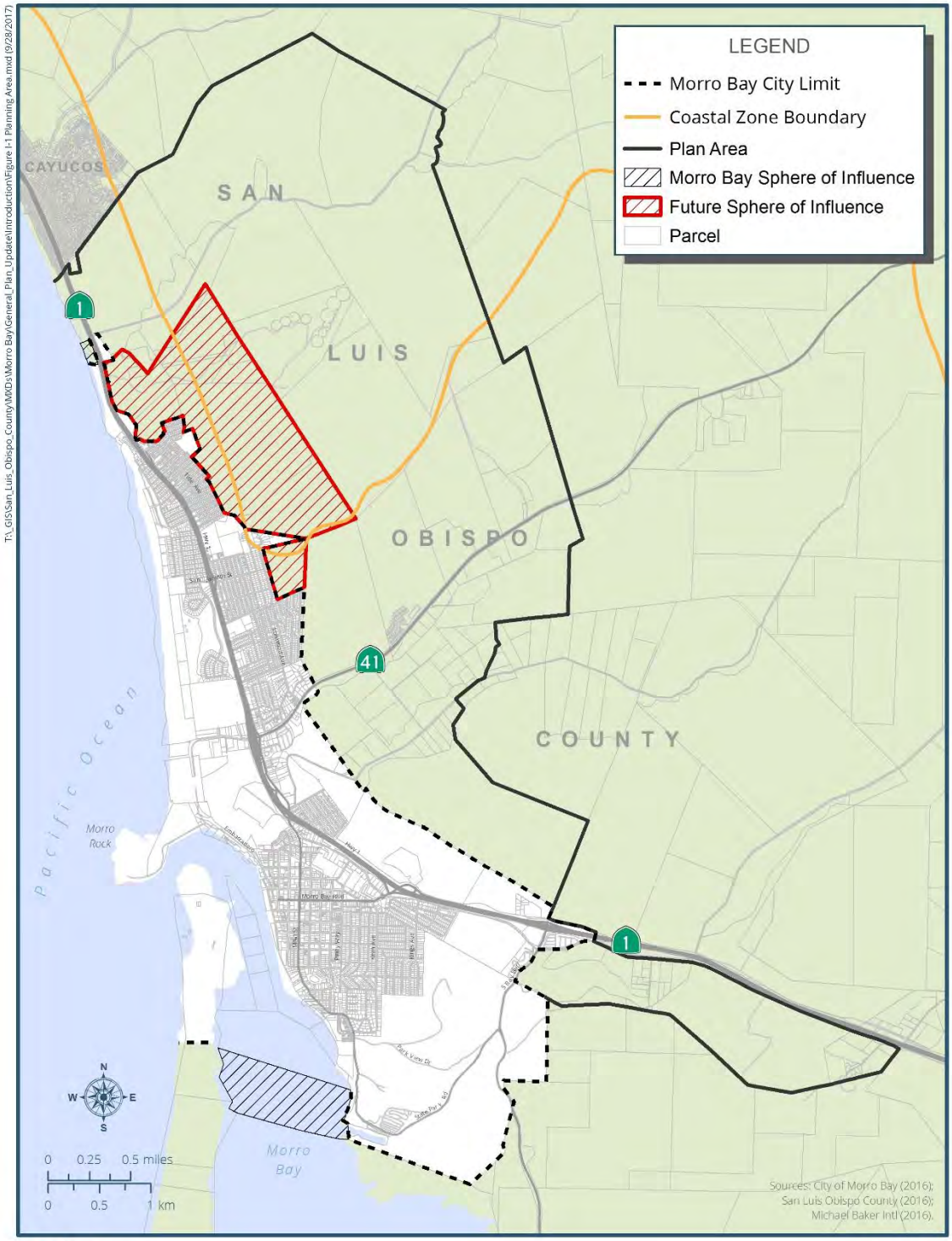
A public scoping meeting has been scheduled to allow for any interested persons to supply input on issues to be discussed in the Program EIR:

Date: Tuesday, November 21, 2017
Time: 4:00 p.m. to 6:00 p.m.
Place: Facility Room, Veteran's Memorial Building, 209 Surf Street

The meeting is an opportunity for City and consultant staffs to gather information from the public regarding the potential environmental impacts of the project that need to be evaluated in the Program EIR. It is not intended to be a hearing on the merits of the project. Therefore, members of the public should limit their comments focused on potential significant changes to the environment that may occur as a direct result of project development.

I. DOCUMENT AVAILABILITY

Copies of the NOP and project documents are available at the Morro Bay Public Library (625 Harbor Street, Morro Bay) and at City Hall (595 Harbor Street, Morro Bay).



Plan MORRO BAY

FIGURE 1

Planning Area

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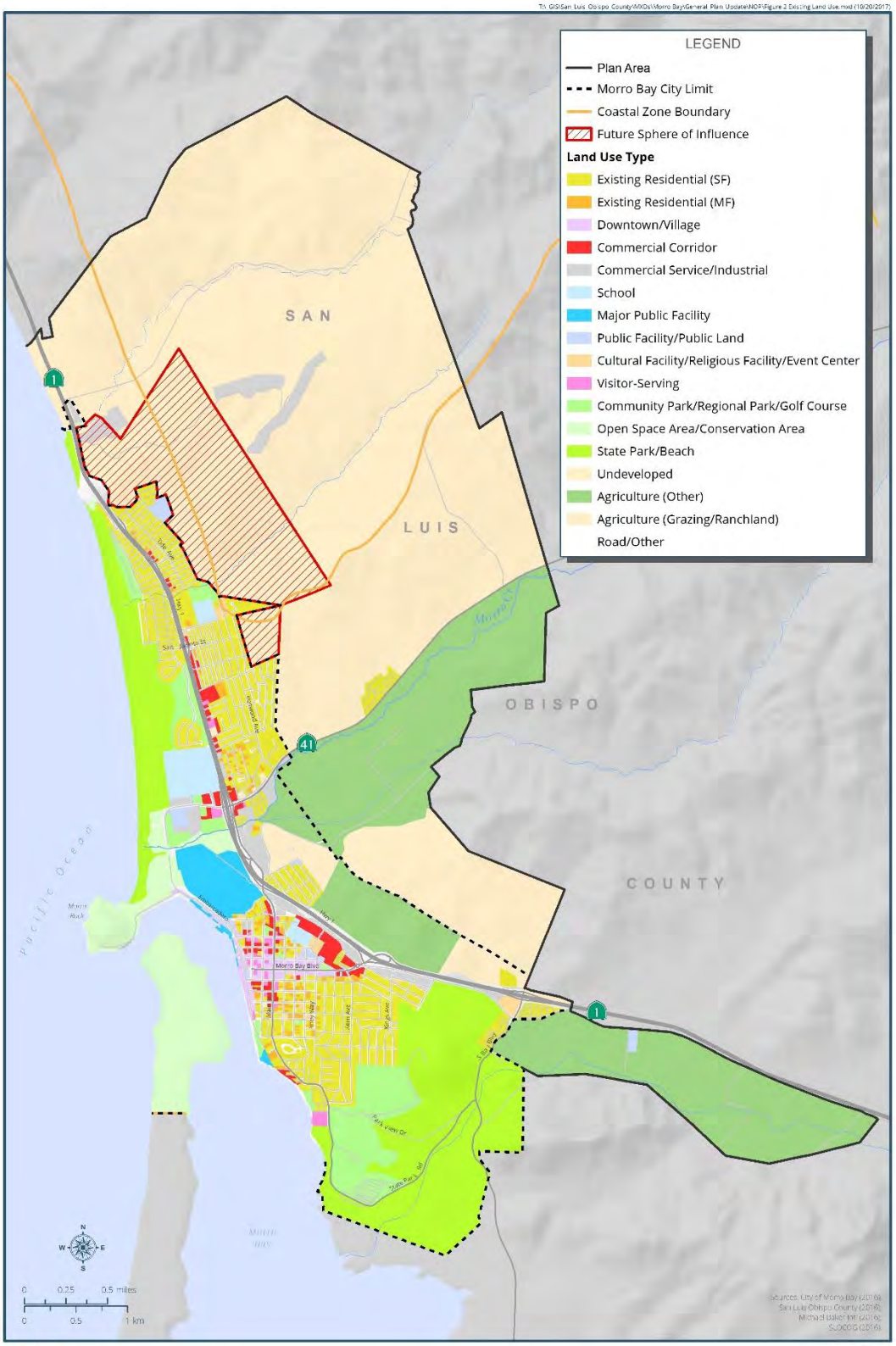

Plan MORRO BAY

FIGURE 2

Existing On-The-Ground Land Use

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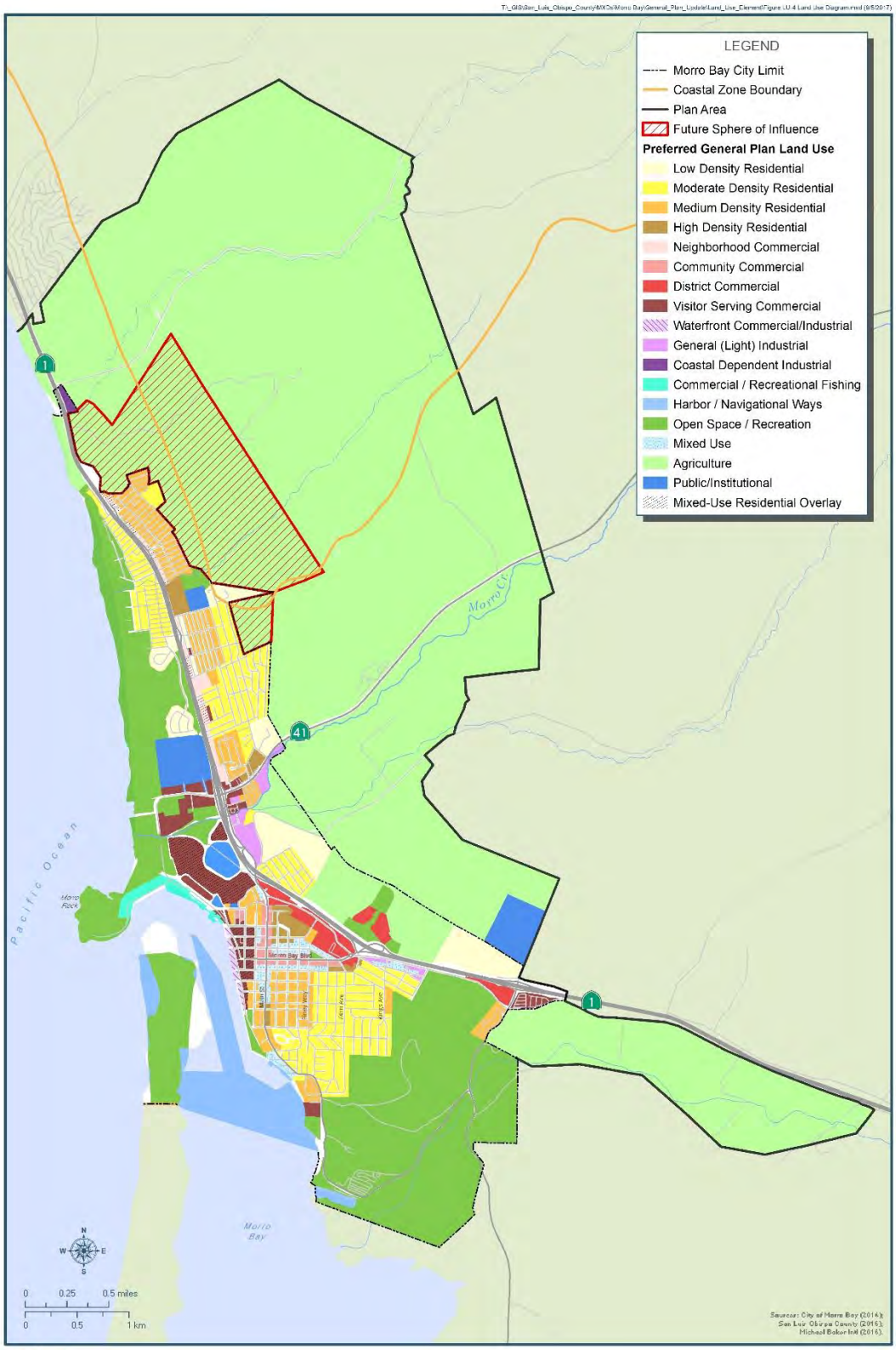

Plan MORRO BAY

FIGURE 3

Land Use Diagram

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Welcome! Please Sign In...

Printed Name	*Contact Information/Email*
Lynda MERRill	
KRISTEN HEADLAND	
GLENN SILLOWAY	
Rigmar	
Mattias	
Betty Winholtz	[redacted]
Andere Johnson	[redacted]
Carissa Reynolds	[redacted]

Comment Sheet

Please let us know your concerns so we can address them in the Environmental Impact Report.

Name: Lynda Merrill

Affiliation: Friends of wildlife
(resident, businessperson, agency representative, community group member, etc.)

Address: [redacted]

Phone: [redacted]

Email:

Comments:

- preserve open space
- create pedestrian friendly roadways
- Keep M.B. a small town
- protect the surrounding parks
- City + ~~Coty~~ State
- Resist major changes

Please submit by December 8, 2017 to:
Scot Graham, Community Development Director
City of Morro Bay
955 Shasta Ave
Morro Bay, California 93422
sgraham@morrobayca.gov

Morro Bay GP/LCP update EIR scoping meeting

Eight attendees signed in. We received one comment card and heard verbal comments from three attendees. Their comments are summarized below.

Rigmar:

- -Asks the definition of SOI.
- -Asks what the plan is for the hatched area on the proposed land use map. To buy it? To annex it? Or to include it in the SOI?

Bill M.:

- -Asks whether the intent is for agricultural land in the SOI to remain in ag.
- -Asks whether the identified ESHA in the Bay is proposed to be removed from ESHA, and if so, what is the purpose or reasoning of that removal. Note that the environmental effects of any ESHA removal would be considered in the EIR.
- -States that the maps showing Special Area B (20 lots) show the incorrect zoning, and that the updated Zoning Ordinance should correct this.
- -Asks if the property at the Tri-W property east of the Morro Bay Blvd off-ramp would be changed from commercial to residential.

Betty W.:

- -States a concern re: the timing of the next GPAC meeting before Christmas.
- -Asks whether biological resources and agricultural resources would be addressed in the EIR. Rincon confirmed that these issues will be addressed in the EIR.
- -Asks whether the EIR will evaluate the required No Project Alternative. Rincon confirmed that the Alternatives analysis will include a range of alternatives, including a No Project Alternative.
- -Asks where 900 new homes would go. Within City Limit? SOI?
- -Asks why annex ag land if it is not to be developed. States that ag land shouldn't be included in the planning area if the plan is not to develop it.
- -Asks if ag land removed from SOI, what would be the % of the town in each land use category. Amy described the % of land in each category without the expanded SOI.

RECEIVED

DEC 14 2017

City of Morro Bay
Community Development Dept.

THE TRUST FOR PUBLIC LAND

101 Montgomery St.
Suite 900
San Francisco, CA
94104
t: 415.800.5276
f: 415.495.4103

tpl.org

Cindy Jacinth
Senior Planner
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

December 8, 2017

Re: City of Morro Bay General Plan Notice of Preparation of an Environmental Impact Report

Dear Ms. Jacinth,

We appreciate the opportunity to comment upon the scope and content of the EIR which will soon be prepared for the City of Morro Bay's proposed General Plan and Local Coastal Plan Update. As a conservation organization with a long history in San Luis Obispo County more generally and in Morro Bay and Estero Bay more specifically, we recognize and value the unique recreational and environmental resources the City of Morro Bay has to offer. A carefully-crafted General Plan and Local Coastal Plan can protect and enhance those resources while creating opportunities for modest, planned growth in keeping with the community.

We wish to comment upon on the selection of project alternatives which will be considered as part of the EIR. Our organization, together in partnership with others, have been working toward a conservation outcome for the roughly 2,600 acres of land owned by Chevron, which separates the communities of Cayucos and Morro Bay and runs back along Toro Creek Road. Our vision and goals for the property includes pedestrian and bicycle trail connections between Morro Bay and Cayucos, recreational trail access into other parts of the property, protection of the viewshed along Highway 1, visitor serving amenities for the coast, and a significant greenspace separator between the communities. Some of the lots currently owned by Chevron along Panorama Drive, as well as an additional row of lots further inland and disconnected from Panorama Drive, are included in Morro Bay's proposed new sphere of influence.

We ask that as the EIR alternatives are developed, that our project be taken into consideration as a feasible project under development in the proposed area. Our team would be happy to speak at more length about our proposed project with City of Morro Bay Planning staff. Thank you for your consideration.

Sincerely,

Becky Bremser
Senior Project Manager

405 Acacia
Morro Bay, CA 93442
November 23, 2017

Ms. Cindy Jacinth
Senior Planner
City of Morro Bay
955 Shasta
Morro Bay, CA 93442

Dear Ms. Jacinth:

Included here are my views as an interested person in the scope and content of the environmental information to be included in the EIR for the project called the Morro Bay General Plan and Local Coastal Program Update. Some of these written comments I expressed at the scoping meeting on November 21, 2017, at the Vets Hall. Others were not stated at that time. I will indicate those I spoke to.

1. This project is mislabeled. It is not an update of the City's current GP/LCP; it is a complete rewrite with no resemblance in format or at times content to the City's current GP/LCP. This makes it extremely difficult for the public to know what is being lost and what is being added. What protections are we losing; what programs are new and which are old? I object to this way of doing the people's business. There must be some way to do a side by side comparison if not strike out version.

2. Referring to page 3, apparently, the City's Zoning Ordinance will no longer be the only implementation tool for interpreting and implementing the GP/LCP. There will be other documents called implementation documents. It is unclear how these various documents fit together with the GP/LCP and Zoning ordinance, how they don't contradict each other, and if they do, then what? Please clearly state/demonstrate how each document relates to the others, which has authority to override which, or demonstrate they are internally consistent.

3. In the list on page 12, Agriculture Resources is not named as one of the issue areas to be addressed in the EIR. However, it is being suggested that Morro Bay increase its planning area which subsequently increases its ag land from 6% to 69%. The response at the scoping meeting was this issue would be included. If City officials have no developmental designs on ag land, and they claim they don't, then the land outside the City limits or Sphere of Influence should not be included in this scope of this work.

4. In the list on page 12, Biological Resources is not named as one of the issue areas to be addressed in the EIR. This is peculiar since Morro Bay is a Tree City, Bird Sanctuary, and hosts parts of both the Morro Bay State Park and the Morro Bay National/State Estuary within its City limits, as well as numerous blue line creeks and beaches. The response at the scoping meeting was this issue would be included.

5. Section C on page 10 states the EIR will “consider broad policy alternatives and program-wide mitigation measures. Section E on page 12 discusses only project alternatives Neither mentions a No Project alternative. The response at the scoping meeting was the No Project alternative would be addressed.

6. The scoping document on page 11 states this EIR “will serve as the environmental review document for subsequent activities in the Program.” What does this mean, i.e. activities as large as the wastewater treatment plant, or as small as enforcing the noise ordinance? Please explain and be specific.

7. Section 1.3 on page 9 identifies a “Figure 3.” There is no Figure 3 in the document. Section 1.3 is followed by Table 2 which is suppose to explain Figure 3? Please include figure 3 for clarification.

8. Table 2 on page 9 is confusing and misleading. Column 2 does not add up. Column 1 gives 2017 as a base year to compare to 2040. Yet, 2017 reflects the larger figure of 8833 acres as though it was already part of our planning process, rather than the current 3700 acres in the City's planning area , the City limits. Why is Commercial listed under Dwelling units? Where are the 933 new dwelling units going to be built? This was asked at the scoping meeting. The response was that it would not be in the proposed Chevron annexation area, but then it was not stated where they would be built.

9. A comment about the population of Morro Bay. Table 2 lists a couple of numbers. While they are taken from projections by the US Census, they err. The US Census made the same predictive error between 2000 and 2010 when the population actually went down. Morro Bay has had a population hovering around 10,000 since 1980, give or take a hundred or two. This is in spite of 600 more housing units being built. The trend for vacation rentals and property as investment are possible causes. There is no City program, or direction in the economy, to reverse this trend. It is erroneous to believe that the City has a current population of 10,700. It's erroneous to predict the City will increase by 2,000 in 23 years when it's only changed by 200 in 37 years. It may be more accurate to state the City's approximate population based on some other source.

10. Section 1.4 on page 10, bullet 10 states “Prioritize and protect sensitive habitats. Restore key habitat areas where feasible.” At the scoping meeting a commenter asked about the proposal to remove the ESH designation in the Bay; the presenter said yes that is true. How does proposing removal of ESH from the Bay not conflict with this statement to prioritize, protect and restore?

11. Table 1 on page 8 lists “Topics of Importance in the Coastal Act.” Yet three Articles specifically listed in Chapter 3 of the Coastal Act are not listed on page 8: Marine Environment, Land Resources, and Development. These 3 topics may be subsumed under one of the topics under Section 1.2 on pages 3-4. However, only 10 topics are listed in table 1 while Section 1.2 states 15 elements will be included in Morro Bay's new document, but it lists more than 15 topics and doesn't specifically identify the 3 missing topics listed above. Please clarify by list, what are the elements or sections, and what sub-topics if any are included in each.

12. Since the sewer plant turned wastewater treatment plant turned water reclamation facility is being designed and built simultaneously as the GP/LCP is being written, what if any part of the new facility will be included in the new GP/LCP?

Respectfully submitted,

Appendix B

Community Baseline Assessment

CITY OF MORRO BAY

COMMUNITY BASELINE ASSESSMENT

Prepared for:

CITY OF MORRO BAY
595 HARBOR STREET
MORRO BAY, CA 93442

Prepared by:

Michael Baker INTERNATIONAL

1026 CHORRO STREET, SUITE 225
SAN LUIS OBISPO, CA 93401

MAY 2017

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1.0 Introduction

Plan MORRO BAY

1.0 INTRODUCTION

1.1 BACKGROUND

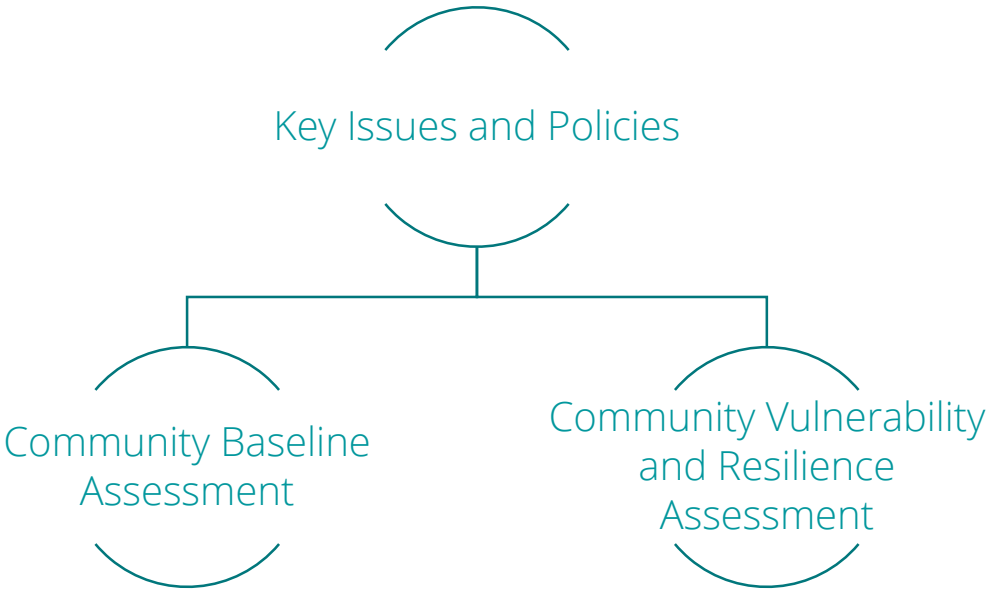
In early 2016, the City of Morro Bay embarked on a project to comprehensively update its General Plan and Local Coastal Program. The project, referred to as *Plan Morro Bay,* will set forth a comprehensive strategy for development and conservation in the city through the year 2040.

The goals, policies, and actions in *Plan Morro Bay* will reflect the community's desires for the future and will be based on public and stakeholder input, direction from elected leaders, and an understanding of historical, existing, and likely future conditions in the planning area. This Community Baseline Assessment (CBA), in conjunction with the Community Vulnerability and Resilience Assessment (CVRA), provides a comprehensive assessment and understanding of these conditions.

1.2 PURPOSE OF THE COMMUNITY BASELINE ASSESSMENT

Taken together with the CVRA, the CBA serves as the technical foundation of *Plan Morro Bay*. The CBA presents historical and existing conditions in the planning area that are relevant to *Plan Morro Bay*, and how such conditions have changed over time. The CVRA assesses how the issues and assets identified in the CBA could reasonably be expected to function given likely demographic, economic, and climate changes through 2040. As shown in Figure 1.1, the CBA and CVRA will eventually be summarized in the Key Issues and Policies report, which summarizes the issues and community features of high importance to the community. This report will be used to develop and prioritize the goals, policies, and actions in *Plan Morro Bay*.

Figure 1.1
Plan Morro Bay's Technical Foundation

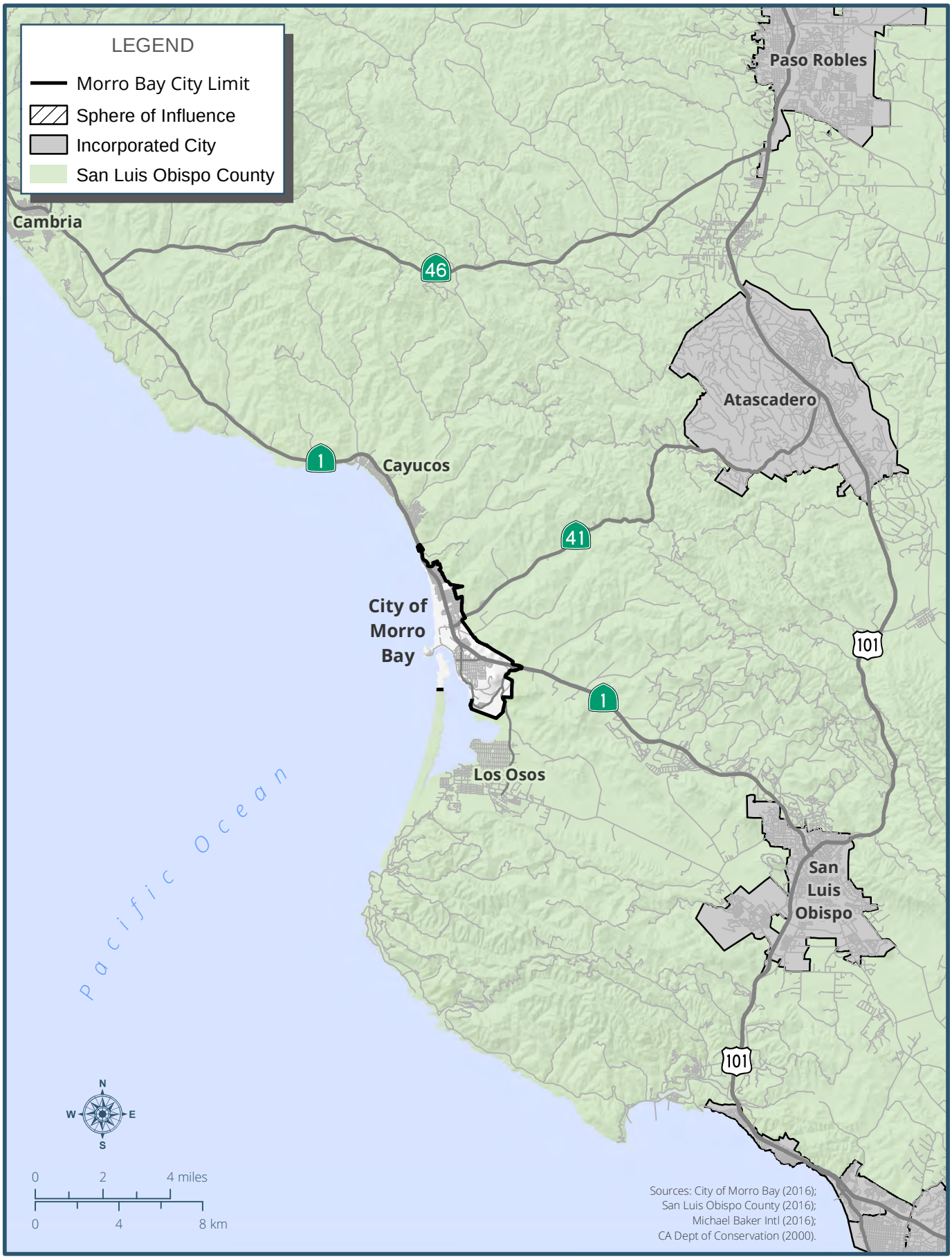


Specifically, the CBA presents a broad review of the available information about historical and existing conditions in and adjacent to the City of Morro Bay and summarizes the background information required to update the City's General Plan and Local Coastal Program. This information will also be used to support the Environmental Impact Report prepared for the General Plan and Local Coastal Program pursuant to the California Environmental Quality Act. The CBA does not, however, provide recommendations, goals, policies, or actions.

The data and information in the CBA reflect the best available understanding of existing and historical conditions as of June 2016.

1.3 PLANNING AREA

The City of Morro Bay is located on the central coast of California, approximately 13 miles northwest of the City of San Luis Obispo. The total area of the city is just over 10 square miles, with approximately 5.3 square miles of land, and 5 square miles of water. The community of Cayucos is located to the north, and the community of Los Osos is located to the south, with a buffer of undeveloped land directly bordering Morro Bay on the north, east, and south, and the Pacific Ocean on the west. Figure 1.2 illustrates the city's location.



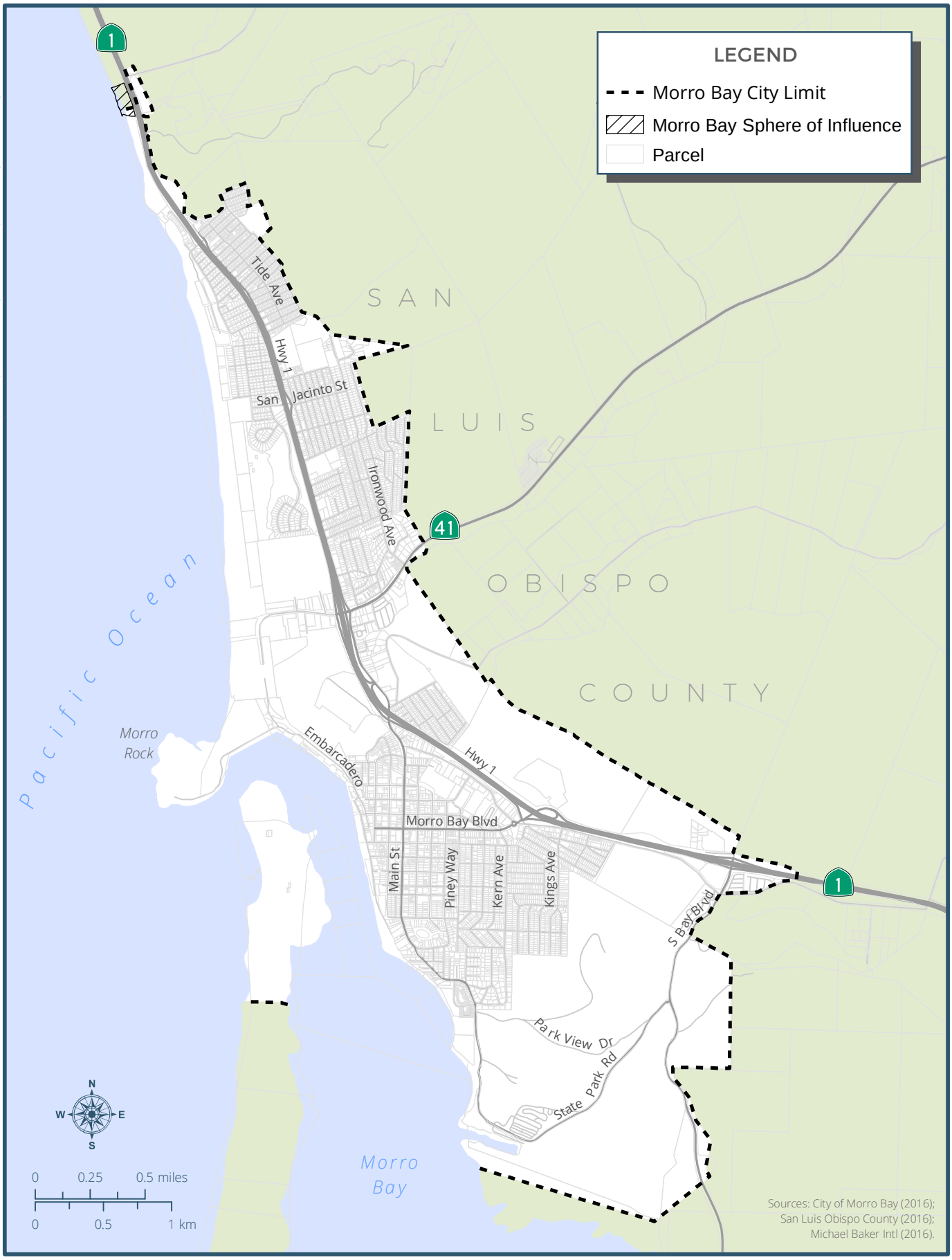
T:_GIS\San_Luis_Obispo_County\MXDs\Morro Bay\General_Plan_Update\CBA\Figure 1.2 Vicinity Map.mxd (7/25/2017)

Plan MORRO BAY

FIGURE 1.2

Vicinity Map

Page 2



T:_GIS\San_Luis_Obispo_County\MXDs\Morro Bay\General_Plan_Update\CBA\Figure 1.3 Planning Area.mxd (6/8/2016)

Plan MORRO BAY

FIGURE 1.3

Planning Area

Page 2

The City of Morro Bay planning area includes lands within the city limits and surrounding areas, including the sphere of influence, that have a bearing on future planning decisions in Morro Bay. Figure 1-3 identifies the planning area.

1.4 ORGANIZATION OF THE COMMUNITY BASELINE ASSESSMENT

The CBA is organized into 15 chapters as described below. Generally, each chapter is organized to (1) provide a brief introduction, (2) discuss existing conditions, (3) identify federal, state, and local regulations related to the chapter topic, and (4) summarize priority findings. The CBA is complemented by the CVRA, which is provided under separate cover. The chapters are organized alphabetically; chapter topics respond to the topics identified in the California Environmental Quality Act (CEQA), as well as state law related to the General Plan and the California Coastal Act.

- Chapter 1.0, Introduction, describes the role of the CBA relative to the pertinent elements, details the organization of the report, and describes the range of the planning area.
- Chapter 2.0, Air Quality and Greenhouse Gas Emissions, provides information about air quality in and adjacent to the planning area, as well as a greenhouse gas emissions inventory that occurred as the result of activity in the City of Morro Bay in 2015.
- Chapter 3.0, Coastal Resilience, identifies coastal hazards for present day, as well as how they are expected to be influenced by sea level rise through 2030, 2050, and 2100. The chapter also identifies assets in the planning area that could be affected by coastal hazards in 2016, 2030, 2050, and 2100.
- Chapter 4.0, Cultural, Paleontological, and Mineral Resources, describes historical inhabitants, as well as cultural and paleontological artifacts that may exist in the planning area.
- Chapter 5.0, Economic Conditions and Market Trends, identifies the existing retail inventory, demarcates and describes the city's trade area, and describes market segments in the planning area.

- Chapter 6.0, Infrastructure and Public Services, provides an overview of the services, service providers, and physical infrastructure that exist in the planning area.
- Chapter 7.0, Land Use, Community Form, and Coastal Uses, explains how land use is currently regulated, existing land uses, and priority coastal uses in the planning area.
- Chapter 8.0, Natural and Environmental Hazards, describes the natural and human hazards that could occur in the planning area and the assets they could affect.
- Chapter 9.0, Natural Resources, discusses plant, animal, and habitat conditions in the planning area.
- Chapter 10.0, Noise, identifies existing noise conditions in the planning area.
- Chapter 11.0, Parks, Recreation, and Open Space, provides an overview of recreational assets and programs, open space areas, and coastal access points.
- Chapter 12.0, Shoreline Management and Protection, discusses existing shoreline protection devices and issues related to erosion.
- Chapter 13.0, Transportation and Mobility, describes automobile and active transportation conditions in the planning area.
- Chapter 14.0, Water and Water Quality, describes watershed conditions, as well as water quality issues related to stormwater runoff.
- Chapter 15.0, References, contains a list of references and citations from each chapter.

2.0 Air Quality & Greenhouse Gas Emissions

Plan MORRO BAY

2.0 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

This chapter identifies existing air quality and greenhouse gas (GHG) emissions conditions in the planning area and provides a discussion of how those conditions would reasonably be expected to change given projected population, economic, and environmental conditions. This chapter also summarizes applicable regulations for air quality levels and GHG emissions reductions.

2.1 EXISTING CONDITIONS

AIR QUALITY

Climate and Atmospheric Conditions

The City of Morro Bay is located in San Luis Obispo County and is within the South Central Coast Air Basin (SCCAB), which includes all of San Luis Obispo, Santa Barbara, and Ventura Counties. The San Luis Obispo County Air Pollution Control District (SLOAPCD) is responsible for managing air quality within the San Luis Obispo County portion of the SCCAB. For geography, climate, and meteorology, the county can be divided into three general regions: Coastal Plateau, Upper Salinas River Valley, and East County Plain. Morro Bay is located in the Coastal Plateau which covers the areas of the county immediately inland from the Pacific Ocean. The Coastal Plateau includes about 75 percent of the county's population and development, and yields higher levels of air pollutants as a result. The City of Morro Bay ranges in elevation from sea level to about 600 feet, and is bounded to the northeast by the foothills of the Santa Lucia Mountains.

The climate of Morro Bay and all of the SCCAB is strongly influenced by proximity to the Pacific Ocean and the location of the semi-permanent high-pressure cell in the northeastern Pacific. The Mediterranean climate of the region produces moderate average temperatures with rainfall concentrated in the winter months.

The SCCAB is subject to seasonal Santa Ana winds. Santa Ana winds are strong northerly to northeasterly winds that originate from high-pressure areas centered over the desert of the Great Basin. These warm, dry winds usually blow offshore at 15 to 20 miles per hour (mph), but can reach speeds in excess of 60 mph. Santa Ana winds are particularly strong in the mountain passes and at the mouths of canyons. Airflow around the county plays an important role in the movement and dispersion of pollutants. The speed and direction of local onshore winds, which occur frequently throughout the year, are controlled by the location and strength of the Pacific high pressure system and other global weather patterns, topographical factors, and circulation patterns that result from temperature differences between the land and the sea.

Two types of temperature inversions (warmer air on top of cooler air) are created in the SCCAB: subsidence and radiation. The subsidence inversion is a regional effect created by the Pacific high-pressure area in which air is heated as it is compressed when it flows from the high-pressure area to the low-pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but is most evident during the summer months. Radiational, or surface, inversions are formed by the more rapid cooling of air near the ground at night, especially during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants in the regional airshed. The more stable the air (low wind speeds, uniform temperatures), the lower the amount of pollutant dispersion.

Characteristics of Air Pollution

In general, air pollution is the introduction of harmful particles or molecules into the atmosphere. Air pollutants can cause harm to humans, animals, and plants that breathe in or absorb these materials. The amount of harm depends on the type and concentration of the pollutant. The following describes common air pollutants found in the Morro Bay planning area.

Ozone

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NOX) and reactive organic gases (ROG). NOX are formed during the

combustion of fuels, and ROG are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and those who exercise strenuously outdoors.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas. The major source of CO in California is automobile exhaust from internal combustion engines. Elevated concentrations are, therefore, usually only found near areas of high traffic volumes. The health effects associated with CO are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing impaired mental abilities and heart difficulties in people with chronic diseases.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a by-product of fossil fuel combustion, with the primary sources being motor vehicles and industrial boilers and furnaces. NO_2 forms when nitric oxide (NO), produced by the burning of fossil fuels, reacts with oxygen in the air. NO_2 is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of particulate matter and acid rain.

Particulate Matter

PM_{10} is particulate matter measuring no more than 10 microns in diameter, and $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates, and sulfates. PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those

between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and remain there. It poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. Particulate matter can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of absorbed toxic substances (CARB 2016a).

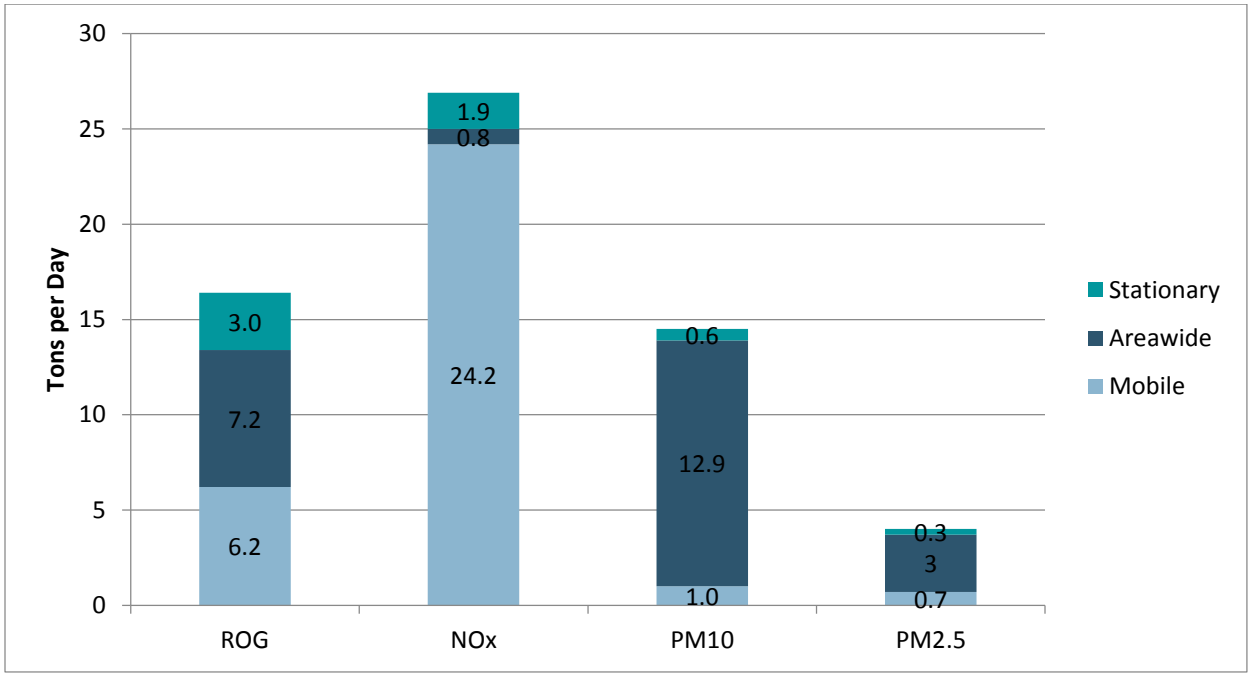
Existing Pollution Sources

Criteria Pollutants

Major sources of air polluting emissions include stationary, mobile, and area-wide sources. Stationary sources include fixed (nonmobile) sources such as dry cleaning equipment, petroleum processing and production facilities, commercial and industrial boilers, and surface coating facilities and operations. Existing operational, stationary sources in Morro Bay include a dry cleaning business, gasoline service stations, and auto body shops. Industrial developments, such as the long-time operating Dynegy power plant and Chevron oil tanker loading terminal, have been retired in recent years and are no longer sources of air pollutant emissions. Mobile sources include vehicles of transport including ships, airplanes, trains, and automobiles. Area-wide sources are point sources spread throughout a region, but considered to be significant when considered collectively. Area-wide sources include residential water heating, consumer products, unpaved roads, and crop tilling.

The California Air Resources Board (CARB) developed an emissions inventory for San Luis Obispo County for 2015 (CARB 2013). The emissions inventory is summarized in Figure 2.1.

Figure 2.1
San Luis Obispo County 2015 Emissions Inventory – Criteria Air Pollutants
(Tons Per Day)



Source: CARB 2013

According to the inventory of criteria pollutants presented in Figure 2.1, mobile sources such as cars and trucks are the largest contributor to the estimated annual average for air pollutant levels of NOX, accounting for approximately 90 percent of total NOX emissions in San Luis Obispo County. Large area-wide sources, such as farming operations, are present in the county and account for approximately 44 percent of ROG, 89 percent of PM_{10}, and 75 percent of $PM_{2.5}$.

Toxic Air Contaminants

Toxic air contaminants (TAC), or hazardous air pollutants (HAP), are regulated in California through the Tanner Air Toxics Act of 1983 (Assembly Bill [AB] 1807) and the Air Toxic Hot Spot Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted the US Environmental Protection Agency's (EPA) list of HAPs as TACs.

The goals of AB 2588 are to collect air toxics emissions data, identify facilities having localized effects, and ascertain the health risks. TACs may include diesel, formaldehyde, benzene, acetaldehyde, and polycyclic aromatic hydrocarbons (PAH). The following eight TAC emitter facilities were identified by CARB in the City of Morro Bay (2016):

- Benedict-Rettey Crematory at 1401 Quintana Road
- Black Mountain Pet Crematorium at 1401 Quintana Road
- Dynegy Morro Bay LLC at 1290 Embarcadero
- Guerra Quarry at 1835 Atascadero Road
- Hanson Aggregates at 180 Atascadero Road
- Mission Linen and Uniform Service at 399 Errol Street
- Morro Bay/Cayucos Wastewater Treatment Facility at 160 Atascadero Road
- US Army Corps of Engineers at Morro Bay Harbor

Other sources of TACs in California include vehicles from freeways and urban roadways with more than 100,000 vehicles per day and from rural roadways with more than 50,000 vehicles per day. However, no such facilities with these traffic volumes are located in Morro Bay.

There is a health risk to sensitive populations from exposure to high levels of TACs. CARB recommends local jurisdictions adopt land use policies to separate sensitive land uses a minimum of 500 to 1,000 feet from air toxic sources. CARB's recommendations for siting new sensitive land uses[1] for both mobile and stationary sources of air toxics are presented in Table 2.1 and published in the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). The recommended setbacks are advisory and should not be interpreted as defined "buffer zones." CARB recognizes the opportunity for more detailed site-specific analyses, and acknowledges that land use regulatory agencies must balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

[1] Sensitive land uses are facilities with large numbers of children, pregnant women, elderly persons, and individuals with existing health problems. These individuals are particularly vulnerable to air pollution.

Table 2.1
Recommendations for Siting New Sensitive Land Uses in California

Source Category	Advisory Recommended Setback Distance
Freeways and High-Traffic Roads	500 feet from a freeway or urban road with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	1,000 feet. Avoid location of new sensitive land uses near entry and exit points.
Rail Yards	1,000 feet. Within 1 mile, consider siting limitation and mitigation approaches.
Ports	Immediately downwind. Consult local air district.
Refineries	1,000 feet.
Chrome Platers	1,000 feet.
Dry Cleaners Using Perchloroethylene	300 to 500 feet.
Gasoline Dispensing Facilities	300 feet for facilities with throughput of at least 3.6 million gallons annually, or 500 feet for facilities with a smaller annual throughput.

Source: CARB 2005

The City of Morro Bay contains one dry cleaning facility and multiple gasoline service stations. No other common sources of TACs listed in Table 2.1 are present in Morro Bay.

Odors

The SLOAPCD has identified common types of facilities known to produce odors in the region including, but not limited to, wastewater treatment plants, landfills, composting facilities, petroleum refineries, and chemical manufacturing. Significant odors are generally those that impact a considerable number of people, particularly in residential areas and at sensitive land uses. Since the intensity of an odor's source operations and its proximity to sensitive receptors influences the potential significance of odor emissions, the SLOAPCD has established minimum screening distances for potential odor sources. These are provided in Table 2.2.

Table 2.2
Screening Distances for Potential Odor Sources

Type of Operation	Screening Distance
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Coffee Roaster	1 mile
Composting Facility	1 mile
Fiberglass Manufacturing	1 mile
Food Processing Facility	1 mile
Oil Field	1 mile
Painting/Coating Operations (e.g., auto body shops)	1 mile
Petroleum Refinery	2 miles
Rendering Plant	1 mile
Sanitary Landfill	1 mile
Transfer Station	1 mile
Wastewater Treatment Plant	1 mile

Source: SLOAPCD 2012a

Existing odor sources in the City of Morro Bay include a coffee micro-roaster, multiple auto body shops, and the Morro Bay/Cayucos Wastewater Treatment Plant.

Existing Air Quality

Ambient Monitoring Data

CARB compiles air quality data from a regional air quality monitoring network that provides information on ambient air pollutant concentrations of criteria air pollutants (CARB 2015). Monitored ambient air pollutant concentrations reflect the number and strength of emission sources and the influence of topographical and meteorological factors. Table 2.3 presents a three-year summary of air pollutant data collected at the Morro Bay Station, centrally located in the city at 899 Morro Bay Boulevard. The Morro Bay Station does not record data for particulate matter. PM_{10} and $PM_{2.5}$ data was collected at the San Luis Obispo Station located approximately 13 miles southeast of Morro Bay, which is the next nearest station. As shown in Table 2.3, the state PM_{10} standard was exceeded one time in 2012 and three times in 2013. No other air pollutant exceedances were recorded from 2012 to 2014.

Table 2.3
Summary of Annual Air Quality Data at the Morro Bay and San Luis Obispo Air monitoring stations

Pollutant	2012	2013	2014
Ozone, ppm – Worst Hour	0.059	0.067	0.070
Number of days of state exceedances (>0.09 ppm)	0	0	0
Ozone, ppm – Worst 8 Hours	0.052	0.056	0.066
Number of days of state exceedances (>0.070 ppm)	0	0	0
Number of days of federal exceedances (>0.075 ppm)	0	0	0
Particulate Matter[1] <10 microns, μg/m^3 Worst 24 Hours	51.3	75.6	43.2
Number of samples of state exceedances (>50 μg/m^3)	1	3	0
Number of samples of federal exceedances (>150 μg/m^3)	N/A[2]	N/A[2]	0
Particulate Matter[1] <2.5 microns, μg/m^3 Worst 24 Hours	15.4	19.5	15.6
Number of samples of federal exceedances (>35 μg/m^3)	0	0	0

Source: CARB 2015

[1] Data from San Luis Obispo Station

[2] Data was insufficient to determine the value

Clean Air Act (CAA) Attainment Status

The SLOAPCD monitors air pollutant levels to ensure that air quality standards are met, and if they are not met, develops strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the air basin is classified as being in "attainment" or in "nonattainment."

According to the SLOAPCD's 2014 Annual Air Quality Report, the eastern part of the county is in nonattainment for the federal 8-hour ozone standard while the western portion of the county, which includes the City of Morro Bay, retained its federal ozone attainment status. The county is currently designated attainment for all of the other national air quality standards. In 2014, Morro Bay experienced somewhat higher ozone levels than in the previous year. The available evidence suggests that exceedances of the national standards in the San Luis Obispo County portion of the SCCAB are primarily caused by the transport of ozone and ozone precursors from outside of the county, rather than by emissions originating within the county.

The San Luis Obispo County portion of the SCCAB is also designated as a nonattainment area for the state one-hour and 8-hour ozone standards, as well as the state 24-hour and annual PM_{10} standards. The San Luis Obispo County portion of the SCAAB is currently designated as attaining the state annual $PM_{2.5}$ standard.

Air Quality Trends

The 2001 Clean Air Plan (2001 CAP) is the third update to the 1991 CAP adopted by the SLOAPCD Board in January 1992. The City of Morro Bay did not participate directly in developing the 2001 CAP. However, local land use decisions in Morro Bay affect air quality and air quality trends in the air basin. The 2001 CAP contains several transportation control measures and land use management strategies designed to reduce the air quality impacts of urban development, and the success of many of these measures is dependent on their adoption and implementation by Morro Bay and the other municipal agencies in San Luis Obispo County.

Ongoing implementation of the control measures adopted through the 2001 CAP and previous plans is expected to bring the San Luis Obispo County portion of the SCCAB into attainment of the state ozone standard within a three-year time frame.

San Luis Obispo County is classified as a moderate nonattainment area for the state one-hour and eight-hour ozone standards. The CAA requires that moderate nonattainment areas implement the following control requirements for stationary sources:

- Application of best available control technology, and a district permitting program designed to allow no net increase in emissions of nonattainment pollutants or their precursors from new or modified stationary sources which emit or have the potential to emit 25 tons per year or more of nonattainment pollutants or their precursors. (Health & Safety Code 40918(a) (1)).
- Application of best available retrofit control technology to existing sources which emit 5 tons or more per day, or 250 tons or more per year; application of reasonably available control technology for all other existing emission sources (Health & Safety Code 40918(a)(2)).
- Development of control programs for area sources, such as coatings and solvents (Health & Safety Code 40918(a) (4)).
- Sufficient control strategies to achieve at least a 5 percent per year reduction in both ROG and NOx emissions countywide, averaged every consecutive three-year period (Health & Safety Code 40914). For moderate nonattainment areas where ozone modeling is not performed, CARB has determined that at least a 20 percent total reduction in both pollutants compared to 1991 emissions levels is required.

In addition, in San Luis Obispo County, motor vehicles (mobile sources) account for over 50 percent of the emissions of ROG and NOX. State controls on vehicles and the use of cleaner, alternative fuels will continue to provide significant reductions in vehicle emissions over time. Transportation control measures (TCMs) are controls implemented at the local or regional level to reduce emissions resulting from the use of motor vehicles. TCMs are primarily intended to reduce vehicle use by promoting and facilitating the use of alternative transportation options. In contrast, the vehicle emissions control program implemented by the state reduces emissions through manufacturer's improvements for new motor vehicles. The TCMs described in the 2001 CAP focus on reducing the number of short trips and limiting the growth of vehicle miles traveled to the rate of population increase. Additional long-term reductions are available through implementation of recommended land use planning strategies designed to help reduce dependence on automobiles. Planning documents published by CARB, the Local Government Commission, and others estimate motor vehicle usage can be reduced by 15 percent to 30 percent with implementation of appropriate land use and circulation management programs.

According to the SLOAPCD's Air Quality Trends 1991-2011 (2013), significant improvements in air quality have been observed in most areas of the county over the past 20 years, despite significant increases in population and vehicle miles traveled during that period. Ozone levels have fallen throughout San Luis Obispo County, particularly in the areas with the highest historical concentrations. This has resulted from emissions reductions of ozone precursors, achieved through implementation of control measures adopted under the 2001 CAP. Coastal areas, including the City of Morro Bay, have generally experienced low ozone levels, with state or federal standards only rarely exceeded. While there is no evidence of substantial improvement in these areas during this period, there is no evidence of deterioration, either.

GREENHOUSE GAS EMISSIONS

This section provides an overview of the science, regulations, and existing conditions of GHG emissions in Morro Bay. It explains the contribution of emissions to climate change, potential impacts as a result of these changes, and provides an inventory of Morro Bay community GHG emissions for 2005 and 2015.

Scientific Basis

In the past several decades, a well-scrutinized body of scientific evidence and understanding has led to a general consensus in the scientific community that human activity is changing the earth's climate by increasing the concentration of GHGs in the atmosphere. The term climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind lasting for an extended period (i.e., a decade or longer).

Our planet's climate system is complex, and some uncertainty is common when trying to understand the nature of the relationship between human activity and climate change. Yet the growing body of scientific evidence surrounding climate change has withstood years of questioning and evaluation. This has led to a recognition and determination that climate change creates a serious risk to human civilization and natural systems (EPA 2016b). The impacts of climate change can disrupt and endanger many aspects of the built and natural world, including coastal infrastructure, human health, energy systems, and natural habitats.

Greenhouse Gases

GHGs are gases that trap heat in the atmosphere, and are of particular interest when it comes to studying climate change. There are seven primary GHGs subject to regulation under California state law, listed below (CARB 2014).

- Carbon Dioxide (CO_2). Carbon dioxide is produced through the burning of fossil fuels, solid waste, and wood products and is generated through certain chemical reactions, such as the manufacture of cement.

- Methane (CH_4). Methane is produced during the production and transportation of fossil fuels, such as coal, natural gas, and oil. It also results from organic decay in landfills, livestock, and other agricultural processes.
- Nitrous Oxide (N_2O). Nitrous oxide is generated during agricultural and industrial activities, combustion of fossil fuels, and solid waste.
- Hydrofluorocarbons (HFCs). HFCs are used as refrigerants in both stationary refrigeration and mobile air conditioning.
- Perfluorocarbons (PFCs). Perfluorocarbons are created as a byproduct of aluminum production and semiconductor manufacturing.
- Sulfur Hexafluoride (SF_6). Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity.
- Nitrogen Trifluoride (NF_3). Although not originally listed in the state's GHG reduction strategy, NF_3 was later added to the list via legislation. Like SF_6, it is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an etchant in microelectronics.

Sources of Greenhouse Gas Emissions

Emissions from human activities have driven the progression of climate change in the last century, with the combustion of fossil fuels being the primary source of human-caused GHGs. ICLEI – Local Governments for Sustainability developed the *U.S. Community Protocol for Accounting and Reporting of GHG Emissions* to establish a national standard for accounting for GHG emissions. By better understanding the sources of emissions, governments and communities can begin to work to reduce them. This protocol focuses on sources of the primary GHG emissions listed above. The primary sources of human-caused GHG emissions are detailed below (ICLEI 2012).

- Built Environment. Homes, businesses, and offices all require energy to operate, especially for heating, cooling, and lighting. When energy generated to power the built environment comes from fossil fuel sources, the GHGs generated can have a significant impact on climate change.

- Transportation and Other Mobile Sources. One of the largest sectors of human-caused emissions nationwide, the fossil fuel combustion required to transport people and goods on a daily basis can have a significant contribution to GHG emissions. On-road passenger vehicles, freight and service vehicles, and transit vehicles like buses and trains all contribute to a community's transportation and mobile source emissions.

- Solid Waste. The operation of landfills, as well as the continued emissions after waste is buried, can create a decades-long source of GHG emissions.

- Wastewater and Water. The generation, transmission, and treatment of water and wastewater can generate emissions. Process emissions from wastewater treatment plants and the operation of septic systems can directly emit GHGs, while the energy used to deliver and treat potable water can be generated by natural gas, oil, or coal.

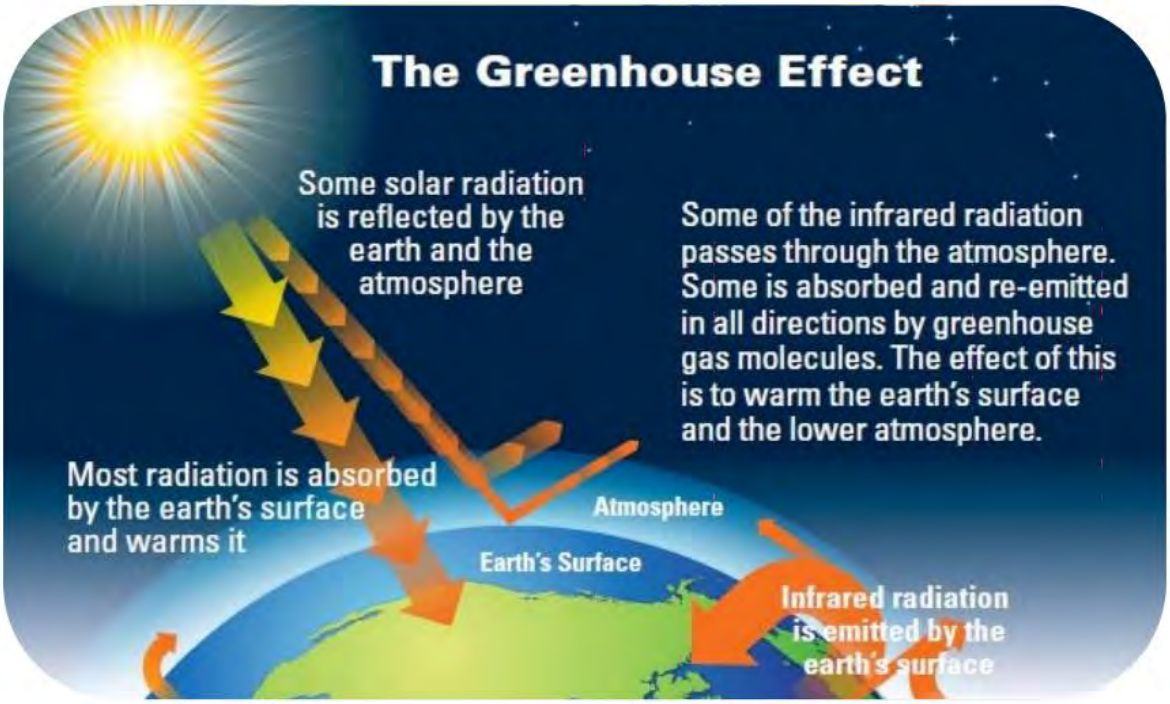
- Agricultural Livestock. These include emissions generated by domesticated animal production, such as the decomposition and treatment of manure.

The Greenhouse Effect

The GHGs described above have always been present in the earth's atmosphere, and are an essential element of supporting life on earth. When solar radiation travels from the sun to the earth, GHGs allow a portion of this heat to remain in the atmosphere by absorbing the solar radiation that has reflected off the surface of the earth. This is called the greenhouse effect, part of an important balancing act of energy entering and leaving the earth's system (Figure 2.2).

Human actions can alter this balance, through changes to land use, increased combustion of fossil fuels, and industrial processes. Anthropogenic activities that increase the amount of GHGs in the earth's atmosphere beyond historic variation can intensify the greenhouse effect, causing serious, lasting changes to our planet's climate. Since pre-industrial times, concentrations of GHGs in the atmosphere have increased substantially, causing earth's temperature to rise. It has been concluded that there is a more than a 90 percent probability that human activities in the last 50 years have caused much of the observed increase in the earth's temperature (NASA 2016).

Figure 2.2
The Greenhouse Effect



Source: NASA 2009

Impacts of Climate Change

As identified in the Morro Bay CAP, increases in the globally averaged atmospheric concentration of GHGs will cause the lower atmosphere to warm, in turn inducing many changes to the global climate system. These changes will have unique and potentially severe impacts in the western United States, California, and in Morro Bay (Morro Bay 2014). Potential impacts in Morro Bay as a result of climate change may include:

- Increased temperatures
- Sea level rise
- Storm surges
- Erosion
- Changed precipitation

These impacts would have serious implications for future development and land use changes, especially along the city's coastline. Considering the worsening impacts of existing hazards in *Plan Morro Bay* will help the City prepare for potentially catastrophic changes to historical climate patterns.

City of Morro Bay Greenhouse Gas Emissions Inventory

An inventory of GHG emissions allows a jurisdiction to estimate the quantity of GHG emissions associated with community activities during a chosen analysis year, providing a snapshot of that city's contribution to climate change. The first year for which a GHG inventory is conducted is typically called the baseline year, and is used to set emissions reduction targets from that year. In California, many local governments have adopted a baseline year between 2005 and 2008.

In 2014, Morro Bay adopted a CAP, which included an inventory analyzing community-wide emissions for a baseline year of 2005. This inventory established a starting point for emissions reductions goals as well as a clearer understanding of community and government activities. Because this was the city's first GHG inventory, the baseline (2005) was the only year analyzed for the CAP. The results of the inventory are summarized below, as is an overview of updates and recommendations for completing a consistent 2015 inventory. The information captured in the 2005 inventory provides a clear overview of historical community activities and future targets, but decisions relating to future land use and development policies should be based on the pending completion of the City's 2015 GHG analysis.

2005 Community-Wide GHG Emissions Sources in Morro Bay

In support of the CAP, the City conducted an inventory of community-wide GHG emissions for calendar year 2005. This inventory analyzed six emissions-generating sectors in the community. Activity data, which measures a key factor that can be used to calculate emissions, is collected for each sector, as summarized in Table 2.4. The 2005 emissions calculated for the City of Morro Bay are shown in Table 2.5. When residential and commercial electricity and natural gas use are combined, energy was the largest source of emissions in Morro Bay, generating 49.5 percent of all GHGs in the community. Transportation was the second largest source, with 40.4 percent of all emissions. All other sectors measured were much smaller sources. Off-road vehicles and equipment, which measures construction and landscaping emissions, was 4.9 percent of all community emissions, while the disposal of solid waste in the community was 4.8 percent. Wastewater, which measures the processing emissions from the City's wastewater treatment plant, was the smallest source of emissions in Morro Bay, with only 0.4 percent of total GHGs.

Table 2.4
Community-Wide Activity Description by Sector, 2005

Sector	Activity Description
Transportation	Vehicle miles traveled, excluding pass-through trips
Residential Energy Use	Residential electricity consumption
	Residential natural gas consumption
Commercial & Industrial Energy Use	Commercial & industrial electricity consumption
	Commercial & industrial natural gas consumption
Off-road Vehicles and Equipment	Emissions from off-road equipment
Solid Waste	Solid waste tonnage sent to landfill from activities in Morro Bay
Wastewater	Methane and nitrous oxide released in the wastewater treatment process

Table 2.5
Community-Wide GHG Emissions by Sector, 2005

Sector	2005	Total GHG Emissions
Transportation	22,506	40.4%
Residential Energy Use	16,094	28.9%
Commercial & Industrial Energy Use	11,442	20.6%
Off-road Vehicles and Equipment	2,740	4.9%
Solid Waste	2,695	4.8%
Wastewater	200	0.4%
Total	55,677	100%

City Government Operations GHG Emissions Sources in Morro Bay

The City's CAP includes a separate inventory examining emissions from municipal actions in 2005. This city government operations inventory allows Morro Bay to better understand its own actions and pursue programs that will allow the City to reduce emissions. This information helps guide effective internal policymaking, but does not have a target that is separate from the overall CAP GHG reduction goal. For the purposes of *Plan Morro Bay*, only the community-wide inventory will be reviewed, updated, and incorporated into the planning process. Table 2.6 shows the distribution of 2005 emissions across different sectors in Morro Bay's government operations.

Table 2.6
City Government Operations GHG Emissions by Sector, 2005 ($MTCO_2e$)

Sector	2005	Percentage of Total GHG Emissions
Wastewater Facilities	451	23.1%
Solid Waste	106	5.4%
Buildings & Facilities	322	16.5%
Vehicle Fleet	355	18.2%
Transit Fleet	113	5.8%
Employee Commute	414	21.2%
Streetlights & Traffic Signals	87	4.5%
Water Delivery	107	5.5%
Total	1,955	100%

Updates to 2005 Community-Wide GHG Emissions Inventory

Climate science is a rapidly developing field, and as a result, best practices in analyzing emissions have improved since 2012 when the baseline inventory update was completed for the year 2005. The 2005 baseline community inventory has been reviewed and updated as follows to ensure consistency with current best practices and allow for comparison to emissions calculations for 2015:

- Waste – The existing inventory uses an older method to determine emissions from solid waste. CARB has developed detailed waste factors that provide the most accurate understanding of waste emissions. The baseline inventory was updated using this source to allow for the most precise understanding of solid waste-related emissions. Additionally, a portion of the 2005 waste has been split out to show details about the tons of alternative daily cover (ADC) disposed. This allows more granularity in analyzing waste emissions.

- Off-Road Vehicles – The original 2005 inventory included industrial and light commercial equipment, as well as agricultural equipment, in the analysis of off-road vehicles. Standard protocol suggests that cities are accountable for construction equipment and lawn and garden equipment in the off-road sector, as these are the emissions most readily impacted by the City's municipal code. As a result, this sector now includes emissions from construction and lawn and garden off-road vehicles only. Additionally, the indicator to determine

construction emissions has been changed from construction and mining jobs to building permits, which provides more precise year-by-year understanding of construction activity.

- Water and Wastewater – Only direct emissions from wastewater treatment processes were included in the 2005 inventory. Because of the energy intensity of transporting and treating water, indirect emissions from the electricity used to power these processes were included in this baseline update. The process with which the 2005 wastewater direct emissions were calculated has also been updated to include more granular assessment of methane and nitrogen dioxide.

- Households – The California Department of Finance (DOF) maintains decades of records on population and households in cities and counties across the state. While this data source has been used across all inventories for Morro Bay, it was found that the original 2005 baseline used a DOF figure for households that has since been updated by the department. To ensure a consistent, reliable baseline for this and other future updates, the number was updated to use the best available data. This change will be reflected in the lawn and garden equipment emissions analysis, which uses percentage of countywide households in the jurisdiction to allocate GHGs. Additionally, this will ensure forecasting efforts will use the best available information from 2005 to estimate emissions for future years.

- Global Warming Potentials (GWP) – The Intergovernmental Panel on Climate Change (IPCC) compiles the findings from the best climate scientists to refine understanding of how different pollutants impact climate change. The 2005 inventory uses 2nd Assessment Report GWPs, which were originally published in 1995. The inventory has been updated to use 5th Assessment Report GWPs, released in 2014. This will ensure that the emissions found in the 2015 inventory will be directly comparable to the baseline year. This update is described in further detail below.

Carbon dioxide is the most prolific GHG, and is used as a reference point for measuring the GWP of other GHGs. To measure the collective impacts of GHGs, these GWPs are used to convert emissions into metric tons of carbon dioxide equivalent (CO_2e) units. As shown in Table 2.7, other gases such as methane and nitrous oxide are more potent than carbon dioxide, meaning they are more effective at trapping heat in the atmosphere and thus have a higher GWP.

Table 2.7
Greenhouse Gases Global Warming Potentials

Gas	Source Activity	IPCC 2nd Assessment Report GWPs	IPCC 5th Assessment Report GWPs
Carbon Dioxide (CO_2)	Combustion	1	1
Methane (CH_4)	Combustion, anaerobic decomposition of organic waste, livestock, agriculture	21	28
Nitrous Oxide (N_2O)	Combustion, wastewater treatment	310	265

Note: GWPs are determined using a 100-year GWP time horizon.

The updates to the 2005 inventory led to a 1,000 $MTCO_2e$ increase in calculated total emissions released in the baseline year. This increase represents the addition of certain sectors, such as indirect emissions from electricity used in water and wastewater processes, as well as changes in emissions from enhanced understanding of GWPs. These changes in activity data and emissions from the 2005 baseline inventory to the updated 2005 inventory are detailed in Table 2.8 and Table 2.9. Aside from new sectors added, the largest increase in emissions between the two baseline years was in the solid waste sector, which due to the increased global warming potential factor used for methane and a more detailed method for calculating emissions over the time of decomposition, increased 57 percent. A summary of sector level changes can be found in Figure 2.3.

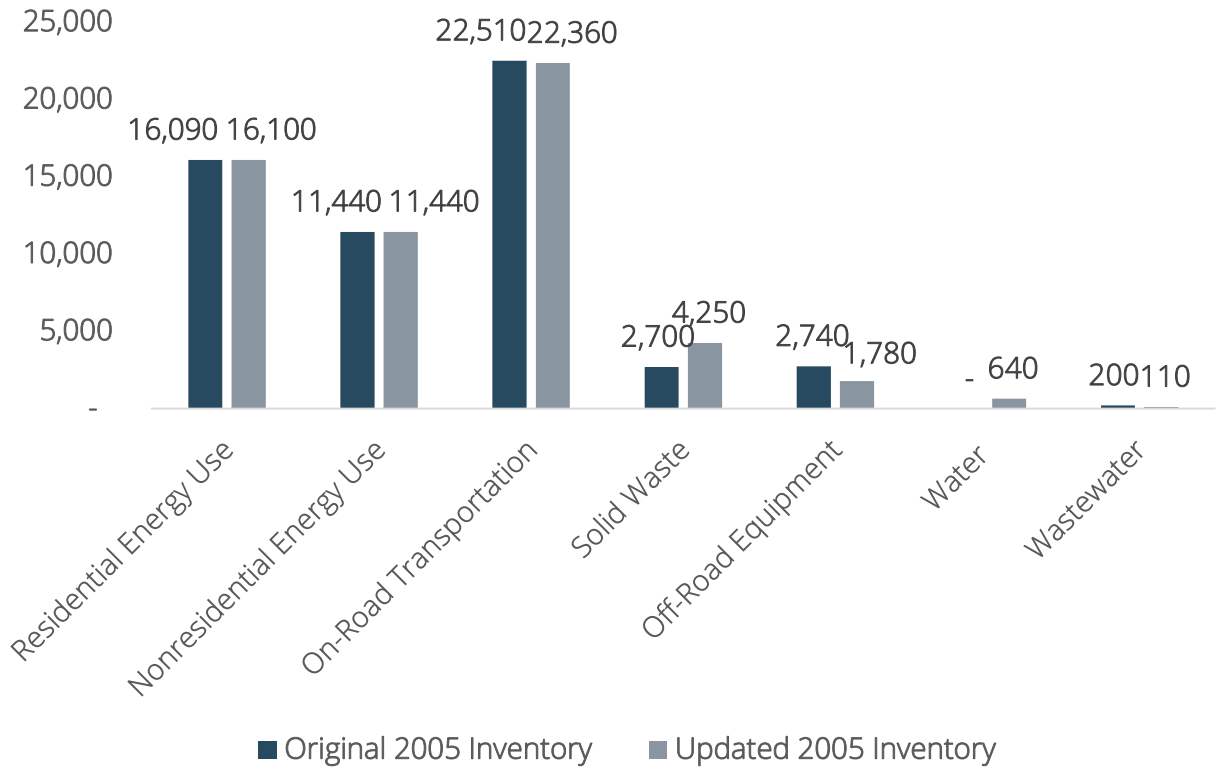
Table 2.8
2005 Baseline Inventory Updates – Changes to Activity Data

Sector	Subsector	Original 2005 Inventory	Updated 2005 Inventory	Unit of Measure	Percent Change
Residential Energy Use	Residential electricity use	24,057,120	24,057,120	kWh	0%
	Residential natural gas	2,013,280	2,013,280	Therms	0%
Nonresidential Energy Use	Nonresidential electricity use	29,121,090	29,121,090	kWh	0%
	Nonresidential natural gas	925,510	925,510	Therms	0%
On-Road Transportation	On-road passenger vehicles	48,897,510	48,897,510	VMT	0%
Solid Waste Disposal	Solid waste disposal	9,240	9,170	Tons of waste	-1%
	Alternative daily cover used for MSW	-	60	Tons of waste	100%
	Solid waste incineration	-	-	Tons of waste	0%
Off-Road Equipment	Lawn & garden	370	400	$MTCO_2e$	8%
	Construction	1,760	1,380	$MTCO_2e$	-22%
	Industrial equipment	40	-		-100%
	Light commercial equipment	360	-		-100%
	Agricultural equipment	210	-		-100%
Water	Indirect water emissions	-	2,862,950	Electricity (kWh)	100%
Wastewater	Direct emissions	200	40	$MTCO_2e$	-80%
	Indirect electricity	-	319,340	Electricity (kWh)	100%

Table 2.9
2005 Baseline Inventory Updates – Changes to Emissions ($MTCO_2e$)

Sector	Subsector	Original 2005 Inventory	Updated 2005 Inventory	Percent Change
Residential Energy Use	Residential electricity use	5,380	5,380	0%
	Residential natural gas	10,710	10,720	0%
Nonresidential Energy Use	Nonresidential electricity use	6,510	6,510	0%
	Nonresidential natural gas	4,930	4,930	0%
On-Road Transportation	On-road passenger vehicles	22,510	22,360	-1%
Solid Waste Disposal	Solid waste disposal	2,700	4,230	57%
	Alternative daily cover used for MSW	-	20	100%
	Solid waste incineration	-	-	0%
Off-Road Equipment	Lawn & garden	370	400	8%
	Construction	1,760	1,380	-22%
	Industrial equipment	40	-	-100%
	Light commercial equipment	360	-	-100%
	Agricultural equipment	210	-	-100%
Water	Indirect water emissions	-	640	100%
Wastewater	Direct emissions	200	40	-80%
	Indirect electricity	-	70	100%
Total		55,680	56,680	2%

Figure 2.3
Summary of 2005 Baseline Inventory Updates ($MTCO_2e$)



2015 Community-Wide GHG Emissions Inventory

A comprehensive community-wide inventory for 2015 was be completed using the same protocol applied to the 2005 inventory. This provides an understanding of GHG emissions-producing community activity in the 10 years since the 2005 baseline inventory, and provides an assessment of Morro Bay's progress toward the GHG reduction goals established by its CAP.

As identified in Tables 2.10 and 2.11, between 2005 and 2015, reductions occurred across the entire energy sector. The decrease observed in the nonresidential electricity use sector exceeds those anticipated in a normal growth scenario. A breakdown of nonresidential electricity use by commercial sector has been requested from PG&E, which will allow additional clarity around this decrease and allow for more granular assumptions about energy use trends to be made in future forecasts.

Solid waste and transportation are the only sectors that saw increases in emissions. Solid waste increases likely occurred as the result of an increase in green and compostable waste being diverted to San Luis Obispo Integrated Waste Authority landfills.

The transportation sector saw a roughly 7 percent increase in vehicle miles traveled (VMT) between 2005 and 2015. VMT is calculated using all trips that occur entirely within Morro Bay and 50 percent of trips that start in Morro Bay and end somewhere in San Luis Obispo County, or vice versa. It should be noted that additional VMT (those that occur from trips that start in Morro Bay and end outside of San Luis Obispo County, or vice versa) have been estimated in support of *Plan Morro Bay*. This modeling ability was not available when the 2005 inventory was completed, and is therefore not included in the 2015 inventory update. Additional changes to the SLOCOG transportation model may account for some of the variation between 2005 and 2015 VMT estimates. A complete description of the VMT modeling method is included in Chapter 13, Transportation and Mobility.

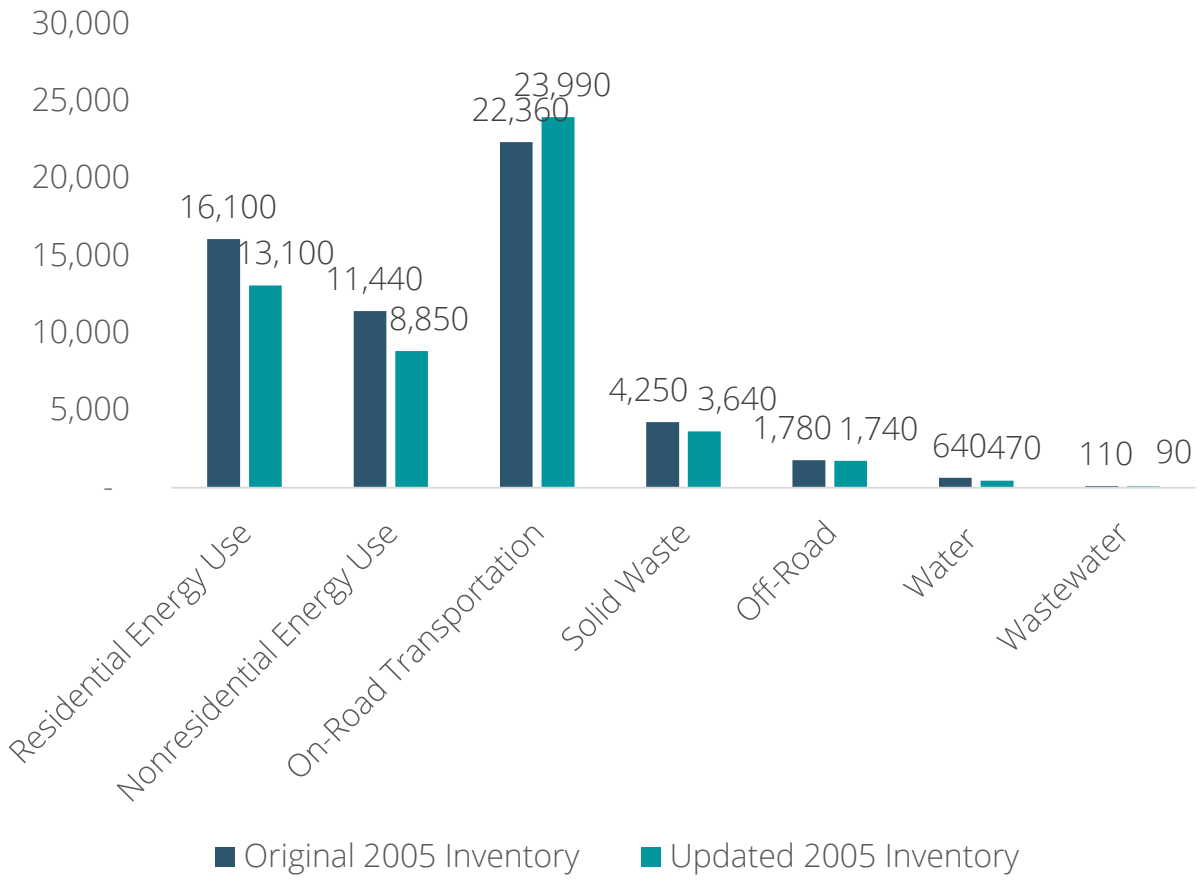
Table 2.10
2005 to 2015 – Changes to Activity Data

Sector	Subsector	2005	2015	Unit of Measure	Percent Change
Residential Energy Use	Residential electricity use	24,057,120	23,084,560	kWh	-4%
	Residential natural gas	2,013,280	1,609,320	Therms	-20%
Nonresidential Energy Use	Nonresidential electricity use	29,121,090	22,486,020	kWh	-23%
	Nonresidential natural gas	925,510	833,840	Therms	-10%
On-Road Transportation	On-road passenger vehicles	48,897,510	52,467,790	VMT	7%
Solid Waste Disposal	Solid waste disposal	9,170	7,720	Tons of waste	-16%
	Alternative daily cover used for MSW	60	210	Tons of waste	250%
	Solid waste incineration	-	-	Tons of waste	0%
Off-Road Equipment	Lawn & garden	400	390	$MTCO_2e$	-3%
	Construction	1,380	1,350	$MTCO_2e$	-2%
Water	Indirect water emissions	2,862,950	2,416,170	Electricity (kWh)	-16%
Wastewater	Direct emissions	40	40	$MTCO_2e$	0%
	Indirect electricity	319,340	269,500	Electricity (kWh)	-16%

Table 2.11
2005 to 2015 – Changes in Emissions ($MTCO_2e$)

Sector	Subsector	2005	2015	Percent Change
Residential Energy Use	Residential electricity use	5,380	4,530	-16%
	Residential natural gas	10,720	8,570	-20%
Nonresidential Energy Use	Nonresidential electricity use	6,510	4,410	-32%
	Nonresidential natural gas	4,930	4,440	-10%
On-Road Transportation	On-road passenger vehicles	22,360	23,990	7%
Solid Waste Disposal	Solid waste disposal	4,230	3,560	-16%
	Alternative daily cover used for MSW	20	80	300%
	Solid waste incineration	-	-	0%
Off-Road Equipment	Lawn & garden	400	390	-3%
	Construction	1,380	1,350	-2%
Water	Indirect water emissions	640	470	-27%
Wastewater	Direct emissions	40	40	0%
	Indirect electricity	70	50	-29%
Total		56,680	51,880	-8%

Figure 2.4
Summary of Emissions, 2005 to 2015 ($MTCO_2e$)



Progress to GHG Reduction Targets

The City of Morro Bay CAP, adopted in 2014, established a GHG reduction target of 15 percent below the baseline year's (2005) emissions. Using the updated 2005 inventory of 56,680 $MTCO_2e$, this equates to a reduction of 8,500 $MTCO_2e$ to reach a 2020 emissions level of 48,180 (Figure 2.5). The 2015 inventory revealed a decrease of 4,800 $MTCO_2e$ since 2005, a reduction of 8 percent from baseline (Figure 2.6). To reach the City's GHG reduction targets as established by the CAP, Morro Bay will need to reduce an additional 3,700 $MTCO_2e$ by 2020.

Figure 2.5
Progress to CAP GHG Emission Reduction Targets ($MTCO_2e$)

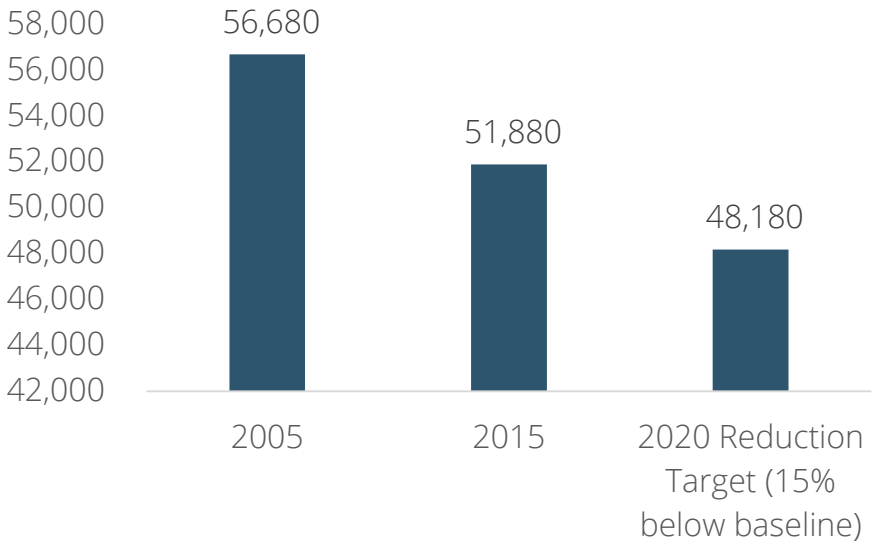
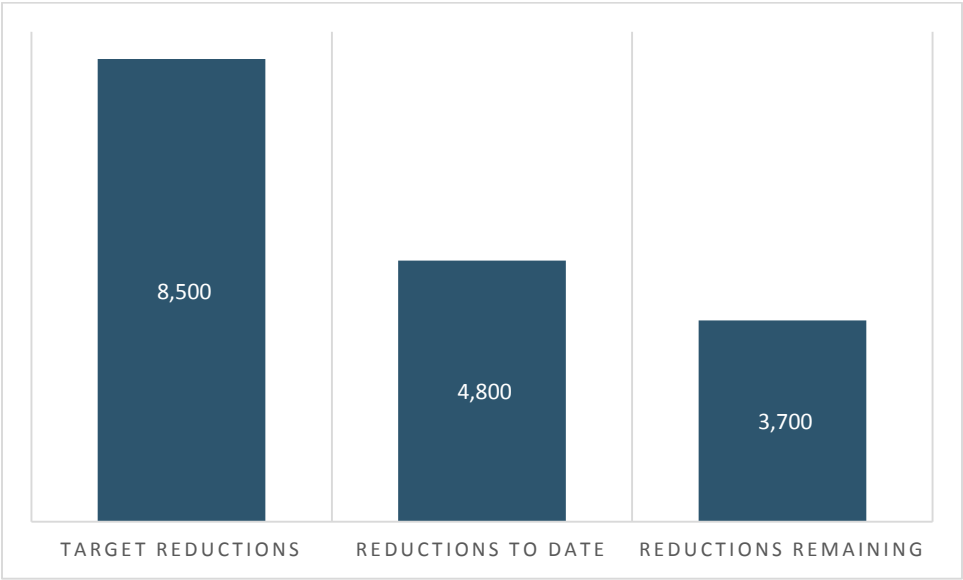


Figure 2.6
GHG Emission Reductions Remaining ($MTCO_2e$)



2.2 REGULATORY SETTING

AIR QUALITY

Federal

Clean Air Act

The CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources in order to control air pollution in the United States. Under the CAA, the EPA establishes limits on six criteria pollutants through the National Ambient Air Quality Standards (NAAQS). Table 2.12 lists the current federal and state standards for these criteria pollutants. Standards are set to protect public health and public welfare. The CAA also gives the EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. Individual states or tribes are allowed to have stronger air pollution laws, but they may not have weaker pollution limits than those set by EPA. Under the law, states have to develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the CAA.

Table 2.12
Current Federal and State Ambient Air Quality Attainment Standards

Pollutant	Federal Standard	California Standard
Ozone	0.07 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.100 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.03 ppm (annual avg)
Sulfur Dioxide	0.075 ppm (1-hr avg)	0.25 ppm (1-hr avg) 0.04 ppm (24-hr avg)
Lead	0.15 μg/m3 (3-mo avg)	1.5 μg/m3 (30-day avg)
Particulate Matter (PM10)	150 μg/m3 (24-hr avg)	50 μg/m3 (24-hr avg) 20 μg/m3 (annual avg)
Particulate Matter (PM2.5)	12 μg/m3 (annual avg) 35 μg/m3 (24-hr avg)	12 μg/m3 (annual avg)

ppm= parts per million μg/m3 = micrograms per cubic meter
Source: CARB 2015

State

California Air Resources Board

In California, CARB is responsible for preparing and enforcing the federally required SIP in an effort to achieve and maintain NAAQS and State Ambient Air Quality Standards (SAAQS), which were developed as part of the California CAA adopted in 1988. California air quality standards are identical to or stricter than federal standards for all criteria pollutants. California has also set ambient standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The SAAQS are listed in Table 2.12.

CARB is responsible for assigning air basin attainment and nonattainment designations in California. Air basins are designated as being in attainment if the concentrations of a criteria air pollutant meet or are less than the SAAQS for the pollutant. Air basins are designated as being in nonattainment if the level of a criteria air pollutant is higher than the SAAQS. CARB is the oversight agency responsible for regulating statewide air quality, but implementation and administration of SAAQS is delegated to the regional air pollution control districts. These districts have been created for specific air basins and have principal responsibility for developing plans to meet SAAQS and NAAQS; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain SAAQS and NAAQS; implementing permit programs established for the construction, modification, and operation of air pollution sources; enforcing air pollution statutes and regulations governing non-vehicular sources; and developing employer-based trip reduction programs.

Local

San Luis Obispo County Air Pollution Control District (SLOAPCD)

The SLOAPCD regulates air quality in the San Luis Obispo County portion of the SCCAB, and is responsible for attainment planning related to criteria air pollutants, and for district rule development and enforcement. Under state law, the SLOAPCD is required to prepare an overall plan for air quality improvement for the SCCAB (the 2001 CAP described above). As a means to help implement the 2001 CAP, SLOAPCD has created

and maintains an Air Quality CEQA Handbook (last updated in 2012) which establishes significance thresholds for various air pollutants.

GREENHOUSE GAS EMISSIONS

Federal

Clean Air Act

In 2007, the US Supreme Court held that the EPA has the statutory authority to regulate GHG emissions from the transportation sector. After the court decision, President Obama signed Executive Order 13432 directing the EPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responded to the Supreme Court's decision.

In December 2007, the president signed the Energy Independence and Security Act of 2007, which sets a mandatory renewable fuel standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022 and sets a national fuel economy standard of 35 miles per gallon by 2020. The act also contains provisions for energy efficiency in lighting and appliances and for the implementation of green building technologies in federal buildings.

On July 11, 2008, the EPA issued an Advance Notice of Proposed Rulemaking on regulating GHGs under the CAA. The Advance Notice of Proposed Rulemaking reviews the various CAA provisions that may be applicable to the regulation of GHGs, presents potential regulatory approaches and technologies for reducing GHG emissions, and seeks further public comment on the regulation of GHG emissions under the CAA.

Mandatory Reporting Rule

In 2009, the EPA adopted a mandatory GHG reporting rule for suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions. These businesses and facilities began submitting annual reports to the EPA in 2011 (covering the 2010 calendar year emission). Vehicle and engine manufacturers began reporting GHG emissions for model year 2011.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

In 2009, the EPA administrator issued a final endangerment finding and final cause finding for light duty vehicles under section 202(a) of the CAA. The findings include:

- Endangerment finding: The EPA found that current and projected concentrations of GHG emissions in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or contribute finding: The EPA found that the combined emissions of GHGs from new motor vehicles contribute to the GHG pollution which threatens public health and welfare.

These findings do not impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA).

On April 1, 2012, the EPA and NHTSA issued final rules requiring that by the 2016 model year, manufacturers must achieve a combined average vehicle emission level of 250 grams of CO_2 per mile, which is equivalent to 35.5 miles per gallon as measured by EPA standards.

State

California has served as a national and global leader in developing a regulatory framework to address the causes and impacts of climate change. The state has adopted a number of policies, programs, and regulations that set targets for GHG emission reductions, which have guided actions across all levels of government. The following section describes the central state-level initiatives that influence the reduction of GHGs in Morro Bay.

Executive Order S-3-05

In 2005, the governor established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80

percent below 1990 levels by 2050. The secretary of the California EPA is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the secretary of the Business, Transportation and Housing Agency, the secretary of the Department of Food and Agriculture, the secretary of the Resources Agency, the chairperson of CARB, the chairperson of the California Energy Commission, and the president of the Public Utilities Commission.

Global Warming Solutions Act – Assembly Bill 32

After the governor signed Executive Order S-3-05, the California legislature followed by passing AB 32 in 2006, the Global Warming Solutions Act. AB 32 directed CARB to develop the rules and regulations necessary to achieve the GHG emissions reduction targets. AB 32 was the first statewide program to limit GHG emissions. Key steps included:

- 2007 – Identifying initial GHG emission-reduction measures.
- 2008 – Calculating the 1990 baseline GHG emissions levels and receiving approval of a statewide limit equivalent to that level. Adopting reporting and verification standards and requirements concerning GHG emissions.
- 2009 – Adopting a scoping plan to reduce GHG emissions.
- 2010 – Adopting and enforcing regulations to implement the actions.
- 2011 – Adopting GHG emission limits and reduction measures.
- 2012 – Enforcing GHG emission limits and reduction measures (CARB 2014).

California Climate Change Scoping Plan

In 2008, CARB approved the California Climate Change Scoping Plan (Scoping Plan), which contains the primary strategies California will use to reduce the GHG emissions that cause climate change. The Scoping Plan outlines a combination of policies, programs, and practices needed to reduce statewide emissions by 15 percent below current levels (the equivalent of 1990 levels) by 2020. Given projected trends, this would be approximately 30 percent below business-as-usual levels anticipated for

2020. Effectively, the Scoping Plan establishes a statewide carbon budget that will allow the state to grow while still meeting its emissions reduction targets. The Scoping Plan strategies include energy efficiency measures, regional transportation-related GHG emissions targets, a renewable portfolio standard, a cap-and-trade program, a light duty vehicle GHG standard, and a low carbon fuel standard.

The Scoping Plan recognizes the essential partnership between state, regional, and local governments to reduce GHG emissions. Local governments have authority over activities that produce both direct and indirect GHG emissions through land use planning and zoning, general permitting, local ordinances, and municipal operations. Therefore, many of the strategies outlined in the Scoping Plan need local governments to take action. The Scoping Plan also encourages local governments to inventory GHG emissions, adopt GHG emissions reduction targets, and develop local action plans to lower emissions. The continued re-inventory of Morro Bay's GHG emissions will continue to serve these purposes.

The first update to the Scoping Plan was approved on May 22, 2014. This update builds upon the initial scoping plan with new strategies and recommendations and identifies funding opportunities to drive GHG emissions reductions. It provides a status update of scoping plan measures and establishes climate change priorities through 2019, setting the groundwork to achieve the state's 2020 GHG emissions reduction target. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target established by Executive Order B-30-15 (see below).

CEQA and Greenhouse Gas Emissions – Senate Bill 97

In 2007, the state legislature enacted Senate Bill (SB) 97, which directed the California Office of Planning and Research (OPR) to develop guidelines that help local governments reduce GHG emissions under CEQA. OPR created guidance related to analysis of GHG emissions in CEQA documents and recommended that the lead agency determine the significance of those impacts and enact measures to reduce emissions to a less than significant level. The California Natural Resources Agency (2014) adopted formal CEQA guideline amendments in 2009.

Low Carbon Fuel Standard

Executive Order S-1-07 establishes a Low Carbon Fuel Standard (LCFS) for transportation fuels in California, which CARB included in the Scoping Plan (CARB 2016e). The executive order requires that the carbon intensity of California's transportation fuels be reduced by at least 10 percent by 2020. Implementation of the LCFS is expected to achieve the minimum 10 percent reduction goal. In May 2014, supplemental information for the 2013 reports for residential and public electric vehicle charging was posted to the CARB website. In June 2014, CARB extended the deadline for the submission of alternatives relating to economic impacts in the LCFS Standardized Regulatory Impact Analysis and CEQA.

California Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS), established in 2002 by SB 1078 (Sher, Chapter 516, Statutes of 2002) establishes statewide regulations for retail sellers of electricity to purchase a portion of that power from renewable sources (CPUC 2016). SB 1078 originally required retail electricity providers to procure at least 1 percent of their electricity supplies from renewable resources to achieve a 20 percent renewable mix by no later than 2017. SB 107 (Simitian and Perata, Chapter 464, Statutes of 2006) accelerated the RPS goal of 20 percent renewables by 2010. In 2011, Governor Jerry Brown signed SB X1-2 (Simitian, Chapter 1, Statutes of 2011, First Extraordinary Session), extending the 20 percent RPS target in 2010 to a 33 percent RPS by December 31, 2020, and broadening the scope of the RPS to include local publicly owned electric utilities (CEC 2016b). In 2015, Governor Brown signed SB 350, which established an additional target of 50 percent renewable energy by 2030 for all electricity providers.

California Building Standards Code

Title 24 of the California Code of Regulations is a statewide standard applied by local agencies through building permits. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings and for fire and life safety, energy conservation, green design, and accessibility in and around buildings. Part 6 (the California Energy Code) and Part 11 (the California Green Building Standards Code) include prescriptive and performance-based standards to reduce electricity and

natural gas use in every new building constructed in California. These standards are updated every three to four years to incorporate new market-ready technologies and design techniques to further reduce energy use from the built environment. The most recent complete update to these standards went into effect July 1, 2014, while an interim update addressing a limited set of issues went into effect July 1, 2015. The 2016 Building Energy Efficiency Standards are currently under development, and will go into effect on January 1, 2017.

Cap-and-Trade

The AB 32 Scoping Plan identifies a cap-and-trade program as a means to reduce GHG emissions from the largest emitters in the state. The cap-and-trade program (Title 17, CCR, Sections 95801-96022) places a cap on GHG emissions from specific sectors. Facilities subject to the rules are allowed to trade permits or allowances to emit GHG emissions. Program rules were adopted into Subchapter 10 Climate Change, Article 5 of Title 17 of the California Code of Regulations. The cap-and-trade program started on January 1, 2012, imposes a 'compliance obligation' on 'covered entities' beginning with their 2013 GHG emissions (California Office of Administrative Law 2016).

A covered entity with a compliance obligation is defined as an entity in California with one or more processes or operations that has emitted, produced, imported, manufactured, or delivered in 2009 or any subsequent year more than the applicable threshold level. In 2012, major GHG sources, such as electricity generation and large stationary sources that emitted more than 25,000 $MTCO_2e$ per year, began to be required to separate the effects of cap-and-trade from the influencing factors on gasoline prices to comply with the cap-and-trade program (California Office of Administrative Law 2016). Starting in 2015, the program expanded to include fuel distributors to address emissions from transportation fuels, and from combustion of other fossil fuels. By expanding the program to fuel distributors, the Legislative Analyst's Office estimates that fuel prices could rise between 13 and 20 cents per gallon by 2020. However, it has been noted that gasoline prices fluctuate over time for a variety of reasons, making it difficult to estimate these impacts (CARB 2016c).

Executive Order B-30-15

Announced by Governor Brown in April 2015, Executive Order B-30-15 establishes a new interim statewide GHG emissions reduction target of 40 percent below 1990

levels by 2030. At the time of writing, Executive Order B-30-15 applied only to state agencies, over which the governor has direct control. This target helps guide California state agencies toward reducing GHG emissions to 80 percent below 1990 levels by 2050, as established by Executive Order S-3-05. The second update to the state's Scoping Plan will incorporate Executive Order B-30-15's guidance to help shape the groundwork for meeting a 2030 emissions reduction target.

General Plan Guidelines

OPR provides guidance to cities in the preparation of their local general plans. The 2003 General Plan Guidelines do not include guidance for climate change mitigation or adaptation; however, OPR is in the process of updating the General Plan Guidelines, and the revised guidelines will include a framework for addressing climate change in general plans. OPR released public review draft guidelines in October 2015. While still in draft form at the time of writing, the 2015 guidelines include multiple objectives and recommended policies addressing air quality and GHG emissions.

Regional

San Luis Obispo Council of Government (SLOCOG) Sustainable Communities Strategy – SB 375 (2008)

In California, the transportation sector produces between 35 percent and 40 percent of the state's GHG emissions, and the Scoping Plan includes a number of measures for the sector. In 2008, California adopted SB 375, the Sustainable Communities and Climate Protection Act. SB 375 attempts to integrate regional land use, transportation, and housing planning in order to reduce GHG emissions from cars and trucks. SB 375 directs CARB to set regional GHG reduction targets for cars and trucks, to assign each metropolitan planning organization a target, and to require each metropolitan planning organization to create a sustainable communities strategy to achieve that target. The law provides relief from specific CEQA requirements for infill development projects that are consistent with the sustainable communities strategy. SB 375 provides one method for local governments to achieve regional transportation-related GHG emissions targets described in the Scoping Plan. Morro Bay is located in the SLOCOG region. SLOCOG's current plan was adopted in April 2015.

San Luis Obispo County Air Pollution Control District (SLOAPCD)

As a result of SB 97, local air districts, including the SLOAPCD, began a process to provide guidance to determine the significance of GHG emissions identified in CEQA documents to local lead agencies. The district's current GHG thresholds, adopted in March 2012, determine the levels beyond which a project in the county would have significant impacts. Although no single land use project could generate enough GHG emissions to noticeably change the global average temperature, cumulative GHG emissions contribute to global climate change and its resulting adverse impacts. Thus, the primary goal in adopting GHG significance thresholds, analytical methodologies, and mitigation measures is to ensure that new land use development provides its fair share of the GHG reductions needed to address cumulative environmental impacts from those emissions. Table 2.13 summarizes the district's GHG emission thresholds.

Table 2.13
SLOAPCD GHG Emissions Thresholds

GHG Emissions Threshold Summary	
Residential and commercial projects	Compliance with Qualified GHG Reduction Strategy OR Bright-Line Threshold of 1,150 $MTCO_2e$ per year OR Efficiency Threshold of 4.9 $MTCO_2e$ per Service Population (residents + employees) year
Industrial (Stationary Sources)	10,000 $MTCO_2e$ per year

Source: SLOAPCD 2012b

Local

City of Morro Bay Climate Action Plan (2014)

In 2014, the City of Morro Bay adopted a CAP. The CAP describes community and municipal GHG emissions, compares future emissions to state-designated AB 32 targets, and defines actions and strategies the City will take to meet both state and local GHG reduction goals. Both community-wide and government operations emissions were inventoried for the CAP, studying emissions from energy use, transportation, waste, water, and off-road emissions, allowing for specific and

attainable goals for GHG reductions. The CAP's target mirrors that of AB 32, setting a goal of 15 percent below baseline (2005) levels by 2020 (City of Morro Bay 2014).

2.3 PRIORITY FINDINGS

LOCAL AIR QUALITY

The eastern portion of San Luis Obispo County is currently in nonattainment for the federal 8-hour ozone standard while the western portion of the county, including Morro Bay, is in attainment for the federal ozone standard. The county is currently designated attainment for all of the other national air quality standards. The county, including Morro Bay, is designated as a nonattainment area for the state one-hour and 8-hour ozone standards, as well as the state 24-hour and annual PM_{10} standards, and is in attainment for the state annual $PM_{2.5}$ standard.

POLLUTANTS AND GHG EMISSIONS FROM ON-ROAD VEHICLES

San Luis Obispo County's criteria air pollutant inventory and Morro Bay's GHG inventory indicate that the largest sources of emissions in and around the community are on-road vehicles. Reducing criteria air pollutant and GHG emissions from vehicles may have a substantial effect on improving air quality concerns in Morro Bay.

STATIONARY SOURCES AND TOXIC HOT SPOTS

Upon the retirement of the Dynegy power plant and the Chevron marine terminal in recent years, stationary sources of criteria pollutants in the city are limited to a dry cleaning facility, gasoline service stations, and auto-body repair shops. CARB has identified eight facilities in Morro Bay that are subject to the Air Toxics Hot Spots reporting requirement under AB 2588 (CARB 2016b).

NONRESIDENTIAL ELECTRICITY REDUCTIONS

The 2015 GHG inventory revealed a larger than anticipated decrease in nonresidential electricity use from 2005 levels. In order to appropriately plan for sustained reductions, and to better understand trends in Morro Bay's nonresidential energy sector, it is necessary to place additional effort into researching the causes of this decrease.

GREENHOUSE GAS TARGET ATTAINMENT

Based on findings in the 2015 community-wide inventory, Morro Bay is just over halfway to its 2020 GHG reduction target. The City will need to prioritize GHG strategies and hasten the pace of reductions in order meet CAP goals and maintain consistency with state targets.

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3.0 Coastal Resilience

Plan MORRO BAY

3.0 COASTAL RESOURCES AND RESILIENCY

The City of Morro Bay is exposed to numerous coastal hazards including flooding, inundation, bluff retreat, and dune erosion. This chapter identifies existing coastal resources in the city, provides a (baseline) assessment of how coastal hazards impact these resources, and provides an assessment of how the hazards and corresponding impacts increase with sea level rise.

> Coastal resilience refers to the ability of a community to "bounce back" after hazardous events such as flooding associated with extreme waves, water levels, or runoff. oceanservice.noaa.gov/facts/resilience.html

Non-coastal hazards are addressed in Chapter 8 (Natural and Environmental Hazards).

3.1 EXISTING CONDITIONS

COASTAL SETTING

The city's coastal setting is described in this section in terms of waves, water levels, and littoral processes. Current and future coastal hazards in Morro Bay are a function of how these processes interact with the natural and built features along the coastline.

Wave Climate

Waves act to carry sand in both the cross-shore and longshore directions and can also cause short-duration flooding events by causing dynamic increases in water levels. Thus, the wave climate (or long-term exposure of a coastline to incoming waves) and extreme wave events are important in understanding future sea level rise vulnerabilities.

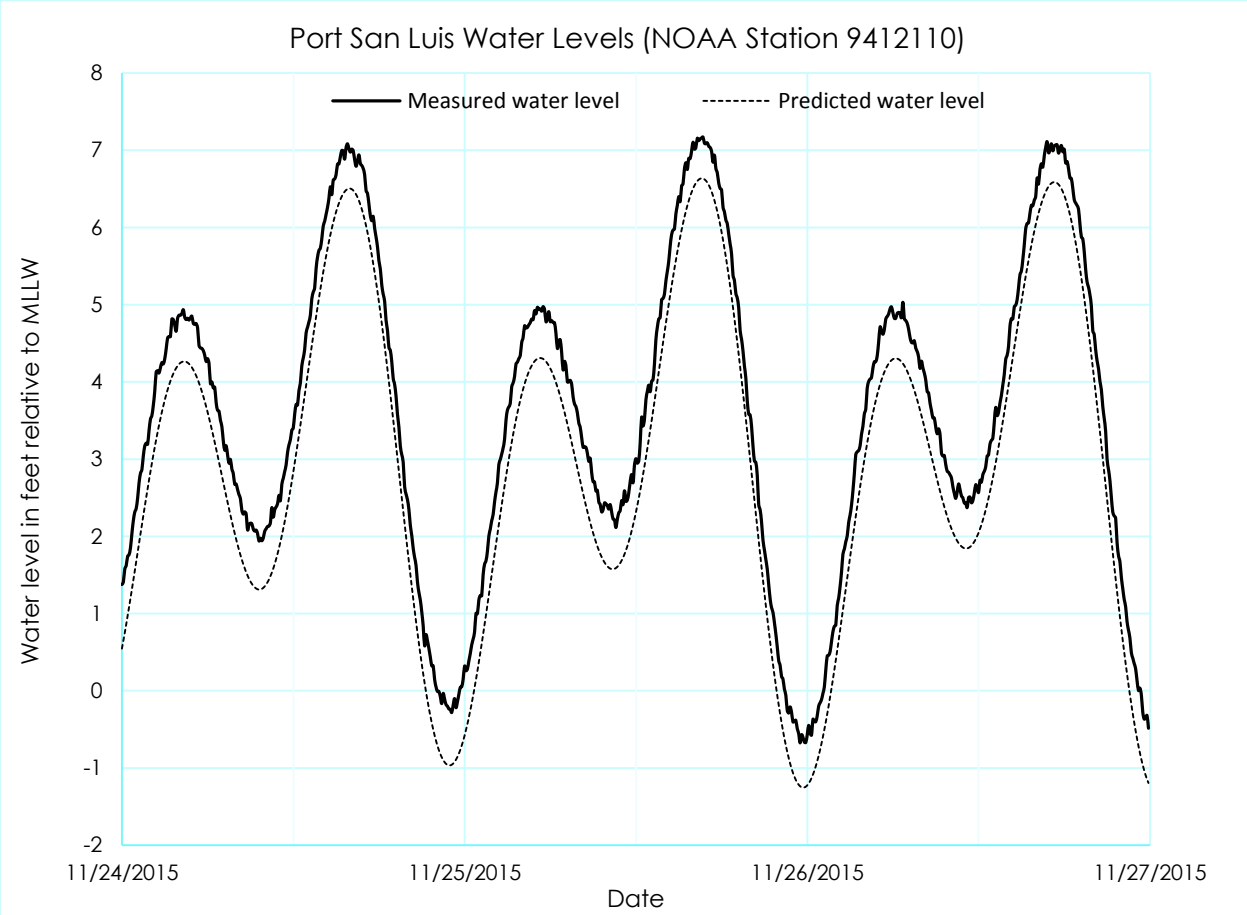
More than 45 percent of the waves approaching Morro Bay are from the west-northwest direction. Historically, the most frequent significant wave height is 8 to 10 feet and the most frequent wave periods are between 12 and 15 seconds. The largest waves occur in the winter when northern hemisphere cyclonic storms generate powerful, long period waves.

Water Levels

The tides in Morro Bay are mixed semidiurnal, with two high tides and two low tides of differing magnitude occurring each day. Astronomical tides make up the most significant amount of the total water level. Typical daily tides range from mean lower low water (MLLW) to mean higher high water (MHHW), a tidal range of about 5.3 feet based on the tidal station at Port San Luis (NOAA station 9412110). During spring tides, which occur twice per lunar month, the tide range increases to about 7 feet due to the additive gravitational forces of the sun and moon. During neap tides, which also occur twice per lunar month, the forces of the sun and moon partially cancel out, resulting in a smaller tide range of about 4 feet. The largest spring tides of the year are sometimes referred to as "king tides" and result in high tides of 6.5 feet or more above MLLW and tidal ranges of more than 8 feet.

In addition to astronomical tide, factors such as sea level anomalies (El Niño events) and storm surge also contribute to the water levels along Morro Bay. An example of this occurred on November 25, 2015, when a king tide of about 6.64 feet above MLLW was predicted but a water level of 7.18 feet was measured at the Port San Luis station. The tide series from this event is shown in Figure 3.1. The predicted astronomical tide was elevated by 0.54 feet due to a sea level anomaly related to the strong El Niño and high ocean temperatures during the 2015–2016 winter season (Doherty 2015).

Figure 3.1
November 2015 Water Levels at Port San Luis



Littoral Processes and Shoreline Change

A littoral cell is a coastal compartment or physiographic unit that contains sediment sources, transport paths, and sediment sinks (Patsch and Griggs 2007). The City of Morro Bay is within the Morro Bay littoral cell, which extends from about Piedras Blancas to Point Buchon in Los Osos. Sinks include aoelian (wind-blown) losses to dunes and cross-shore transport to offshore. Some sinks, such as dunes, can later become sand sources as dunes erode during extreme wave events or as sea levels rise. Other sources of sand to the Morro Bay littoral cell include fluvial delivery of sand and bluff erosion.

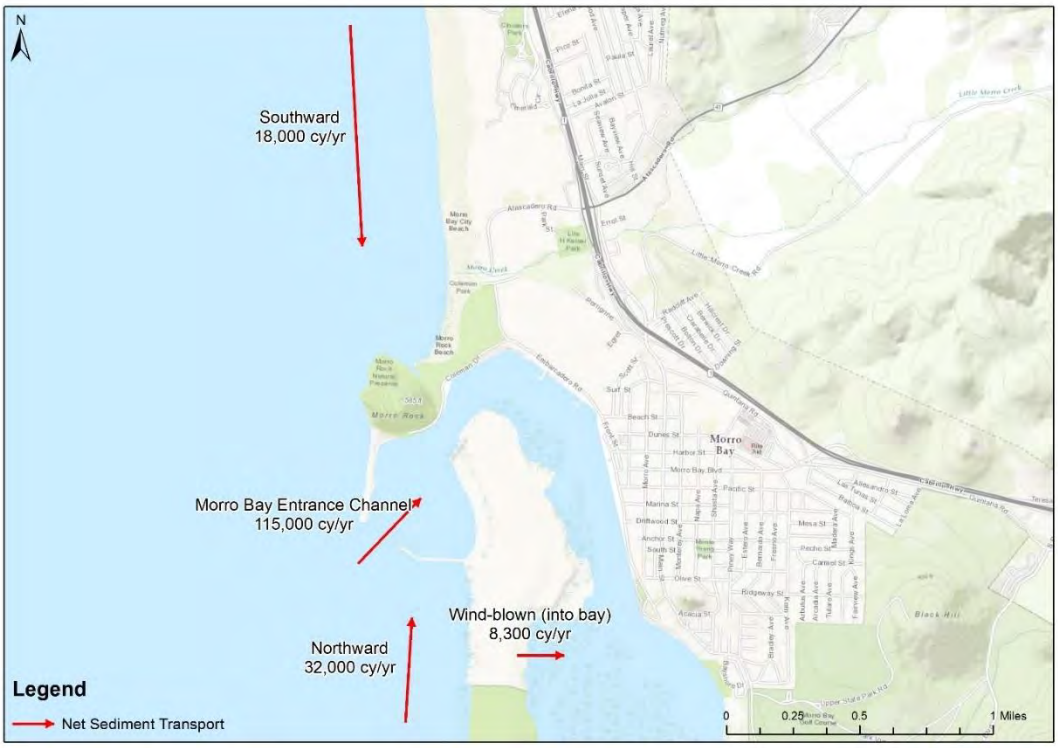
Sediment transport in the city is shown in Figure 3.2, and described in this section. Beaches north of Morro Rock experience a net southward drift of 18,000 cubic yards per year (cy/yr) while beaches south of Morro Rock experience a net northward drift of

32,000 cy/yr (Griggs, Patsch, and Savoy 2005). The Morro Bay entrance channel intercepts approximately 115,000 cy of sediment per year. Sediment is dredged annually by the US Army Corps of Engineers (USACE) and placed in the nearshore and surfzone along Morro Strand State Beach. Placement at this site has resulted in wider beaches than might naturally occur (Griggs, Patsch, and Savoy 2005).

Wind-blown (aeolian) transport of sediment from the dunes into Morro Bay is estimated at 8,300 cy/yr (USACE 2003). The barrier beach is estimated to be migrating landward at a rate of 1.1 to 1.7 feet per year (ft/yr) into the bay (USACE 2003).

Analysis of shoreline position data from 1800 to 2002 found that beaches have accreted 4 inches per year, on average, during this period (Hapke et al. 2006). An analysis of shoreline change from 1970 to 2002 found that the beaches narrowed by 2.3 feet per year on average (Hapke et al. 2006). Thus, the findings of this study suggest that the beaches in the city have been accretional over the long term and erosional in the short term. Short-term erosion rates may be a result of decreased sediment supply or changes in the wave climate.

Figure 3.2
Sediment Budget in Morro Bay



COASTAL HAZARDS AND ASSETS

Coastal resources in the city are diverse and include natural resources such as Morro Rock, Morro Bay Estuary, and sandy beaches backed by dunes and bluffs. Resources of the built environment include the harbor infrastructure, commercial fishing industry, visitor-serving commercial waterfront, and numerous recreational opportunities along the coastline and bay.

Historically, and currently, these resources are vulnerable to coastal hazards. The primary coastal hazards that occur in Morro Bay are flooding (as a result of extreme coastal wave runup and river discharge events), inundation (as a result of daily tides), and bluff and dune erosion resulting from a composite 100-year wave event. The hazard zones are further described below:

- Flood Hazard Zone – Flood events are typically short in duration (i.e., hours) and occur episodically in association with extreme waves and precipitation events (e.g., 100-year return period events). The flood hazard zone shows the limits of extreme water levels associated with a 100-year return event.

- Inundation Hazard Zone – Areas within the inundation hazard zone will be subject to daily wetting and drying associated with tides. A mean high water tide elevation was used as a proxy to represent future inundation hazard zones.

- Bluff Hazard Zone – Rising sea levels may result in the increased erosion of coastal bluffs due to more frequent exposure to wave attack. The bluff hazard zone is the area between the existing and future bluff edge.

- Dune Hazard Zone – Coastal dunes will respond to sea level rise by migrating landward. The dune hazard zone represents the area between the current and future dune toe.

Baseline coastal hazards for 2016 are identified in Figures 3.3 through 3.7. The following narrative provides description of coastal resources and how they are vulnerable to coastal hazards.

Beaches

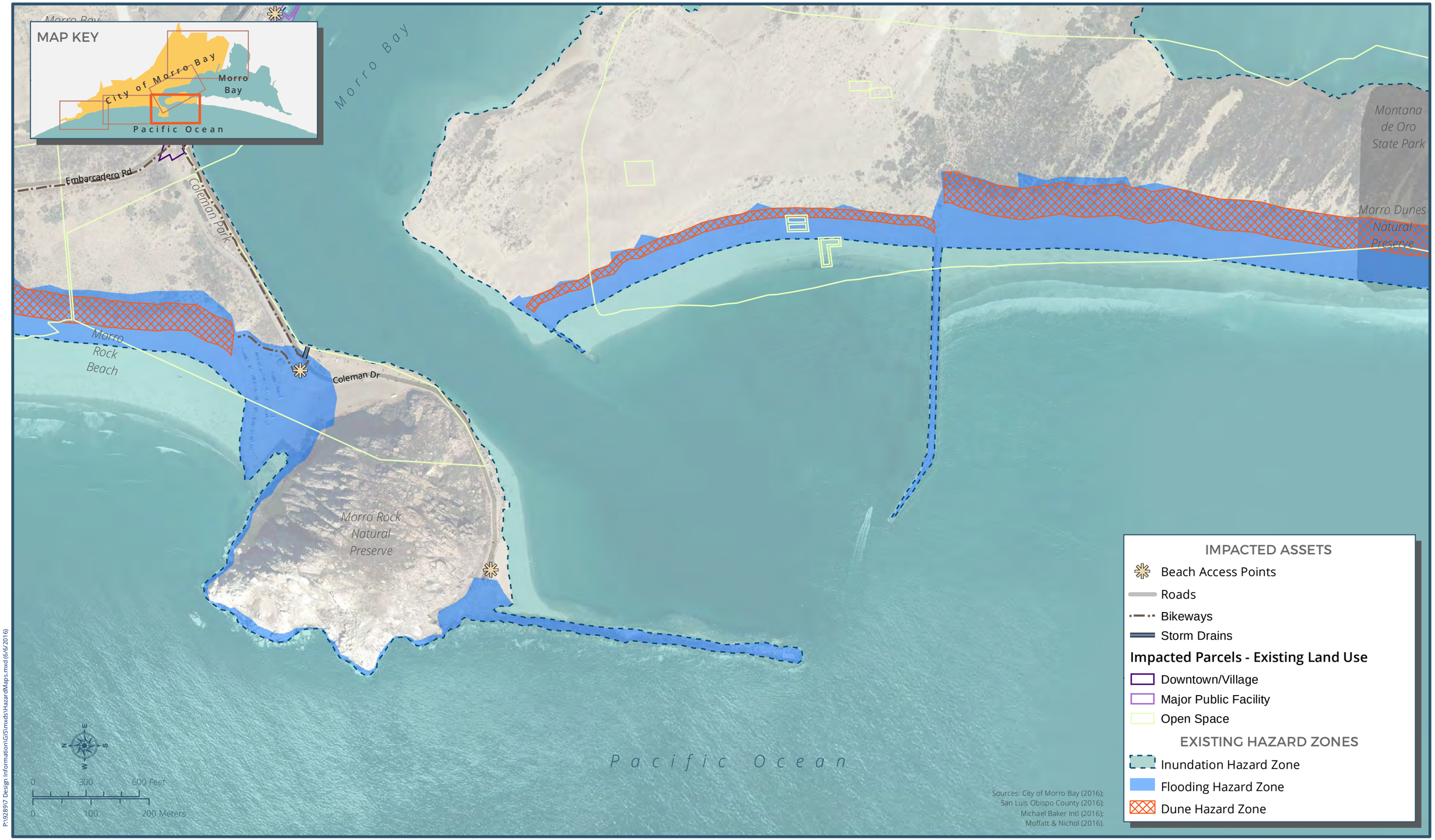
Beaches in the city are mostly managed by the state; however, the City manages Morro Rock Beach and the sandspit. Morro Rock beach is generally a wide, sandy beach backed by dunes just north of the rock. Amenities at this beach include restrooms, picnic tables, and parking. Morro Rock beach is the most popular beach in the city. The sandspit consists of sandy beach and large dunes that make up a landform extending from Los Osos across Morro Bay. Chapter 11 (Parks, Recreation, and Open Space) provides additional detail about beaches in Morro Bay.

In 2016, 54 acres of beaches are vulnerable to and could be impacted by coastal hazards such as flooding and dune erosion. Beaches provide both recreational and storm protection benefits. Beach flooding is generally short in duration, occurring during large surf events; therefore, flooding impacts would be temporary and recreation opportunities largely unaffected following flooding. Dune and beach erosion can result in significant impacts as some areas are lost and changed by erosion; while recreation opportunities would remain largely unaffected, beaches will narrow and storm protection benefits will begin to diminish as dunes erode.

Public Coastal Access

Vertical (access to) and lateral (access along) beach access is abundant in the city. A total of 22 vertical access ways exist along the city's coastline, consisting of sandy trails that lead to the beaches from street ends, City parking lots, and state campgrounds. There are 40 lateral access ways along the city's bayfront, consisting of the beach, bikeways, and other pedestrian improvements in the city. Chapter 11 (Parks, Recreation, and Open Space) provides additional detail about public coastal access in Morro Bay

In 2016, three access points and 24,777 linear feet of access trails are vulnerable to flooding and dune erosion hazards. Access ways may only experience temporary interruptions during flooding events; clearing may be needed following flooding. Access ways that experience erosion may develop drop-offs that will likely adapt from foot traffic and natural processes as beach areas adjust following surf events. Local grading may be used if immediate action is desired to address conditions resulting from erosion along access ways.



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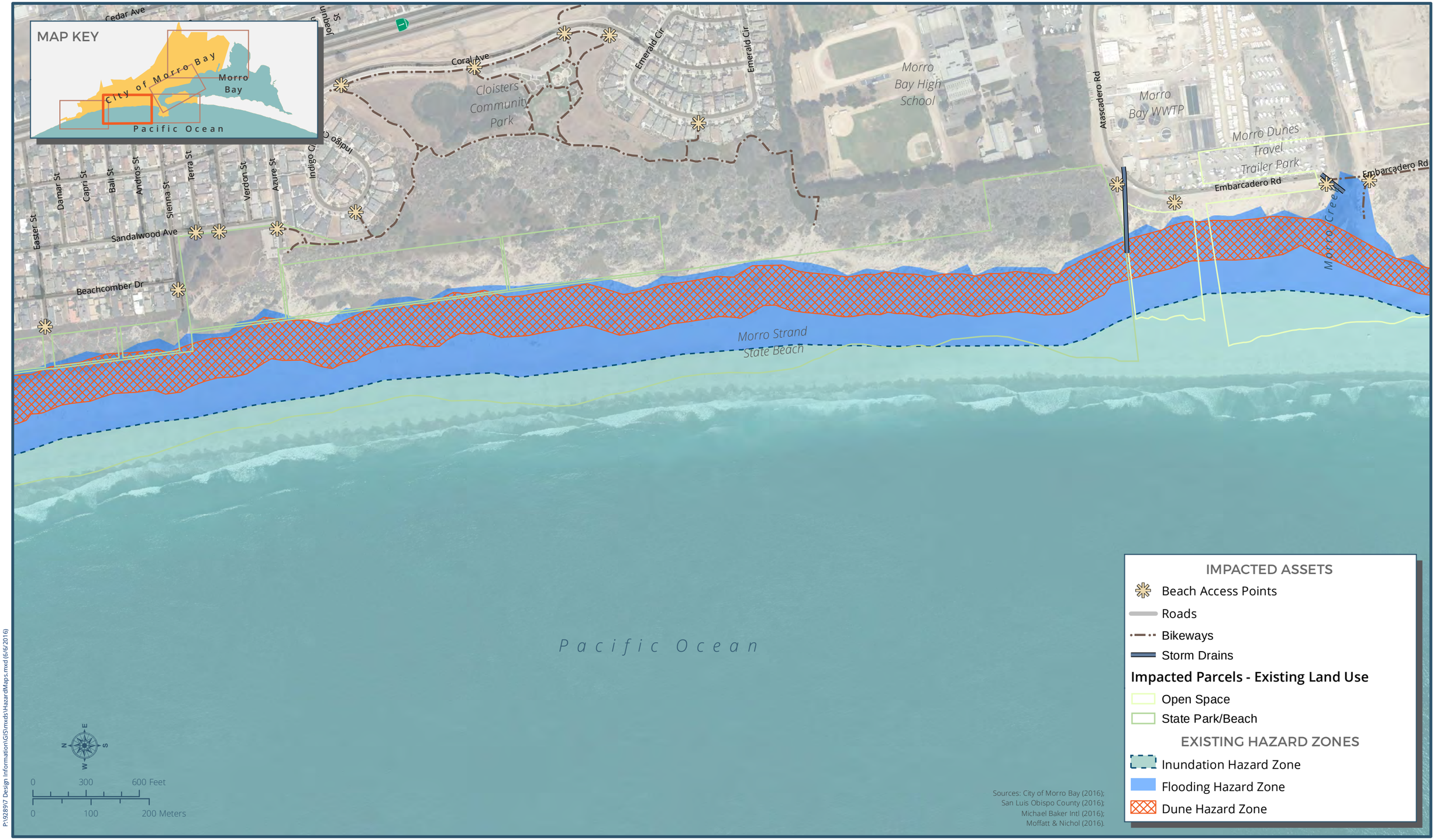
EXISTING COASTAL HAZARDS

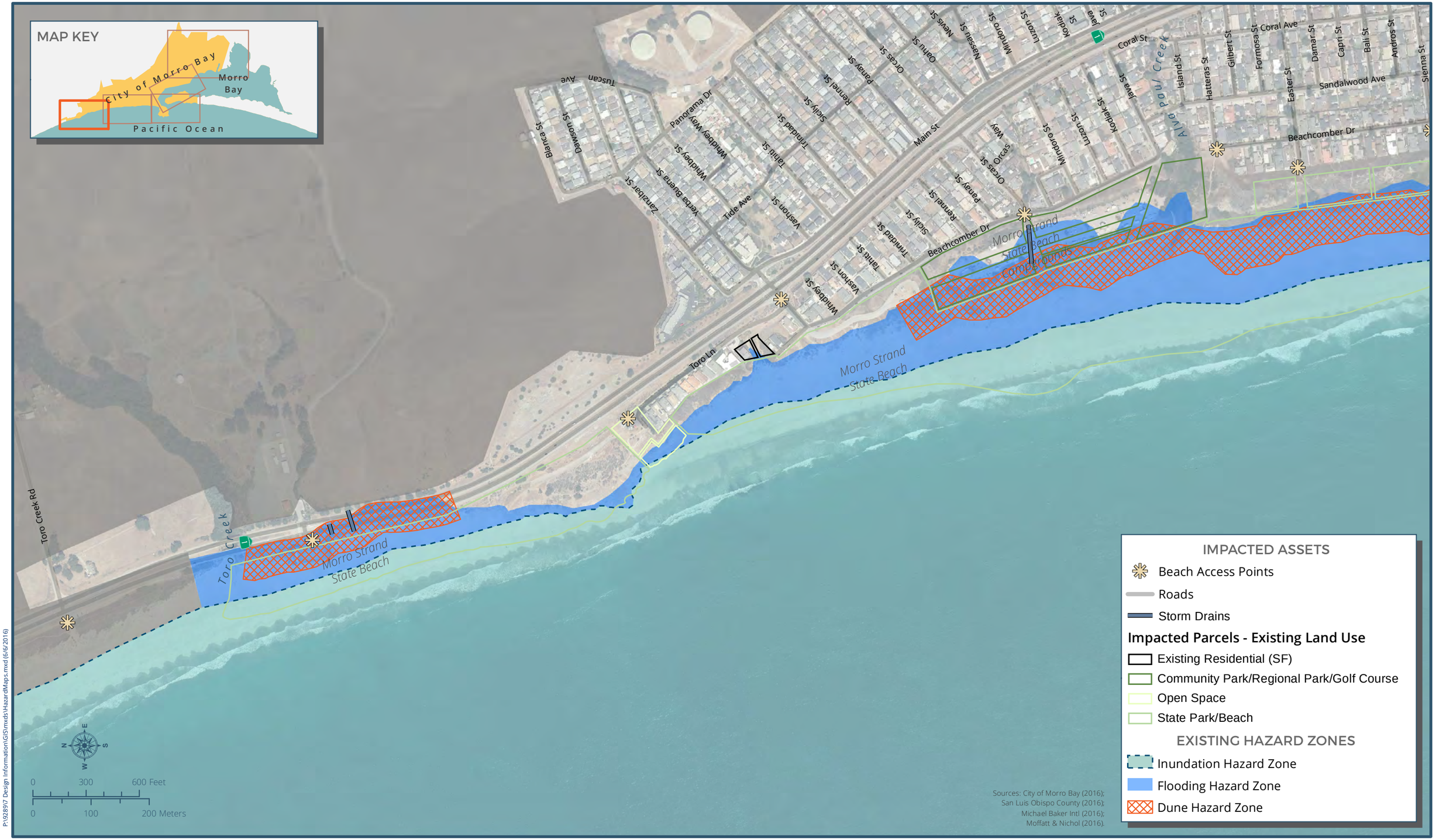
Plate 1 of 5



Plan MORRO BAY

EXISTING COASTAL HAZARDS

Plate 2 of 5



Plan MORRO BAY

EXISTING COASTAL HAZARDS

Plate 3 of 5

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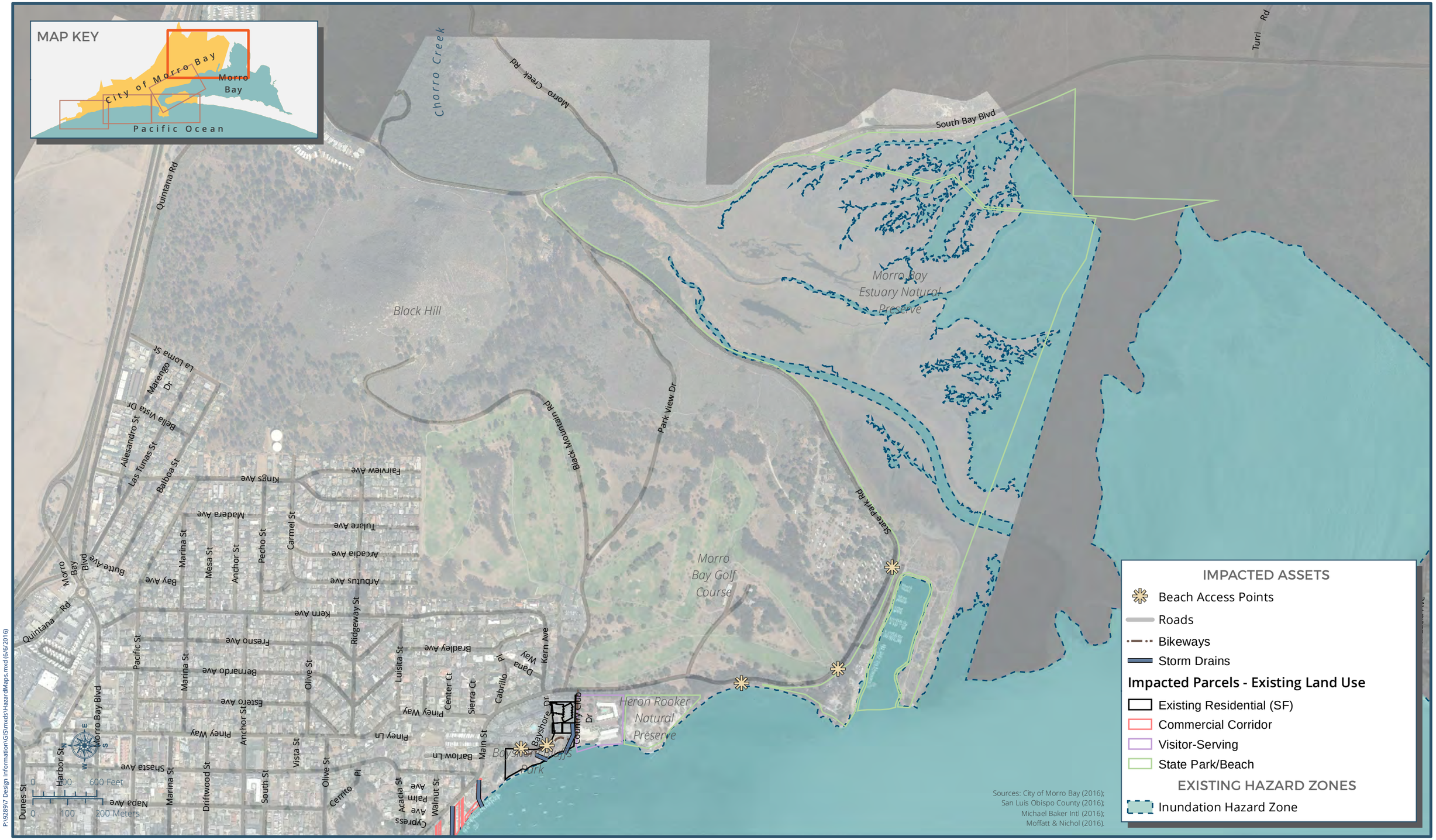
Plan MORRO BAY

EXISTING COASTAL HAZARDS

Plate 4 of 5



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Plan MORRO BAY

EXISTING COASTAL HAZARDS

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State Parks

The Morro Strand State Beach is generally a wide sandy beach backed by dunes and bluffs on the northern end of the city, and extends from Morro Rock beach to the south to beyond city limits to the north. This state beach includes campgrounds, restrooms, picnic tables, and trails. Dunes are vegetated and some are being restored with native habitat.

Along the coastline, the beach and dunes provide habitat for endemic and endangered plant and animal species. This habitat has been historically impacted statewide by coastal development and introduction of nonnative plant species. Local restoration efforts, led by the State Parks Department, have been under way for the last 15 years to restore dune habitats along Morro Strand State Beach. The dunes also provide environmental value in buffering coastal development from wave runup and erosion during extreme storm events. Chapter 11 (Parks, Recreation, and Open Space) provides additional detail about State Parks in Morro Bay.

There are 23 state park parcels currently exposed to flooding and dune erosion hazards. Flooding impacts would be temporary, although clearing may be required with short-term impacts to parking and access. Recreation opportunities in state parks are not inhibited by current coastal hazards; however, natural resources in the state parks are sensitive. Dunes and dune habitats represent a significant natural resource in the state parks as they are actively restored and preserved. Dunes are not expected to naturally reestablish following loss from erosion; because dunes and habitat areas can be lost or diminished, dune and beach erosion may result in significant impacts.

Coastal Development

Coastal development includes city properties and buildings in the coastal zone. These assets provide for homes, goods and services providers, public facilities, worship, and education. City parcel data was used to assess the impacts to these resources. A majority of these parcels feature buildings, while some are open space and City parks with their own unique vulnerabilities. Development in the city is generally set back from the shoreline and behind a natural dune system. Minimal coastal armoring exists to protect existing coastal development. Chapter 7 (Land Use, Community Form, and Coastal Uses)

provides additional coastal development detail; Chapter 12 (Shoreline Management and Protection) provides additional coastal armoring information.

Bayfront coastal development includes City/community parks, the former Morro Bay Power Plant site, commercial uses in the Embarcadero, nature preserves, a state parks marina, and residential homes in the southeastern bay. Development in this area is located adjacent to or overtopping intertidal waters of the bay. The commercial development along the Embarcadero is elevated on pile-supported foundations. The majority of residential development in the south bay is protected with seawalls and bulkhead walls.

In 2016, 53 parcels are vulnerable to inundation, flooding, and dune erosion. Although parcels are vulnerable to these hazards, the impacts are expected to be low. Parcels subject to erosion in the current time horizon do not contain structures and their value and use is not expected to change. Parcels exposed to inundation along the bayfront have structures that are elevated on pile-supported foundations or protected with seawalls and bulkhead walls. These features will continue to provide protection.

Utilities: Water, Wastewater, Gas, Electricity and Telecommunications

Utilities are the facilities necessary to run the City effectively and efficiently since loss of water, sewer, or power would significantly disrupt quality of life for residents. Critical infrastructure facilities in the city include the PG&E substation, City desalination facility and the Morro Bay Wastewater Treatment Plant. Components of these facilities, such as sewer pump stations and electrical transformers, are also vulnerable in that flood damages could result in utility service disruptions. Chapter 6 (Infrastructure and Public Services) provides additional information about utilities in Morro Bay.

Currently, there are no major utility systems or components identified as vulnerable to coastal hazards. However, important facilities such as the PG&E substation and wastewater treatment plant are located within the FEMA 100-year floodplain of Morro Creek.

Transportation: Roads, Bike, and Pedestrian Assets

The city's transportation network is vital for public circulation, access, emergency services, and evacuation. Highway 1, Morro Bay Boulevard, Main Street, and South Bay Boulevard are examples of major elements of the city's transportation network. Most of the city's transportation infrastructure is outside of the reach of existing coastal hazards. However, Highway 1 in the northern portion of the city is located in close proximity to the ocean on a coastal bluff. Coastal protection has been placed to protect the roadway in this location. State Park Road, located in the south bay, is also subject to coastal flooding due to its low elevation and proximity to the bay. Chapter 13 (Transportation and Mobility) provides additional information about transportation in Morro Bay.

There are 2,025 linear feet of roadway currently vulnerable to coastal hazards. Flooding and dune erosion hazards exist along Highway 1 south of Toro Creek. Highway 1 is a major north–south transportation corridor and evacuation route. Roadways are highly sensitive to flooding as this can result in temporary traffic delays and road closures. Erosion along Highway 1 could result in extended road closures while repairs are made. Flooding hazards exist along Coleman Drive, but would be short in duration, although require clearing.

Environmentally Sensitive Lands

This category includes habitats in the coastal environment of Morro Bay such as the estuary, dunes, and tidally influenced streams. The Morro Bay Estuary is home to a variety of wetlands, salt and freshwater marshes, intertidal mudflats, and subtidal habitats and serves as a vital stopover and wintering ground for many migratory birds in the Pacific Flyway (MBNEP 2016).

The importance of this habitat led to the creation of the Morro Bay National Estuary Program (MBNEP) in 1995. The MBNEP is one of 27 national estuarine programs focused on water quality and the integrity of these valuable and sensitive estuarine systems. Despite being one of the least disturbed estuaries in Southern and Central California, the estuarine habitats face many stressors including saltwater intrusion, accelerated sedimentation, water quality concerns due to pollutant loading, increasing demand for freshwater resources, and threats to existing biodiversity (MBNEP 2016). Eelgrass has declined rapidly in Morro Bay since 2007 and is cause for great concern since the estuary

sustains the only major eelgrass habitat between San Francisco and Los Angeles (MBNEP 2014). Dynamic conditions in the estuary make it difficult to discern variables driving changes in eelgrass habitats. A combination of factors is likely driving the decline of eelgrass. These include sedimentation, water quality, dredging activities, and coastal storm impacts (MBNEP 2013). These lands provide the backdrop for visual and cultural resources of intrinsic value to the City of Morro Bay. Additional natural resources information is provided in Chapter 9 (Natural Resources).

These lands are currently vulnerable to flooding and dune erosion. Flooding can result in short-term impacts as habitats recover from temporary saltwater inundation. Dune erosion represents a greater impact to sensitive habitats as these areas can be permanently lost if the shoreline continues to retreat. Once eroded, the dune systems are not expected to naturally reestablish and can then be less resilient to impacts from extreme storms.

3.2 PROJECTED CONDITIONS

Sea level rise has the potential to result in significant changes within the coastal zone. Current sea level rise projections and methods used to map how these increased water levels may impact the city are described in this section.

SEA LEVEL RISE PROJECTIONS

There is broad agreement in the scientific community that the earth is predicted to warm and that sea levels will rise as a result of the thermal expansion of water and increased contributions from melting glaciers (CO-CAT 2013; CCC 2015). Though there is consensus among the scientific community on these concepts, the timing and severity of sea level rise is relatively uncertain and is dependent on region-specific conditions. The uncertainty in the sea level rise projections is a result of future global emissions of carbon dioxide (a function of future social behavior) and the nonlinear response of the ocean to warmer temperatures and contributions from land-based ice sources. Planning for potential future sea levels provides the City with the tools to make current and future planning decisions that will allow its resources to adapt to changing conditions.

As a supporting study to a Local Coastal Program update, the most relevant guidance to this analysis is the California Coastal Commission (CCC) Sea Level Rise Policy Guidance

(CCC 2015). This guidance provides detail on how to conduct these vulnerability analyses and states to utilize best available science for the analysis. The 2012 National Research Council report, "Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future," is considered the best available science for California (CCC 2015; CO-CAT 2013). Sea level rise projections for the various planning horizons being considered (i.e., 2030, 2050, and 2100) were derived from this study. The 2012 study's high-range sea level rise projections for the area south of Cape Mendocino were used as the basis of the vulnerability assessment (Table 3.1).

Table 3.1
Sea Level Rise Projections for Morro Bay

Year	Projected Sea Level Rise (ft)	Projection Uncertainty (ft, +/-)	Low Range (ft)	High Range (ft)
2030	0.5	0.2	0.2	1.0
2050	0.9	0.3	0.4	2.0
2100	3.1	0.8	1.5	5.5

(Source: National Research Council 2012)

COASTAL HAZARD ANALYSIS AND MAPPING

Morro Bay's exposure to future rates of sea level rise was determined through modeling and analyses performed by Moffatt & Nichol (M&N) for this assessment. The sea level rise projections shown in Table 3.1 were used as the basis for analysis. The modeling efforts depict coastal flooding, shoreline change, and bluff response to a composite, 100-year wave event in combination with various rates of sea level rise and baseline water levels (i.e., high tide, storm surge, sea level anomaly, and river discharge). See Appendix A for more detailed information on model data inputs, assumptions, and limitations.

VULNERABILITY AND RISK ASSESSMENT METHODS

A vulnerability assessment was performed to identify impacts that sea level rise and coastal hazards may have on existing resources and assets in the city. Vulnerability was assessed as a function of an asset's exposure, sensitivity, and adaptive capacity. A numerical rating system was used to develop an overall vulnerability rating for each asset category at the 2016, 2030, 2050 and 2100 time horizons. The definition of these terms

and the rating system used are described in the Table 3.2. A vulnerability rating of low (3-4), moderate (5-7), or high (8-9) was assigned for each asset category based on the sum of ratings for exposure, sensitivity, and adaptive capacity.

While the vulnerability assessment was performed to identify impacts from sea level rise, a risk assessment was performed to evaluate the magnitude of these impacts and likelihood of occurrence. The risk assessment was performed qualitatively to help the City manage risk related to sea level rise in its planning and decision-making process.

Table 3.2
Vulnerability Rating System

Exposure is the degree to which an asset or resource is susceptible to coastal hazards such as flooding, inundation, and bluff erosion for a given sea level rise scenario. The mapped hazard zones were used to rate the level of exposure to a given asset or category.		
Category	Rating	Explanation
Exposure	Low (1)	Asset or resource partially exposed to flooding, inundation, or bluff/dune erosion.
	Moderate (2)	Asset or resource moderately exposed to flooding, inundation, or bluff/dune erosion.
	High (3)	The majority of the asset or resource is exposed to flooding, inundation, or bluff/dune erosion.
Sensitivity is the degree to which the function of an asset or resource would be impaired (i.e., weakened, compromised, or damaged) by the impacts of sea level rise. *Example: State Park Road/Main Street in the vicinity of the campground has a high sensitivity to sea level rise because even minor flooding can cause significant disruption in service.*		
Category	Rating	Explanation
Sensitivity	Low (1)	Asset or resource is not affected or is minimally affected by coastal hazards at a given sea level rise scenario.
	Moderate (2)	Asset or resource may experience minor damage or temporary service interruption due to coastal hazard impacts, but can recover relatively easily.
	High (3)	Asset or resource would experience major damage or long-term service interruptions due to coastal hazard impacts, requiring significant effort to restore/rebuild to original condition.
Adaptive capacity is the inherent ability of an asset or resource to adjust to sea level rise impacts without the need for significant intervention or modification. *Example: Some wetland habitats have a high adaptive capacity due to their ability to naturally migrate landward and upward with rising water levels, provided adequate space exists.*		
Category	Rating	Explanation
Adaptive Capacity	High (1)	Asset or resource can easily be adapted or has the ability and conditions to adapt naturally.
	Moderate (2)	Asset or resource can be adapted with minor additional effort.
	Low (3)	Asset or resource has limited ability to adapt without significant changes.
Vulnerability Scoring (Exposure + Sensitivity + Adaptive Capacity): Low (3-4) Moderate (5-7) High (8-9)		

This vulnerability assessment quantitatively evaluates and rates sea level rise impacts to various city assets. Evaluated asset categories include beaches, public access ways, state parks, parcels, critical infrastructure, and transportation.

VULNERABILITY AND RISK ASSESSMENT FINDINGS

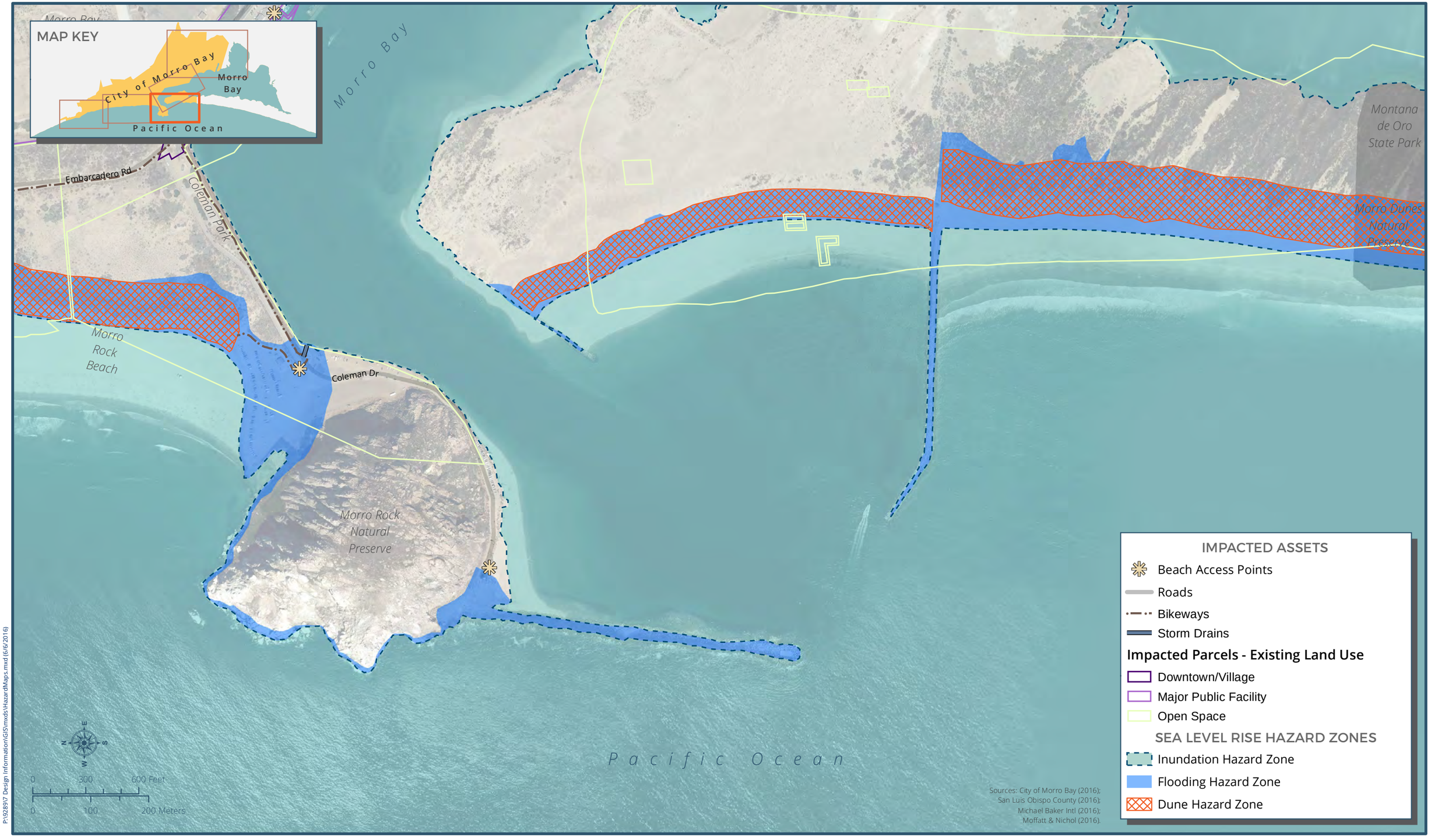
Results of the vulnerability assessment are discussed in this section for years 2030, 2050 and 2100. For simplicity and to align with the Local Coastal Program/General Plan update planning horizon, vulnerability graphics are provided in this section for year 2050 only (Figures 3.8 through 3.12). Vulnerability graphics for year2030 and 2100 are included in Appendix B.

A tabular summary of the results of vulnerability assessment is provided in Table 3.3. A particular asset's exposure to sea level rise was characterized in terms of hazard type and quantity of assets impacted for each planning horizon. A discussion of the vulnerability and risk assessment is also provided for each asset category.

Table 3.3
Vulnerability Assessment Summary

Asset Category	Horizon	Hazard Type	Impacted Assets	Exposure Rating	Sensitivity Rating	Adaptive Capacity Rating	Vulnerability Rating (Score)
Beaches	2016	Bluff Erosion, Flooding	54 acres	2	1	1	Low (4)
	2030	Inundation, Dune and Bluff Erosion, Flooding	60 acres	2	1	1	Low (4)
	2050		68 acres	3	2	2	Moderate (7)
	2100		96 acres	3	3	3	High (9)
Public Access Ways	2016	Flooding, Dune Erosion	3 access points 24,777 LF trails	1	1	1	Low (3)
	2030		3 access points 26,936 LF trails	1	1	1	Low (3)
	2050		7 access points 28,329 LF trails	1	1	1	Low (3)

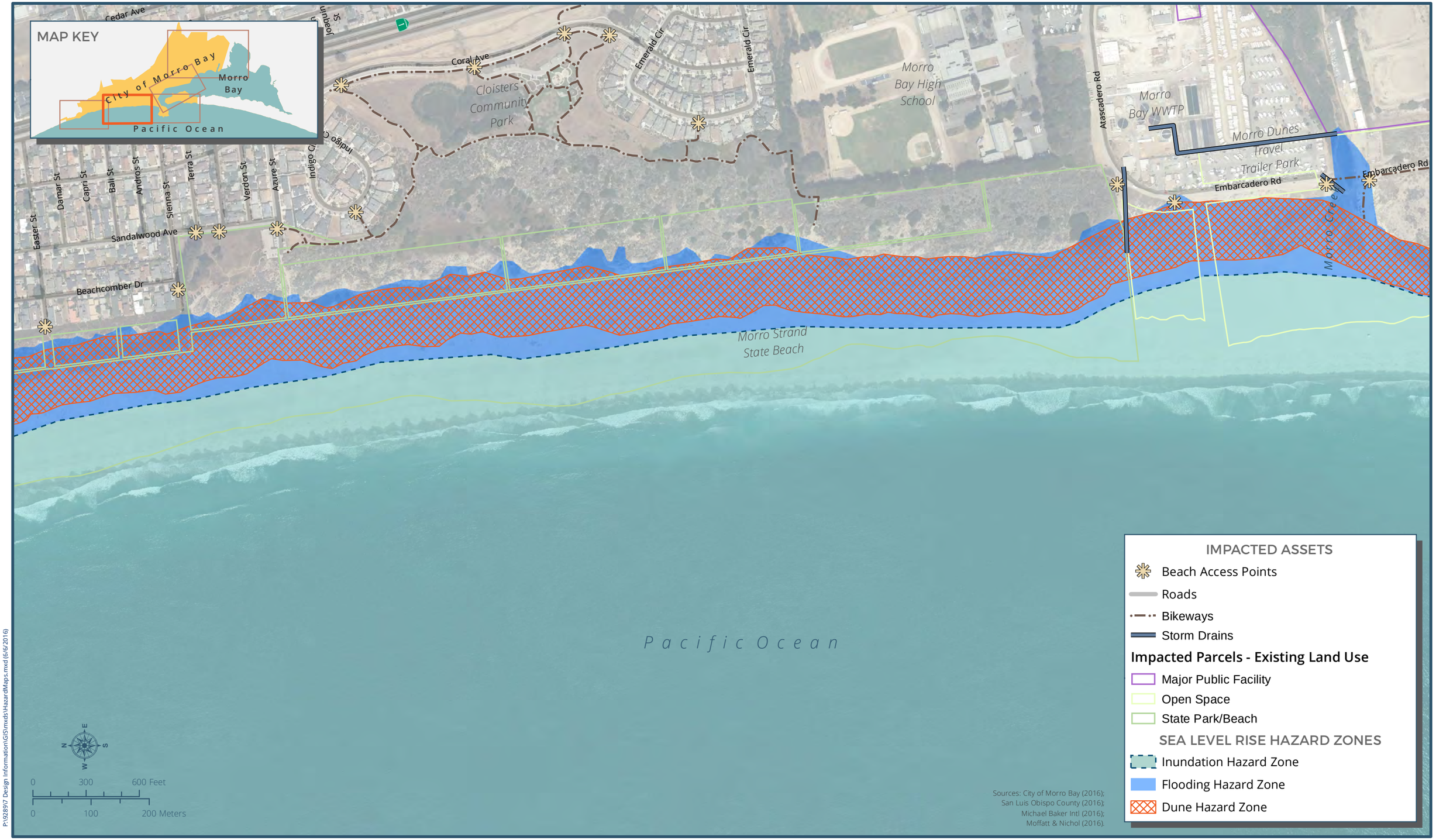
Asset Category	Horizon	Hazard Type	Impacted Assets	Exposure Rating	Sensitivity Rating	Adaptive Capacity Rating	Vulnerability Rating (Score)
	2100	Inundation, Flooding, Dune Erosion, Bluff Erosion	13 access points 37,052 LF trails	2	2	2	Moderate (6)
State Parks	2016	Flooding, Dune Erosion	23 parcels	2	2	3	Moderate (7)
	2030		27 parcels	2	2	3	Moderate (7)
	2050		28 parcels	2	3	3	High (8)
	2100	Inundation, Flooding, Dune Erosion	33 parcels	3	3	3	High (9)
Coastal Development (Parcels)	2016	Inundation, Flooding, Dune Erosion	53 parcels	1	1	1	Low (3)
	2030	Inundation, Flooding, Dune Erosion, Bluff Erosion	66 parcels	1	1	1	Low (3)
	2050		74 parcels	1	2	2	Moderate (5)
	2100		133 parcels	2	2	3	Moderate (7)
Utilities	2016	None	0	N/A	N/A	N/A	N/A
	2030		0	N/A	N/A	N/A	N/A
	2050		0	N/A	N/A	N/A	N/A
	2100	Flooding, Dune Erosion	1 parcel	2	2	3	Moderate (7)
Transportation (Road, Bike, Pedestrian)	2016	Flooding, Dune Erosion, Bluff Erosion	2,025 linear feet	1	3	3	Moderate (7)
	2030	Inundation, Flooding, Dune Erosion, Bluff Erosion	2,715 linear feet	1	3	3	Moderate (7)
	2050		4,102 linear feet	1	3	3	Moderate (7)
	2100		13,162 linear feet	3	3	3	High (9)



Plan MORRO BAY

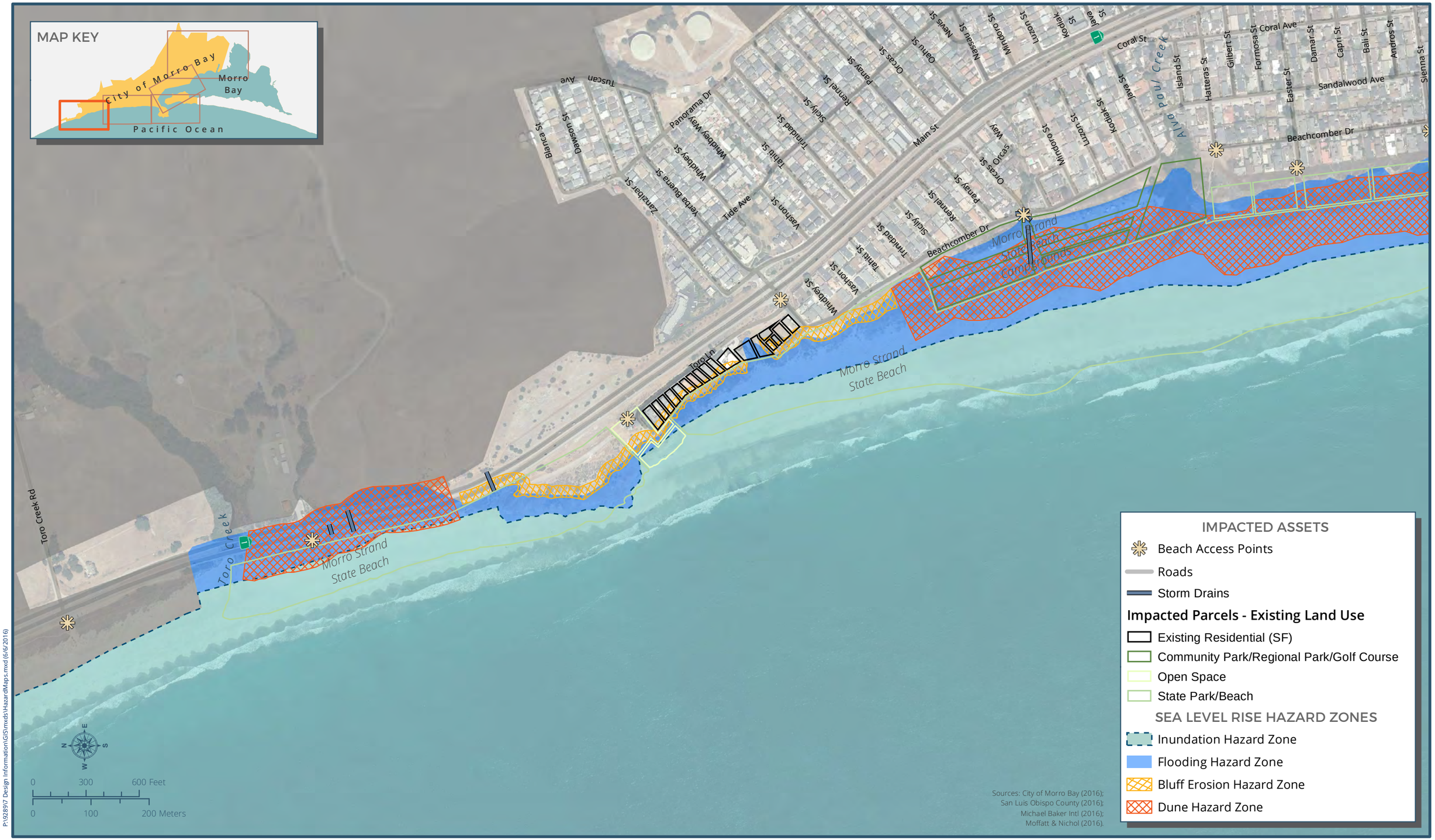
YEAR 2050 SEA LEVEL RISE HAZARDS

Plate 1 of 5



Plan MORRO BAY

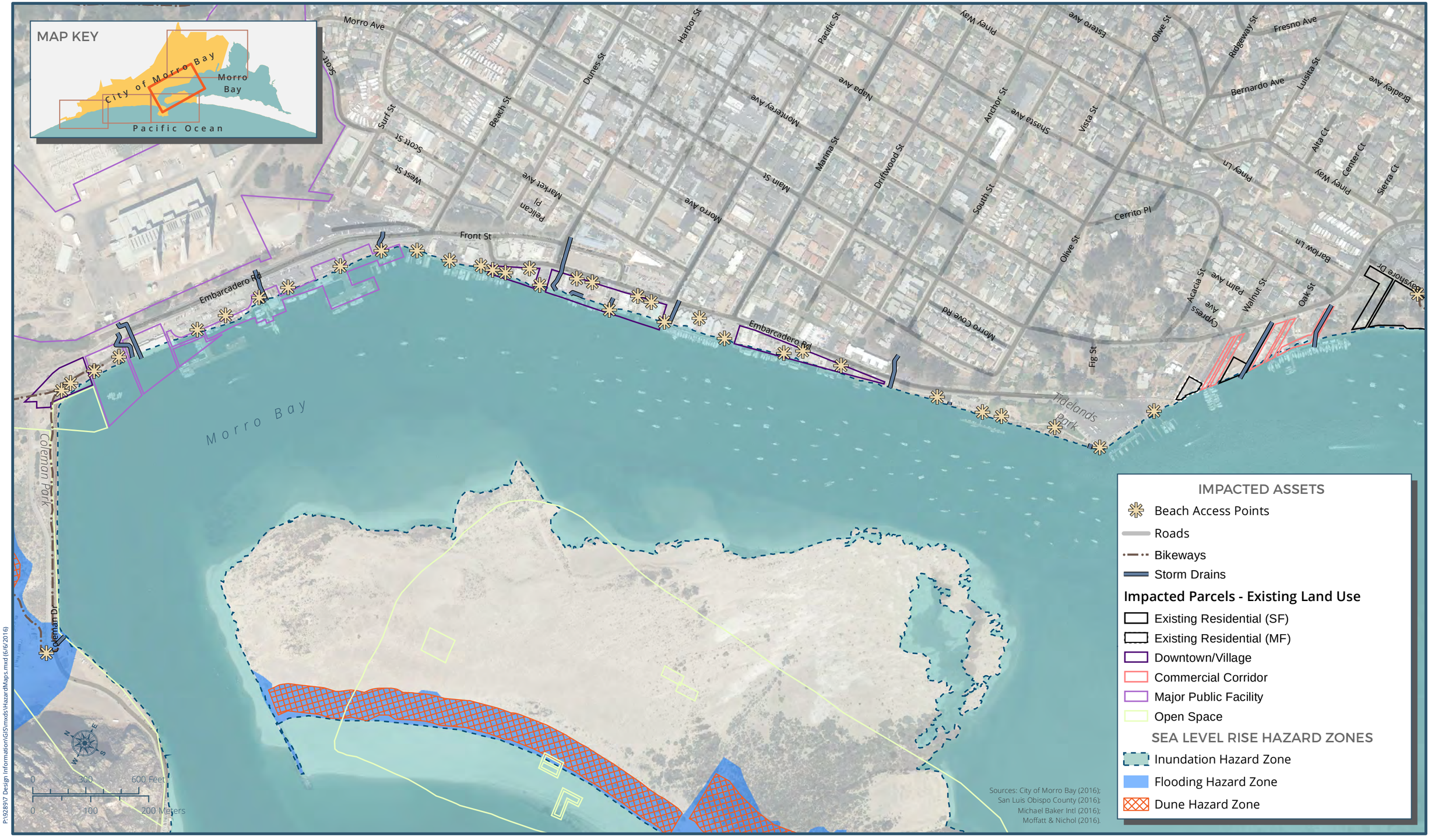
YEAR 2050 SEA LEVEL RISE HAZARDS



Plan MORRO BAY

YEAR 2050 SEA LEVEL RISE HAZARDS

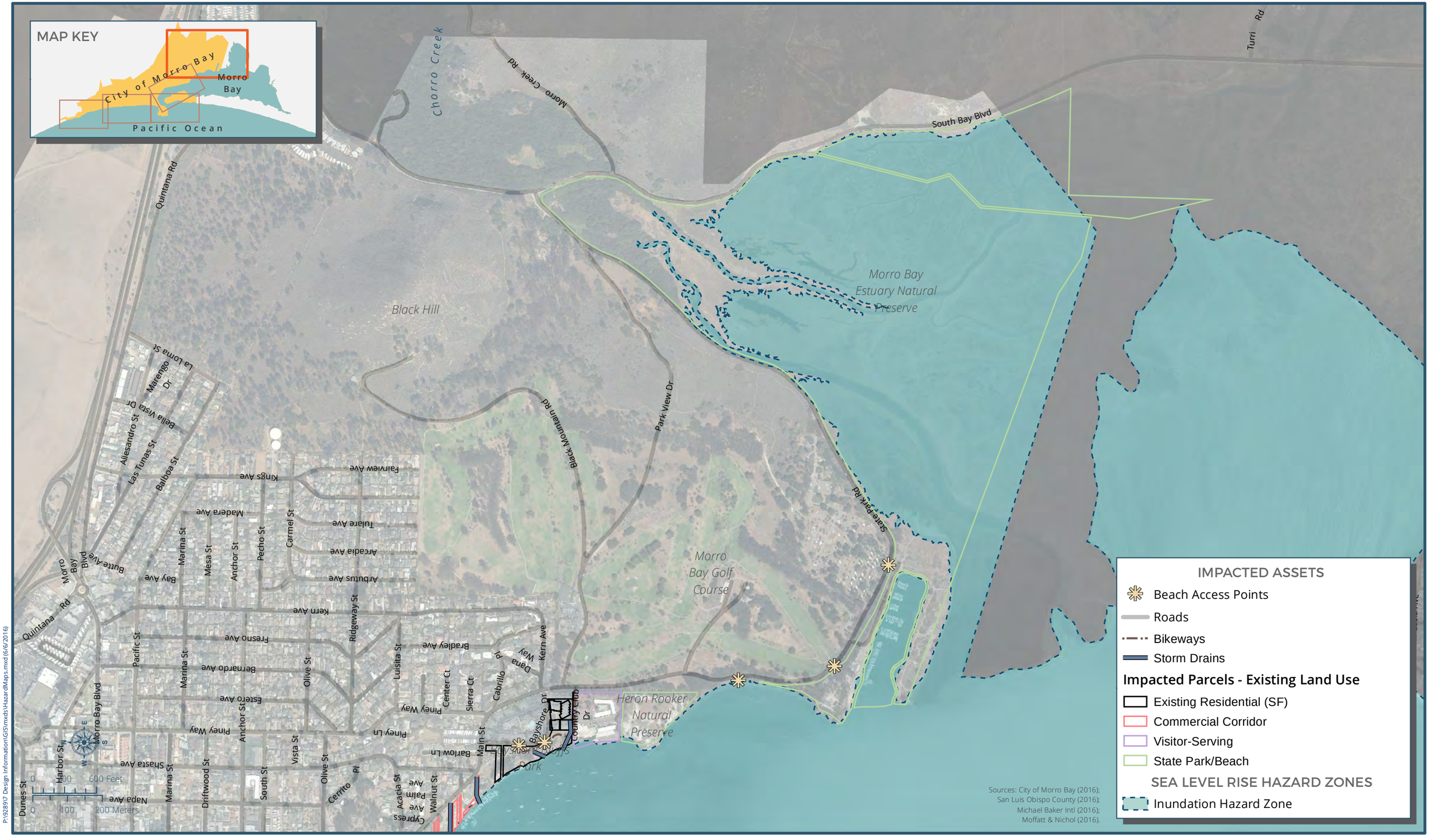
Plate 3 of 5



Plan MORRO BAY

YEAR 2050 SEA LEVEL RISE HAZARDS

Plate 4 of 5



Plan MORRO BAY

YEAR 2050 SEA LEVEL RISE HAZARDS

Beaches

Sandy beaches are highly vulnerable to sea level rise impacts, and erosion impacts are anticipated in any sea level rise scenario. In a natural setting, beaches can be thought to have a high adaptive capacity because they will naturally adjust to a rising sea level if adequate sand exists in the system. However, the adaptive capacity of beaches can be low in areas where beaches are backed by coastal structures or development or where insufficient sand exists in the system.

Year 2030 Vulnerabilities

The overall vulnerability rating for beaches is low for 2030. Approximately 60 acres of beach area are projected to be impacted by a combination of inundation, flooding, and erosion in 2030. Beaches will continue to provide recreation and storm protection benefits during this time horizon (low sensitivity). This impact poses a low risk to the city; although there is a high likelihood of beach loss occurring due to sea level rise, there are low consequences to overall beach function based on shoreline change from modeling results.

Year 2050 Vulnerabilities

Vulnerability is rated moderate for the 2050 horizon, as approximately 68 acres are projected to be impacted by coastal hazards compared to the current horizon. With an increase in inundated, flooded, and eroded areas, impacts will cover greater beach areas and be closer to oceanfront assets, prompting the need for minor to moderate adaptation in sensitive areas where adequate sand may not exist. Beaches will continue to provide recreation and storm protection with a reduced but sizeable beachfront under predicted inundation levels.

Year 2100 Vulnerabilities

A high vulnerability rating has been selected for the 2100 horizon due to the significant erosion expected as a total of approximately 96 acres become impacted by coastal hazards compared to the current horizon, and beaches become squeezed between rising sea levels, dunes, and bluffs. This vulnerability poses a high risk to the city as increased beach erosion will reduce the natural barrier to storm waves and reduce

opportunities for beach access and recreation. Because beach visitation from residents and out-of-town guests often produces economic benefits for City businesses (e.g., retail, restaurants, hotel), there may also be adverse economic costs associated with such impacts.

Public Access Ways

Public access ways consist of vertical beach access points and lateral access ways (trails) that run along the beach and bay. Coastal flooding and erosion have the potential to impact these beach access points and access trails. For example, erosion of the beach may create a large scarp (or drop-off) at the end of a beach access trail. Generally, public access ways have a relatively high exposure due to their location at sandy beaches and waterfronts. In beach areas where access ways are exposed to inundation, flooding, and erosion, there is a low to moderate sensitivity as they are already located in a dynamic environment. Access ways can often naturally adapt to increased water levels and erosion, although some minor repair and adaptation measures may be needed. Waterfront access ways on fixed or floating structures will continue to provide access as long as they are located at an elevation above predicted water levels or are able to accommodate increased water levels.

Year 2030 Vulnerabilities

Overall, the vulnerability of access ways is low for this time horizon due to the low number of impacted access ways and access points, their low sensitivity to coastal hazards, and minor or no adaptation needed. Wave forces during large surf may physically damage trails, making them temporarily impassable. Three access points to ocean-fronting beaches and 26,936 linear feet of trails may be temporarily impacted during storm events but will likely still be viable immediately after storm events; however, some may require minor adaptation like clearing and grading. Bay side beach access points are not expected to be impacted by coastal hazards in this time horizon.

Year 2050 Vulnerabilities

Vulnerability remains low for the 2050 horizon with seven access points on ocean-fronting beaches and 28,329 linear feet of trails impacted by coastal hazards. This represents a small increase in number of impacted access points and length of trail from

the 2030 horizon along with a small increase in temporary impacts due to flooding and erosion with minor or no adaptation needed. Bay side beach access points are not expected to be impacted by coastal hazards in this time horizon.

Year 2100 Vulnerabilities

Public beach access ways will be moderately vulnerable in the 2100 horizon with 13 access points and 37,052 linear feet of trails impacted by coastal hazards. In this time horizon, one of the impacted access points will be located on the bayfront; however, the remaining bayfront access points are not expected to be impacted. A majority of impacted access ways will likely become impassible during large surf but remain viable after. Some access ways may encounter damage due to erosion, thus requiring minor to moderate repairs and adaptations such as clearing, grading, and fill. Access points that become inundated in 2100 will naturally migrate inland, and some adaptation may be needed to maintain safety and ease of access at these locations.

State Parks

State park facilities along the shoreline consist of parking lots, campgrounds, and a marina. Dunes and dune habitats represent a significant natural resource in the state parks as they are actively restored and preserved. State park facilities are recognized as important assets to the city in terms of economic and recreation value. The state park facilities also provide an important low cost visitor-serving amenity with prime access to coastal resources. Though economic impacts to the physical structures (i.e., asphalt paving, restrooms, some utilities and marina facilities) in the affected state parks would be relatively low, loss of these amenities would be significant since these features may not be easily or realistically moved inland.

Year 2030 Vulnerabilities

Overall, vulnerability for the 2030 time horizon is moderate and many impacts are expected to be temporary, only occurring during large surf events. The state parks have a variety of assets providing coastal access and recreation opportunities that are vulnerable to coastal impacts. In this time horizon, 27 parcels are exposed. Temporary impacts due to flooding could affect parking and access corridors, particularly in the vicinity of Morro Rock. Following flooding, clearing may be necessary to restore full

accessibility in these areas. The Morro Strand campground is vulnerable to flooding and erosion, and clearing and minor erosion repairs may be needed following a high surf event. The state park marina will be largely unaffected as floating docks, gangways, and fixed access ways should be able to accommodate higher water levels. Natural features in the state parks have an elevated vulnerability, due to low adaptive capacity to migrate inland and moderate to high resource sensitivity. Dunes are not expected to naturally reestablish following loss from erosion; because dunes and habitat areas can be lost or diminished, dune and beach erosion may result in significant impacts.

Year 2050 Vulnerabilities

Vulnerability in the 2050 time horizon has been rated as high; one additional parcel is exposed under this condition and assets from the 2030 horizon are exposed to additional flooding and erosion. Coastal access and recreation opportunities will remain viable in this time horizon; however, temporary disruptions during high surf events are more likely and widespread. Additional parking and access corridor areas will be exposed to flooding in the vicinity of Morro Rock and will require clearing following a high surf event. The Morro Strand campground will be exposed to additional flooding and erosion; along with clearing, minor adaptation may be required to maintain functionality. Some adaptations to floating docks, gangways, and fixed access ways may be required in the state park marina to accommodate increased water levels. Some natural features may adapt in this horizon; however, many features may be lost and unable to naturally migrate inland. Where possible, restoration efforts may be needed to reestablish features like dunes and habitats. Dunes will continue to erode inland toward development and may no longer exist in some areas.

Year 2100 Vulnerabilities

State parks have a high vulnerability in the 2100 time horizon. Coastal access and recreation opportunities may be impeded by temporary disruptions due to flooding and dune erosion. The Morro Strand campground may require significant adaptation to remain functional prior to and following flooding and erosion events. Lands surrounding the state park marina will be inundated and floating docks, gangways, and fixed access ways may require significant adaptation to accommodate increased water levels. Access to the marina via State Park Road will be impacted as portions of the road become inundated. Dune losses and associated habitat losses will increase and in some areas

may be completely lost as erosion carries inland to the line of development. Dune habitats are of intrinsic value to the state parks, providing ecological, recreational, and storm protection values; therefore, their loss will be significant.

Coastal Development

Coastal development evaluated for sea level rise impacts include privately held parcels of various land uses g. Current City land use data was used to categorize the parcels. Parcels generally have a low adaptive capacity and high sensitivity. However, the adaptive capacity of buildings could potentially be moderate for some parcels with finished floors on an elevated building pad. Note that impacts to parcels may not necessarily represent impacts to the physical buildings located on the parcel.

Year 2030 Vulnerabilities

Coastal development has a low vulnerability during the 2030 time horizon, with 66 parcels exposed to coastal hazards. Portions of parcels, where buildings are located, along the bayfront may be exposed to flooding in year 2030. However, the majority of buildings themselves do not appear flooded in this scenario and are supported on structures above predicted water levels or fronted by shore protection in the form of a revetment or seawall (low exposure). Increased water levels may impact parcel usage but impacts to structures are not expected. Bayfront parcels with coastal access, including gangways, floating docks, and fixed docks/access ways, should be able to accommodate water levels predicted for 2030. Oceanfront parcels have a low exposure to coastal hazards during this time horizon.

Year 2050 Vulnerabilities

With a small increase in exposure (low exposure), totaling 74 parcels, a moderate vulnerability to coastal development exists in the 2050 time horizon. A moderate rating has been assigned as development is typically sensitive to episodic flooding and erosion with little adaptive capacity. Bayfront parcels will largely maintain conditions as seen in the 2030 horizon, with the height of structures and protection above predicted water levels. Some parcels with coastal access ways and docks may need modifications to accommodate increased water levels.

Oceanfront parcels in the vicinity of Toro Lane may experience bluff erosion. Adaptation may be needed to maintain parcel use. No other privately held oceanfront parcels are exposed to coastal hazards during this time horizon.

Year 2100 Vulnerabilities

Vulnerability of coastal development is moderate for the 2100 time horizon due to the increased exposure and sensitivity of parcels to flooding, erosion, and inundation during an extreme storm event. In 2100, 133 parcels are exposed to coastal hazards. This poses a high risk to parcel owners due to the higher consequence of damage under the storm scenario evaluated for this planning horizon. Bayfront parcels will continue to experience increased water levels, thus impacting uses, but structures are expected to only be moderately sensitive as most are above predicted water levels. However, a portion of the golf course will be particularly sensitive to inundation. Many parcels with coastal access ways and docks will need modification to accommodate the water levels predicted for this time horizon.

Oceanfront parcels along Beachcomber Drive and Toro Lane are exposed to flooding, dune, and bluff erosion hazards. The parcels are highly sensitive to flooding and erosion events. Furthermore, the adaptive capacity of these parcels is low, requiring significant changes to maintain current use.

Utilities: Water, Wastewater, Gas, Electricity, and Telecommunications

Utility assets include facilities necessary to run the city effectively and efficiently since loss of water, sewer, or power would significantly disrupt quality of life for residents. This infrastructure typically has a high sensitivity and low adaptive capacity. Wastewater was determined to be the only vulnerable utility to sea level rise. The wastewater treatment plant site was found to be vulnerable to coastal flooding by the 2100 time horizon. Impacts to the wastewater treatment plant are not expected in the 2030 and 2050 time horizons.

Vulnerability of the wastewater treatment plant is rated as high due to the high sensitivity and low adaptive capacity of this asset in its current state. The wastewater treatment plant is exposed to flooding and erosion hazards that could lead to a disruption of

service during a large surf event. Service disruption can result in overflow conditions where untreated and partially treated wastewater is released on-site and through outfall facilities.

Since the wastewater treatment plant is planned for relocation, the vulnerability of proposed future property uses to sea level rise and associated coastal hazards should be considered.

Transportation: Roads, Bike, and Pedestrian Assets

Transportation-related assets are generally highly sensitive to coastal hazards as even minor amounts of flooding can cause significant traffic delays and potentially disrupt emergency service vehicles and evacuation routes. Maintenance and repair requirements may also increase after significant flooding and erosion events. Roadways typically have a low adaptive capacity because significant costs are associated with relocating or raising these structures. Many roadways include bike and pedestrian facilities or have separate bike and pedestrian facilities running parallel to roads.

Year 2030 Vulnerabilities

A moderate vulnerability exists for transportation corridors in 2030 when a total of 2,715 linear feet are exposed to coastal hazards. Highway 1 provides a vital north–south connection and will be partially exposed to flooding and dune erosion during extreme storms in the 2030 planning horizon. The hazards to Highway 1 are localized to the area south of Toro Creek. Note that the dune hazard zone in this area assumes the revetment in this area fails or is overwhelmed, thus allowing erosion to continue landward of this feature.

Flooding hazards also exist along Coleman Drive and at Morro Rock Beach parking lot during this time horizon. Flooding of these areas would be of short duration and episodic in nature but could result in temporary access constraints and increased maintenance and cleanup costs. Although the exposure to hazards is considered low for the 2030 horizon, roads are sensitive to flooding and can create traffic delays and become impassible with any flooding. Depending on the city's tolerance for these events, vulnerabilities may be considered greater.

Year 2050 Vulnerabilities

The rating for transportation asset vulnerabilities in the 2050 time horizon remains moderate due to the localized and relatively small increase in flood and erosion hazard areas of Highway 1. There is a modest increase in flooding hazards along Coleman Drive in the vicinity of Morro Rock and some flooding and erosion hazards along local roads of ocean-fronting areas. A total of 4,102 linear feet of transportation assets will be exposed. Exposure remains low but the sensitivity of Highway 1 continues to increase as greater lengths of the road become impacted by coastal hazards.

Year 2100 Vulnerabilities

Vulnerability is considered high for the 2100 planning horizon as major transportation corridors in the city become exposed to inundation, flood, and erosion hazards. Exposure becomes high as 13,162 linear feet become exposed along with a greater portion of Highway 1 and portions of Main Street/State Park Road. Flood hazards continue to increase on Coleman Drive in the vicinity of Morro Rock. Inundation, flood, and erosion hazards increase along local roads in ocean-fronting areas such as Beachcomber Drive. Major corridors will be highly sensitive to flooding in this time horizon due to the low adaptive capacity. Improvements will likely be needed to maintain continuous access.

Qualitative Assessment of Resource Vulnerabilities

Certain assets are difficult to quantify; thus, a qualitative analysis was conducted to describe how these resources may be impacted by sea level rise. These assets include environmentally sensitive lands, harbor resources, visual resources, cultural resources, and saltwater intrusion, as discussed below.

Environmentally Sensitive Lands

Environmentally sensitive lands include wetlands, rivers, riparian areas, dunes, and other natural resources in the coastal zone. These lands generally have some adaptive capacity in areas where adequate space exists for them to naturally shift landward due to a rising sea level.

In the 2030 time horizon, environmentally sensitive lands begin to experience increased tidal inundation with rising in sea levels. Wetland hydrology may be altered by the rising freshwater-saltwater interface (CNRA 2014) and intertidal and subtidal ecosystems may be affected by changes in water depth and sunlight penetration. Some flora and fauna may be able to adapt by migrating vertically and/or horizontally. As sea levels continue to rise in 2050 and 2100, exposure will increase and may adversely impact density and diversity of these resources. Many flora and fauna may not be able to adapt due to lack of suitable upland areas or failure to keep pace with the rate of sea level rise.

Restoration efforts may be needed, where possible, to adapt certain species to predicted water levels. Many areas with steep slopes and urban development constrain the space available for landward migration. Risk of this vulnerability is high as the consequences to density and diversity of environmental resources are significant.

Eelgrass is a sensitive environmental resource in Morro Bay. It has been actively monitored by the MBNEP since 2007. Eelgrass has declined rapidly in Morro Bay since that time and the decline is cause for great concern since the estuary sustains the only major eelgrass habitat between San Francisco and Los Angeles (MBNEP 2014). Dynamic conditions in the estuary make it difficult to discern variables driving changes in eelgrass habitats. A combination of factors is likely driving the decline of eelgrass; these include sedimentation, water quality, dredging activities, and coastal storm impacts (MBNEP 2013). Increases in the quantity of sediment from sources that outlet into the estuary and decreased sediment quality due to pollutants may be the cause of these declines. Sedimentation of the bay can be accelerated by large precipitation events, coastal storms, wildfires, urban development, grazing, and cultivation practices. Intertidal channel erosion can also impact eelgrass habitats. (MBNEP 2013)

Fisheries are another environmental resource which face a similarly dynamic multitude of variables. A decline in density and diversity of coastal habitats can impact fisheries as these areas provide food sources, shelter, and hatching grounds for many organisms. In addition, warmer water temperatures can result in harmful algal blooms and increased prevalence of pathogens and disease which can impact both plant and animal species (MBNEP 2016).

Harbor Resources

The harbor in Morro Bay is a resource to mariners, providing a critical harbor of refuge and vessel mooring which supports the local marine industry, including commercial fishing. In turn, the harbor also contributes to the cultural and economic resources of the City of Morro Bay.

As discussed in the Coastal Development section, marinas, gangways, docks, and other areas where vessels are moored may accommodate some amount of sea level rise while others may require modifications. Mooring areas that are able to accommodate or have been modified for sea level rise will continue to function similarly. Mooring hardware and structures which mooring hardware is fastened to should be in good repair and appropriately sized. During a storm event, increased wind loads and bay currents on moored vessels can result in failure of undersized or deteriorated mooring hardware and associated structures.

The USACE owns and maintains key resources that facilitate safe passage for vessels in Morro Bay. Historically, the USACE has frequently dredged the federal channel in Morro Bay. The federal channel consists of the entrance channel, the transition channel, the sand trap, the main channel, the Navy channel, and the Morro Channel. The USACE also owns and maintains the Morro Bay Harbor jetty system, which consists of a northern breakwater and southern rock jetty structures used to stabilize the Morro Bay entrance channel. Continued maintenance dredging of the federal channel along with maintenance of the Morro Bay Harbor jetty system is needed to maintain safe passage for vessels regardless of rising sea levels. Dredging activities are not expected to increase in frequency or effort with rising sea levels. The Morro Bay Harbor jetty system may require upgrades as determined by the USACE to provide current levels protection with projected sea level rise.

Visual Resources

Visual resources in the City of Morro Bay include views of the beaches, bluffs, dunes, Morro Bay, Pacific Ocean, and Morro Rock. As sea levels rise, sandy beaches will become narrower due to erosion and inundation. Erosion may alter the size and appearance of bluffs and dunes fronting the beach. Views may also be impacted by coastal structures built to protect assets or to accommodate sea level rise. Waterfront views may be impacted if structures increase in height in order to accommodate increased water levels.

Cultural Resources

Historic sites existing within the coastal hazard zones will be vulnerable. In addition to physical impacts, exposure of historic sites can lead to irreplaceable loss of cultural heritage. Erosion, inundation, and flooding of these coastal areas could result in vulnerability and/or loss of any archaeological resources that exist in these areas.

Saltwater Intrusion

As sea levels rise, saltwater has the ability to migrate inland through man-made and natural channels, drainage structures, soils, and underground pathways. The migration of saltwater results in salinity changes that can lead to a variety of ecological and agricultural resource impacts. Additionally, saltwater intrusion can impact freshwater resources including surface waters and groundwater.

3.3 REGULATORY SETTING

The following sections summarize the agencies that may be involved in issues related to coastal hazards. Additional coastal regulations are outlined in Chapter 12 (Shoreline Management and Protection).

FEDERAL AGENCIES

National Oceanic and Atmospheric Administration (NOAA) Fisheries

In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act, NOAA Fisheries must be consulted on any potential impacts to Essential Fish Habitat. Essential Fish Habitat includes all tidal waters; therefore, future adaptation strategies that involve actions in tidal waters will require consultation with NOAA Fisheries.

US Army Corps of Engineers (USACE)

Any action that involves the placement of structures or sand below the high water line requires a permit from the USACE under Section 404 of the Clean Water Act. Any project that places structures or sand below the mean high tide line or that involves dredging requires a permit from the USACE under Section 10 of the Rivers and Harbors Act. For projects below the mean high tide line, the USACE processes the Section 10 and Section 404 permits together. Adaptation strategies such as beach nourishment or repair of shoreline protection structures will likely involve work with USACE jurisdiction.

US Fish and Wildlife Service

Under Section 7 of the Federal Endangered Species Act, a federal agency must consult with the US Fish and Wildlife Service for any project that has the potential to affect a federally listed threatened or endangered species. Species of concern for activities in Morro Bay include the snowy plover and least tern.

STATE AGENCIES

California Coastal Commission

The California Coastal Act requires cities and counties in coastal California to prepare Local Coastal Programs that provide ground rules for future development and protection of resources in the coastal zone. The CCC Sea Level Rise Policy Guidance (CCC 2015) lays out the following guiding principles for addressing the challenge of rising sea levels:

- Use Science to Guide Decisions
- Minimize Coastal Hazards Through Planning and Development Standards
- Maximize Protection of Public Access, Recreation, and Sensitive Coastal Resources
- Maximize Agency Coordination and Public Participation

A certified Local Coastal Program is intended to be the implementing mechanism for adaptation strategies to minimize hazards and protect coastal resources from impacts related to sea level rise. The CCC is responsible for certification of Morro Bay's updated Local Coastal Program and will provide feedback on adaptation policies and programs developed by the city.

Regional Water Quality Control Board

Any project that requires a Section 404 permit from the USACE must also obtain a Water Quality Certification under Section 401 of the Clean Water Act from its affiliated Regional Water Quality Control Board. Adaptation strategies such as beach nourishment or repair of shoreline protection structures will likely require a Water Quality Certification.

California State Lands Commission

The state of California owns state tidelands, which generally are all lands seaward of the mean high tide line. This includes the waterside infrastructure along the Morro Bay Embarcadero that supports commercial fishing and recreational boating activities. If a project extends into state lands, a letter of concurrence for the activity will need to be obtained from the California State Lands Commission.

3.4 PRIORITY FINDINGS

EXISTING COASTAL RESOURCE VULNERABILITIES

Under existing (baseline) conditions, beaches and dunes are among the most exposed resources along the open coastline. Erosion and flooding associated with extreme storm events can result in significant loss of beach area and dune habitat. The sandy beaches are more resilient than dunes and typically regain width during calm wave conditions. Once eroded, the dune system takes a longer time to reestablish and is less resilient to impacts from extreme storms.

Despite being one of the least disturbed estuaries in Southern and Central California, the environmentally sensitive habitats of the Morro Bay Estuary face many stressors including saltwater intrusion, accelerated sedimentation, water quality concerns due to

pollutant loading, increasing demand for freshwater resources, and threats to existing biodiversity (MBNEP 2016).

Much of the coastal development faces limited exposure to inundation, erosion, and flooding from coastal storm events under the baseline conditions. Coastal development north of Morro Rock is set back from the active shoreline and protected by the beach and dune system. Along the bayfront, most development is elevated above extreme high water levels and protected by a revetment or bulkhead structure.

PROJECTED COASTAL RESOURCE VULNERABILITIES

Projected vulnerabilities were evaluated for three sea level rise scenarios representing the upper range of projections for years 2030, 2050 and 2100. Coastal hazards were mapped for each scenario to estimate flooding, inundation, dune erosion, and bluff erosion hazard areas. A summary of coastal resources vulnerable to sea level rise in year 2100 is provided in Table 3.4. Year 2030 and year 2050 are provided for reference where notable differences exist.

Table 3.4
Priority Findings Summary table

Asset Category	Potential Impacts	Consequences
Transportation	Highway 1, south of Toro Creek, vulnerable to flooding and erosion in 2030. Coleman Drive and the Morro Rock parking lot are vulnerable to flooding in 2050. Main Street/State Park Road vulnerable to flooding in 2100.	Interruption of a major north–south transportation and evacuation route (Highway 1).
		Traffic delays, road closures, debris, and damage.
Environmentally Sensitive Lands	Wetlands, intertidal, and subtidal habitats impacted by increased tidal inundation in 2030. Impacts more significant in 2050 and beyond as steep topography and development limit the ability of habitats to adapt.	Loss of habitat area and species diversity.
State Parks	Dune system and Morro Strand campground vulnerable to flooding and erosion in 2030, more so in 2050 and 2100.	Loss of sensitive dune habitat and loss of recreational beach area.

Asset Category	Potential Impacts	Consequences
Beaches	Flooding, erosion, and inundation of sandy beaches, dunes, and bluffs. Significant loss of beach area expected for 2050 and 2100.	Loss of recreation opportunities and storm protection provided by beaches.
Coastal Development	Moderate vulnerability to coastal development in 2050 due to storm-related flooding. Increased vulnerability in 2100 as flooding, dune erosion, and bluff erosion impact oceanfront parcels.	Impacts to uses and value of residential and commercial parcels.
Utilities	The wastewater treatment plant site was found to be vulnerable to coastal flooding by the 2100 time horizon.	Disruption of water treatment service, damage to infrastructure, potential overflow.

Flooding is generally short in duration (hours); however, it can present significant disruptions to parcels, critical infrastructure, and transportation corridors. Parcels may be highly sensitive to flooding, especially if the finished floor elevation of a structure is below flood depths. Flooding of residential parcels may displace homeowners, result in property damage, and decrease value, while commercial parcels may experience operation interruptions, displacement, and property/equipment damage. Critical infrastructure, specifically the wastewater treatment plant, would be highly sensitive to flooding due to the consequences of service interruptions and potential for the release of untreated sewage. Transportation corridors may remain viable after flooding; however, any amount of flooding can temporarily disrupt traffic and choke vital transportation and evacuation routes.

Erosion may be gradual or episodic and consequential to many assets based on their exposure and sensitivity. Beaches, state parks, parcels, and transportation corridors are exposed to dune and bluff erosion hazards. Erosion at beaches and state parks may impact recreational opportunities as sand and dune areas become squeezed between rising seas and upland development. Storm protection provided by beaches, dunes, and bluffs will be degraded as erosion progresses inland, which can result in damage to roadways, residential parcels, and commercial parcels currently fronted by these features.

Inundated areas will be subject to daily wetting from tidal waters impacting beaches, state parks, parcels, and transportation corridors. Inundation will reduce recreation space and opportunities in state parks and beaches. Transportation corridors subject to

inundation will no longer be viable. Parcel inundation may result in damage and displacement with impacts to structures, use, and value. Environmentally sensitive lands may decrease in density and diversity as significant habitat areas are lost and species are unable to keep pace with rising seas or become constrained by development or geographic features.

4.0 Cultural Paleontological, and Mineral Resources

Plan Morro Bay

4.0 CULTURAL, PALEONTOLOGICAL, AND MINERAL RESOURCES

This chapter identifies existing and historical cultural, paleontological, and mineral resources conditions in the planning area, as well the regulatory conditions relating to cultural, paleontological, and mineral resources.

4.1 EXISTING CONDITIONS

CULTURAL BACKGROUND

Prehistoric

Morro Bay lies in the Central Coast archaeological region (Moratto 1984; Jones et al. 2007). The Central Coast is defined as extending from south of San Francisco Bay to the northern edge of the Southern California Bight (Jones et al. 2007). Following Jones et al. (2007), the prehistoric cultural chronology for the Central Coast can be generally divided into six periods: Paleo-Indian (ca. 10,000–8,000 B.C.), Millingstone/Early Archaic (8,000-3,500 B.C.), Early (3,500-600 B.C.), Middle (600 B.C.-A.D. 1000), Middle-Late Transition (A.D. 1000-A.D. 1250), and Late (A.D. 1250-contact [ca. A.D. 1769]).

Recent data from Paleo-Indian sites in Southern California indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (Jones et al. 2002) and on Pleistocene lake shores in eastern California (Moratto 1984). Although few Clovis-like or Folsom-like fluted point arrowheads have been found in Southern California (Erlandson, Cooley, and Carrico 1987), it is generally considered that the emphasis on hunting may have been greater during the Paleo-Indian period than in later periods.

The Millingstone period, as defined by Wallace (1955, 1978) and recognized on the Central Coast by Greenwood (1972), is characterized by an ecological adaptation to collecting suggested by the appearance and abundance of well-made milling implements. Millingstones occur in large numbers for the first time in the region's archaeological record, and are even more numerous near the end of this period. Aside

from millingstones, typical artifacts during this period include crude core and cobble-core tools, flake tools, large side-notched projectile points, and pitted stones (Jones et al. 2007).

An extensive series of shoreline midden deposits are within the Central Coast region dating to the Early period, signifying an increase in occupation of the open coast (Jones 1995; Jones and Waugh 1995, 1997). Sites dating to this period are marked by large lithic artifact assemblages, which include Central Coast Stemmed Series and side-notched projectile points. The material culture recovered from Early period sites within the Central Coast region provides evidence for continued exploitation of inland plant and coastal marine resources. Artifacts include milling slabs and handstones, as well as mortars and pestles, which were used for processing a variety of plant resources. Bipointed bone gorge hooks were used for fishing. Shell beads and obsidian are hallmarks of the trade and exchange networks of the Central and Southern California coasts. The archaeological record indicates a substantial increase in the abundance of obsidian at Early period sites in the Monterey Bay and San Luis Obispo areas (Jones and Waugh 1997).

A pronounced trend toward greater adaptation to regional or local resources occurred during the Middle period. For example, the remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in archaeological deposits along the coast. Related chipped stone tools suitable for hunting were more abundant and diversified, and shell fishhooks became part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common during this period. Projectile points include large side-notched, stemmed, and lanceolate or leaf-shaped forms. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive became common. Sites from this period show a retention of stemmed points and the disappearance of the larger side-notched points (Jones et al. 2007).

The Middle-Late Transition period is marked by relative instability and change, with major changes in diet, settlement patterns, and interregional exchange. The relatively ubiquitous Middle period shell midden sites found along the Central Coast were abandoned by the end of the Middle-Late Transition period, so most Transition period and Late period sites were first occupied during those periods (Jones and Ferneau 2002). One site (Site SLO-239) has been tentatively dated to the Middle-Late Transition period

and contains the only residential feature, a circular house floor, dating to this time period (Jones et al. 2007; Mikkelsen, Hildebrandt, and Jones 2000).

Late period sites are marked by small, finely worked projectile points, such as desert side-notched and cottonwood points, as well as temporally diagnostic shell beads. The small projectile points are associated with bow and arrow technology and indicate influence from the Takic migration from the deserts into Southern California. Common artifacts identified at Late period sites include bifacial bead drills, bedrock mortars, hopper mortars, lipped and cupped *Olivella* shell beads, and steatite disk beads. The presence of beads and bead drills suggest that low-level bead production was widespread throughout the Central Coast region (Jones et al. 2007).

Ethnographic

Morro Bay was historically occupied by the Obispeño Chumash, so-called after their historic period association with Mission San Luis Obispo de Tolosa (Gibson 1983; Kroeber 1925).

Groups neighboring the Chumash included the Salinan to the north, the Southern Valley Yokuts and Tataviam to the east, and the Gabrielino (Tongva) to the south. Chumash place names in the project vicinity include Pismu (Pismo Beach), Tematatimi (along Los Berros Creek), and Tilhini (near San Luis Obispo) (Greenwood 1978).

Only a general outline of the lifeways of the Obispeño Chumash is known based on the little ethnographic information available (Greenwood 1978). Although their language was closer to Southern Chumash groups, the material culture and lifeways of the Northern Chumash appear to have been more similar to their northern neighbors, the Salinan. Accordingly, their populations in this area are thought to have been substantially lower than in the Santa Barbara Channel area, their villages smaller, and their livelihood less based on intensive use of marine fisheries (Glassow, Wilcoxen, and Erlandson 1988; Greenwood 1978).

Permanent Chumash villages included hemispherical dwellings arranged in close groups, with the chief having the largest for social obligations (Brown 2001). Each Chumash village had a formal cemetery marked by tall painted poles and often with a defined entrance area (Gamble, Walker, and Russell 2001). Archaeological studies have

identified separate sections for elite versus commoner families within the cemetery grounds (King 1969).

The acorn was a dietary staple for the mainland Chumash, though its dominance varied by coastal or inland location. Chumash diet also included cattail roots, fruits and pads from cactus, and bulbs and tubers of plants such as amole (Miller 1988). On the coast, the wooden plank canoe (tomol) was employed in the pursuit of marine mammals and fish. The tomol not only facilitated marine resource procurement but also facilitated an active trade network maintained by frequent crossings between the mainland and the Channel Islands.

Chumash populations were decimated by the effects of European colonization and missionization (Johnson 1987). Traditional lifeways largely gave way to laborer jobs on ranches and farms in the Mexican and early American periods. Today, the Santa Ynez Band of Chumash Indians is the only federally recognized Chumash tribe, though many people of Chumash descent continue to live throughout their traditional territory.

Historical

Post-European contact history for the state of California is generally divided into three periods: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present).

The Juan Rodrigues Cabrillo expedition reached the San Luis Obispo region in 1542, possibly landed in Morro Bay, and sailed as far north as San Francisco Bay (Chesnut 1993). For more than 200 years, other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003). The earliest detailed descriptions of the area come from members of Gaspar de Portolá's land expedition, which passed through the region in 1769 (Squibb 1984). Early travelers in the Central Coast region reported seeing no large Native American villages like those noted in the Santa Barbara Channel area.

Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Portolá continued north, passing through the project vicinity and reaching San Francisco Bay in 1769. Mission San

Luis Obispo de Tolosa was founded in 1772, the fifth of 21 missions established by the Spanish in Alta California. (Rolle 2003)

The Mexican period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period was an era of extensive interior land grant development and exploration by American fur trappers west of the Sierra Nevada mountains. The California missions declined in power and were ultimately secularized in 1834. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 1999).

The secularization of the missions during the Mexican period resulted in approximately 500,000 acres of former mission lands being granted to Mexican citizens in San Luis Obispo County (San Luis Obispo 2006). The City of Morro Bay contains portions of what were once the San Bernardo and the Moro y Cayucos land grants. Rancho San Bernardo was granted in 1840 to Vincent Cane, and Rancho Moro y Cayucos was granted in 1842 to Martin Olivera and Vicente Feliz (Shumway 2007).

The American period began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of Southern California continued to increase during the early American period. Many ranchos in the county were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns. Rancho San Bernardo was patented to Vincent Cane in 1865, and a patent was issued for Rancho Moro y Cayucos to James McKinley in 1878.

The County of San Luis Obispo was founded in 1850 (San Luis Obispo 2006). Roads were constructed throughout the county in the 1870s, primarily by Chinese laborers, leading to increased mobility throughout the county. In 1872, Captain John Harford began construction on the Pacific Coast Railway.

In 1864, Franklin Riley visited Morro Bay while traveling the coast. Riley knew that there was a pocket of public land between Don Canet's Rancho San Bernardo and the coast, so he decided to homestead this land, and in 1870 founded it as the City of Morro Bay. Few roads led to Morro Bay, so transportation relied on steamers. Riley built the Embarcadero and planned the town next to the bay to accommodate sea trade and

travel. Throughout the 1870s, the town grew rapidly because of trade along the Embarcadero (Hammond 2010).

Land development became very important in Morro Bay in the early 1900s, with several real estate developers promoting the city. During the 1920s, numerous housing developments were carved out of ranches and farms (Hammond 2010). The Morro Bay Power Plant was constructed in the 1950s, providing jobs and tax revenue. Morro Bay was incorporated as a general law city in 1964 and elected its first City Council.

In the early twentieth century Port Harford was renamed Port San Luis and oil from the Santa Maria and Taft-Coalinga fields was shipped beginning in 1907 and 1913, respectively. The California Polytechnic School was established in 1901 as a high school and eventually became California Polytechnic State University (Cal Poly). The county's agriculture and ranching production supplied US troops during World War I and helped its residents weather the Great Depression of the 1930s. At the start of World War II, the US War Department transferred nearly 100,000 military personnel to bases at Morro Bay, Camp San Luis, Camp Roberts, and Cambria.

PALEONTOLOGICAL RESOURCES BACKGROUND

Paleontological resources, also known as fossils, are the remains, traces, or imprints of once living organisms preserved in rocks or sediment. Paleontological resources are most commonly found in sedimentary rock units and are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Fossils may be exposed by a trench, ditch, or channel during subsurface construction.

Paleontologists examine invertebrate fossil sites differently than vertebrate fossil sites. Invertebrate fossils in microscopic form such as diatoms, foraminifera, and radiolarians can be so prolific as to constitute major rock material in some areas. Invertebrate fossils normally are marine in origin, widespread, abundant, fairly well preserved, and predictable as to fossil locale. Therefore, the same or similar fossils can be located at numerous sites throughout Central California. Vertebrate fossil sites are usually found in nonmarine or continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized (SVP 2010).

Known Cultural and Paleontological Resources

Cultural Resources

According to the Office of Historic Preservation, there are no resources listed as California Points of Interest, and no resources in the City of Morro Bay were listed on the National Register of Historic Places or the California Register of Historical Resources. Policy 4.02 of the Local Coastal Plan calls for the City to develop and establish a cultural resources inventory, including both built-environment and archaeological resources. However, such an inventory has not yet been created. One resource, Morro Rock, is listed as a State Historical Landmark. Morro Rock, sometimes called the Gibraltar of the Pacific, has served as an important mariner's landfall, was noted by Cabrillo, and is mentioned in the diaries of Portolá (Arbuckle 1981). Morro Rock is considered sacred by the Chumash and Salinan peoples.

According to the City's existing General Plan, the Morro Bay area is sensitive for Native American cultural resources due to its proximity to the ocean, various streams, and abundance of food resources and raw materials. Most archaeological resources are not readily seen nor identified until grading or construction occurs.

Additionally, the development of the City of Morro Bay goes back to the 1800s, and the city likely contains built-environment resources over 45 years of age that may be considered significant or require further evaluation.

Paleontological Resources

Morro Bay lies at the tectonically active southern end of the Coast Ranges geomorphic province and so contains geologic units ranging in age from Jurassic to recent (CGS 2002) (Table 4.1). A list of the geologic units mapped at the surface within Morro Bay is presented in Table 4.2 and mapped in Figure 4.1. Most of the geologic units mapped within the limits of Morro Bay have not produced any fossils; however, the Pismo Formation and Pleistocene-aged alluvial deposits are known to contain significant paleontological resources.

A review of the University of California Museum of Paleontology's online collections database reveals six known vertebrate fossil localities (N=27 specimens) near Morro Bay from the Pismo Formation, although this formation does not occur within Morro Bay

itself. Quaternary older alluvium (Pleistocene-age), which is located in the city limits of Morro Bay, is highly sensitive for paleontological resources in California wherever it occurs (see Agenbroad 2003; Bell et al. 2004; Jefferson 1985, 1991; Merriam 1911; Reynolds et al. 1991; Savage, Downs, and Poe 1954; Scott and Cox 2008; Springer et al. 2009; Wilkerson, Elam, and Turner 2011; Winters 1954), though no records of fossil localities in the vicinity of Morro Bay were found in online museum databases or the published literature.

Table 4.1
Geologic Time Scale, City of Morro Bay

Era	Period	Epoch	Age (millions of years ago)1
Cenozoic	Quaternary	Holocene	Recent – 0.0117
		Pleistocene	0.0117 – 2.58
	Neogene (Tertiary)	Pliocene	2.58 – 5.33
		Miocene	5.33 – 23.03
	Paleogene (Tertiary)	Oligocene	23.03 – 33.9
		Eocene	33.9 – 56.0
		Paleocene	56.0 – 66.0
Mesozoic	Cretaceous	Lower/Upper	66.0 – 145.0
	Jurassic	Lower/Middle/Upper	145.0 – 201.3

[1]Numerical ages based on Global Boundary Stratotype Section and Points (GSSP) for their lower boundaries, as ratified by the International Commission on Stratigraphy. Rocks older than the Paleozoic have less secure upper and lower boundary dates.

[2]Epochs have not been named for rocks older than the Paleozoic.

Source: Cohen et al. 2013

Table 4-2
Geologic Units, City of Morro Bay

Major Rock Type	Geologic unit[1]	Description	Age
Sedimentary	(af) artificial fill	Human construction-related deposits, including engineered and nonengineered fill	Latest Holocene
Sedimentary	(Qa) Quaternary alluvial flood-plain deposits	Active and recently active floodplain deposits of cobbles, gravel, sand, and silt	Late Holocene
Sedimentary	(Qpe) Quaternary paralic estuarine deposits	Unconsolidated estuarine deposits of fine-grained sand and clay	Late Holocene

Major Rock Type	Geologic unit[1]	Description	Age
Sedimentary	(Qe, Qs) Quaternary eolian deposits	Unconsolidated, well-sorted white to brown windblown sand. Forms active dunes along west side of Morro Bay	Holocene
Sedimentary	(Qls) Quaternary landslide deposits	Highly fragmented to largely coherent landslide deposits	Holocene and Pleistocene
Sedimentary	(Qya) Quaternary young alluvial floodplain deposits, undivided	Unconsolidated sand, silt, and clay-bearing alluvium deposited on floodplains and along valley floors	Holocene and late Pleistocene
Sedimentary	(Qoa) Quaternary old alluvial floodplain deposits	Moderately consolidated, slightly dissected gravel, sand, silt and clay-bearing alluvium, capped by moderate to well-developed soils	Late to middle Pleistocene
Sedimentary	(Qoe) Quaternary old eolian deposits	Old stabilized sand dune deposits of moderately consolidated, well-sorted brown windblown sand, capped by moderately well-developed soils	Late to middle Pleistocene
Sedimentary	(Tp) Pismo Formation	Buff to light-brown well-bedded, relatively soft siltstone, shale, porcelaneous shale, opaline shale, diatomaceous shale, friable sandstone	Pliocene to Miocene
Igneous	(Toi) Tertiary porphyritic dacite of Morro Rock-Islay Hill intrusive complex	Porphyritic dacite with altered plagioclase, biotite, glass, quartz, and hornblende groundmass	Oligocene
Igneous	(Toif) Tertiary fine-grained dacite of Morro Rock-Islay Hill intrusive complex	Fine-grained dacite flows, with rare phenocrysts	Oligocene
Sedimentary	(KJfm) Franciscan Complex melange	Chaotic mixture of fragmented rock and metasandstone	Cretaceous to Jurassic
Sedimentary	(KJfch) Franciscan Complex chert	Red and green radiolarian chert	Cretaceous to Jurassic
Igneous/Metamorphic	(KJfmv) Franciscan Complex metavolcanics	Greenstone, pillow basalts	Cretaceous to Jurassic
Metamorphic	(Jos) Serpentinized ultramafic rocks	Peridotite, dunite, serpentinite	Jurassic

[1]Rock unit abbreviation depends on geologic map source.

Sources: Dibblee 2006a, 2006b; Wiegers 2009

MINERAL RESOURCES

The landscape of San Luis Obispo County contains a variety of mineral resources. Mining of copper and coal has occurred in the county since the mid-1800s, and chromite, manganese, and mercury were mined in the early 1900s. Quarrying on Morro Rock provided the materials for construction of a jetty to close the north entrance of the harbor and a breakwater to protect the south entrance. In recent years, the principal developed mineral resources of San Luis Obispo County have been gypsum, clay, natural gas, petroleum, mercury, construction stone, sand, and gravel. Of these, sand and gravel remain principal mineral resources to this day.

Based on a review of San Luis Obispo County GIS data and the Mineral Land Classification Map prepared by the State of California Division of Mines and Geology, there are no existing mineral extraction operations in Morro Bay. The state geologist has not designated a mineral resource area of statewide or regional significance pursuant to Sections 2710 et seq. of the Public Resources Code (the Surface Mining and Reclamation Act) in the city. Similarly, the County of San Luis Obispo has not designated any Extractive Resource Areas in or adjacent to the City of Morro Bay. According to the Division of Oil, Gas & Geothermal Resources well data, there are no existing or historic petroleum wells in the city.

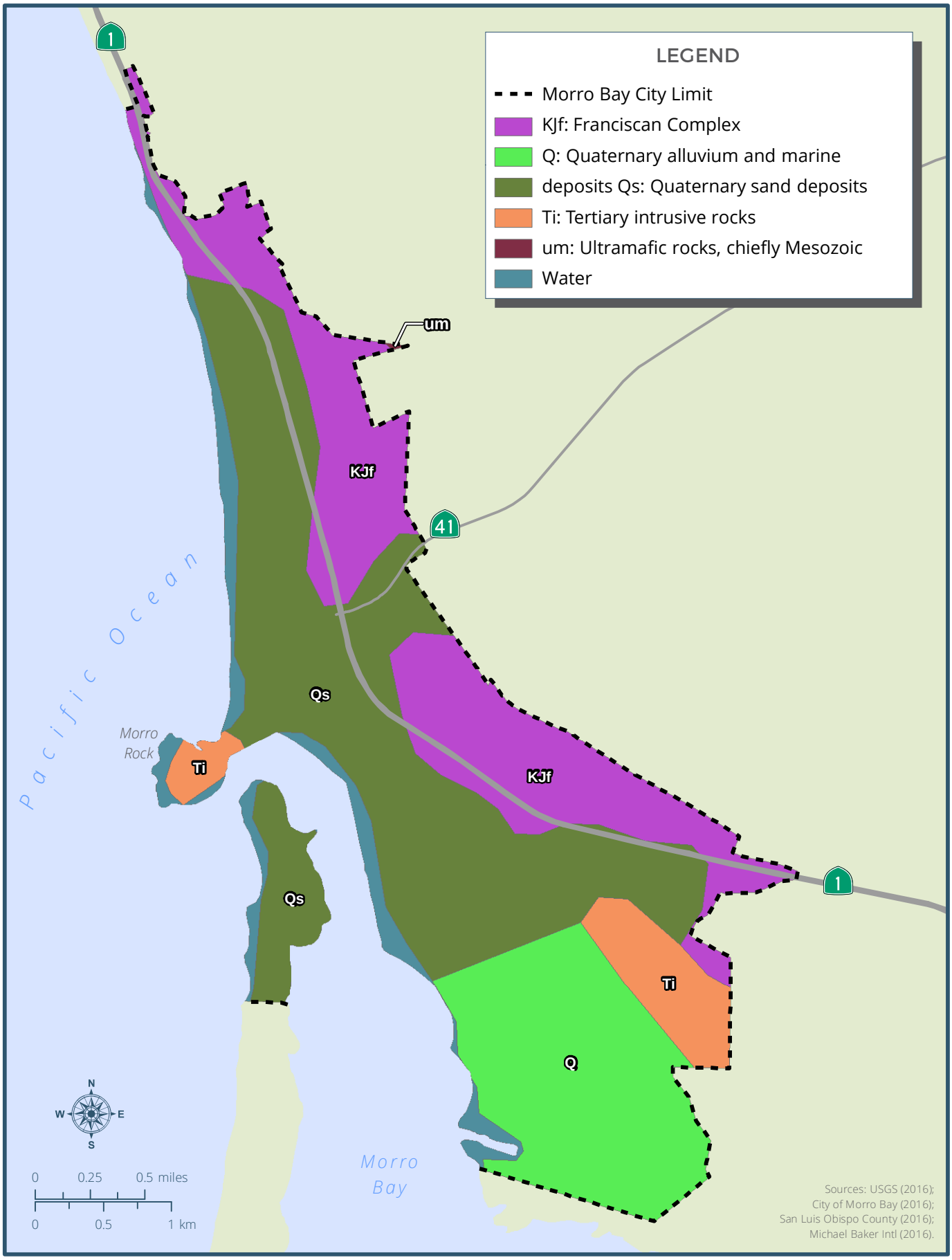


FIGURE 4.1

Geologic Units in the City of Morro Bay

Page 2

4.2 REGULATORY SETTING

FEDERAL

The definition of a federal undertaking in 36 Code of Federal Regulations (CFR) 800.16(y) includes projects requiring a federal permit, license, or approval. Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act of 1966 (as amended) through one of its implementing regulations; 36 CFR 800 (Protection of Historic Properties); and the National Environmental Policy Act. Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the National Historic Preservation Act, and Section 106 of 36 CFR 800.3–800.10. Other federal laws include the Archeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of the National Historic Preservation Act (16 United States Code [USC] 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected historic property is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Historic properties are those significant cultural resources that are listed in or are eligible for listing in the National Register of Historic Places per the criteria listed below (36 CFR 60.4):

> The quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that:
>
> a) Are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b) Are associated with the lives of persons significant in our past; or

c) Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) Have yielded, or may be likely to yield, information important in prehistory or history.

STATE

The California Environmental Quality Act (CEQA) requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC] Section 21084.1). If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b], and [c]).

PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A historical resource is a resource listed in, or determined to be eligible for listing, in the California Register of Historical Resources, a resource included in a local register of historical resources, or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (State CEQA Guidelines Section 15064.5[a][1-3]).

Section 15064.5(a)(3) also states that a resource shall be considered by the lead agency to be historically significant if the resource meets any of the following criteria for listing on the California Register of Historical Resources:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

2) Is associated with the lives of persons important in our past.

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

4) Has yielded, or may be likely to yield, information important in prehistory or history.

LOCAL

The existing City of Morro Bay Local Coastal Plan includes a number of policies related to archaeological resources within the city, but does not specifically address paleontological resources. Policies 4.01 through 4.08 include measures to protect the archaeological resources and guide actions which affect those resources within the city.

4.3 PRIORITY FINDINGS

CULTURAL RESOURCES

Significant or important cultural resources may exist within the limits of Morro Bay. Buildings, structures, or objects in Morro Bay that are over 45 years of age may be considered significant cultural resources. The City has not yet implemented Policy 4.02 of the Local Coastal Plan with regard to the establishment of an inventory of cultural resources.

ARCHAEOLOGICAL RESOURCES

Prehistoric or historic archaeological resources could be identified on the surface or subsurface of undeveloped areas or in the subsurface of developed areas. Efforts to identify these resources and measures to preserve them should be considered. The City has not yet implemented Policy 4.02 of the Local Coastal Plan with regard to the creation of an archaeological sensitivity map.

PALEONTOLOGICAL RESOURCES

Portions of the City of Morro Bay include geological formations that may contain fossils. Opportunities for protecting paleontological resources can generally be incorporated as specific measures on a project-by-project basis, when evaluated by a qualified paleontologist.

5.0 Economic Conditions and Market Trends

Plan Morro Bay

5.0 ECONOMIC CONDITIONS AND MARKET TRENDS

This chapter identifies existing demographic and economic conditions, as well as market trends in the planning area.

5.1 EXISTING CONDITIONS[1]

ECONOMIC SCAN

This section provides an overview of the existing socioeconomic characteristics of Morro Bay residents. [2]

Demographics

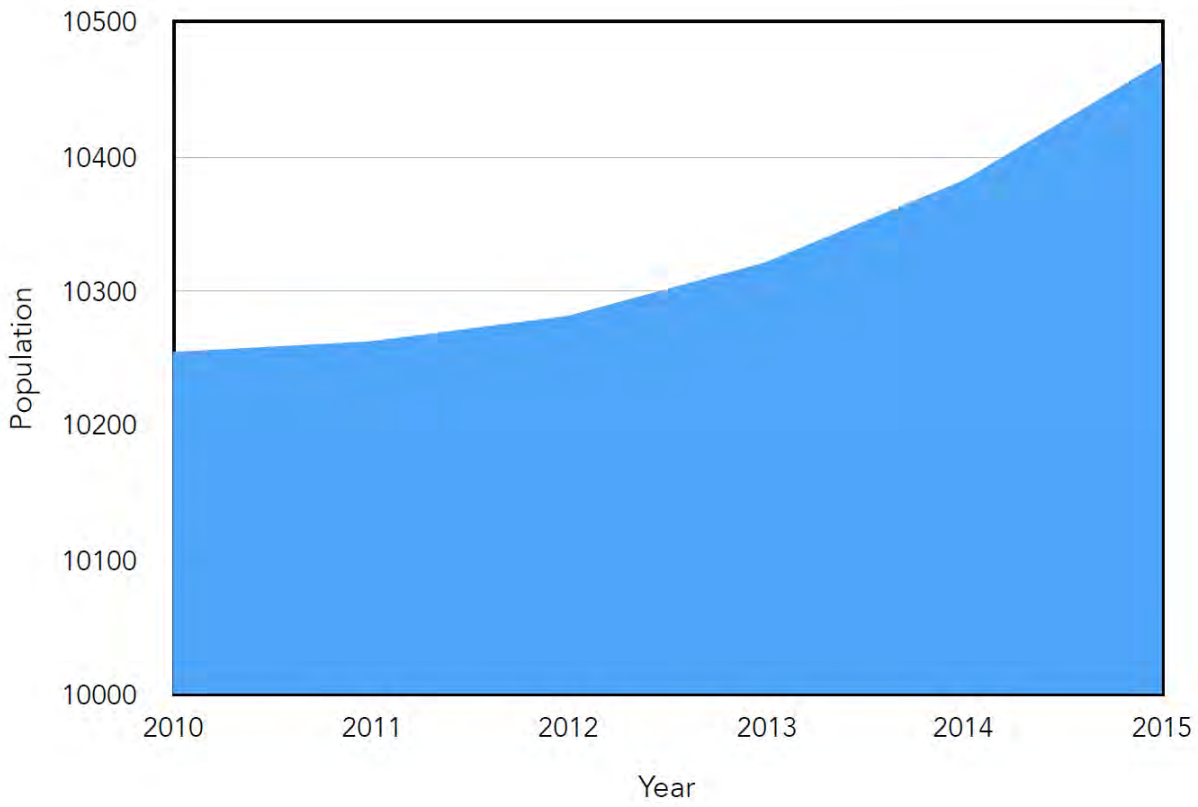
The population of Morro Bay has grown slowly since 2010, based on 2010 Census data and 2015 population estimates by the California Department of Finance (Figure 5.1).

[1] The content of this chapter originates from a background report generated in support of the Morro Bay Economic Development Strategic Plan by Chabin Concepts. The content has been lightly edited.

[2] For greater transparency around some of the data used in this report as provided by the US Census Bureau, the Census Bureau reports some data as having a margin of error with a 90 percent confidence interval. For example, the Census Bureau reports the median age of Morro Bay as 49.2 years with a margin of error of 3.2 years; this means there is a 90 percent chance that Morro Bay's median age falls between 46.0 and 52.4 years (49.2 years, plus or minus the margin of error of 3.2 years). There is a 10 percent chance that Morro Bay's median age falls outside this range. Some graphs and tables in this report may indicate the range of the 90 percent confidence interval rather than providing a single value.

Additionally, some data showing a comparison between two or more points may include a probability of significance. This measurement indicates whether the observed difference is meaningful, or whether it is an insignificant fluctuation due to random changes and estimates. In these cases, a statistic known as a "p-value" has been calculated. If the p-value of the data is below 0.1, the difference is considered statistically significant. If the p-value is equal to or greater than 0.1, the difference is not statistically significant.

Figure 5.1
Morro Bay Population (2010–2015)



Source: CA Department of Finance, Demographic Research Unit, May 2016 E-4 Population Estimates for 2010 and 2015

In terms of projected growth, the city is expected to add several hundred new residents by 2020, resulting in an annual growth rate of 0.7 percent between 2015 and 2020. Morro Bay's population is expected to increase from 10,640 in 2015 to 11,005 by 2020 (Table 5.1).

Table 5.1
Population Growth (2010–2020)

	Morro Bay	California
Historical Population		
2010	10,234	37,253,956
2015	10,640	38,907,642
Annual Average Percent Change (Historic)	0.8%	0.9%
Future Population		
2020	11,005	40,619,346
Annual Average Percent Change (Projected)	0.7%	0.9%

Source: CA Department of Finance, Demographic Research Unit, May 2016 E-4 Population Estimates for 2010 and 2015; P-1 State and County Population Projections 2010–2060

The distribution of population by age reveals that Morro Bay has a significantly older population than the state as a whole. About 23 percent of the population is over 65, compared to only 12 percent of the state population.

There is also a lower share of people under 18 in Morro Bay compared to the state. This is reflected in a significantly higher median age of 49.2, versus 35.8 for the state as a whole. Sustaining a vital and growing community will be a greater challenge given the community's aging demographics.

Despite differences in the youth and senior cohorts, the share of the population that is of working age (25 to 64) is similar to the state average, at 54 percent for Morro Bay and 53 percent for the state. This is important in terms of having a sufficiently sized workforce to support economic development. Because of the very tight housing market in the City of San Luis Obispo, university employees and other workers are forced to find housing in neighboring communities, such as Morro Bay, which may boost the working age population.

Figure 5.2 and Table 5.2 show the age distribution in Morro Bay compared to California.

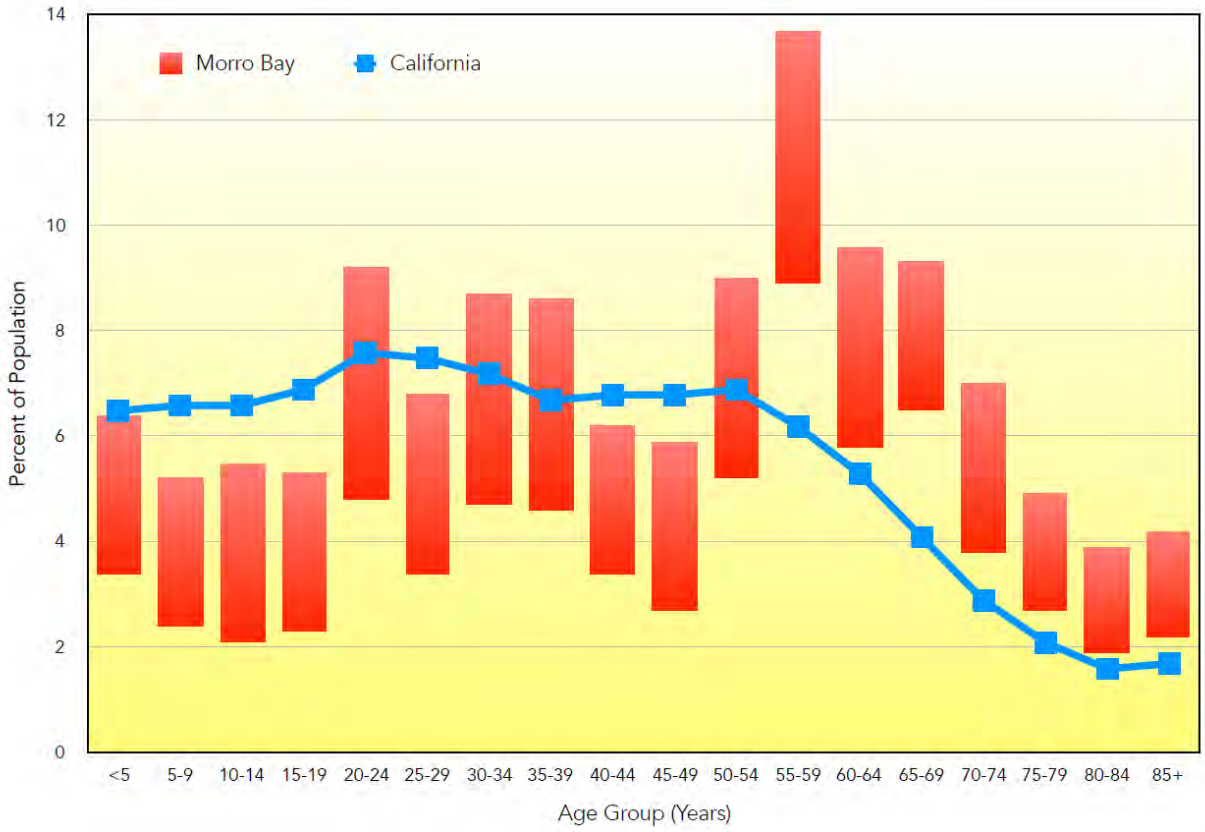
Table 5.2
Age Distribution (2010–2015)

	Morro Bay			California		
	2010	**2015[3]**	**Average Annual Change**	**2010**	**2015**	**Average Annual Change**
Total	10,234	10,640	0.8%	37,253,956	38,907,642	0.9%
Under 20	1,341	1,734	5.9%	10,617,377	10,349,433	-0.5%
20-34	1,627	2,000	4.6%	8,084,108	8,676,404	1.5%
35-54	2,303	2,426	1.1%	10,580,124	10,582,879	<0.1%
55-64	1,863	2,022	1.7%	3,837,157	4,474,379	3.3%
65 & Over	3,101	2,458	-4.1%	4,135,189	4,824,548	3.3%
Share of Population 25 to 64	51%	54%		53%	53%	
Population Under 18	12%	15%		25%	24%	
Population Over 65	31%	23%		11%	12%	
Median Age	54.1	49.2		34.9	35.8	

Source: US Census Bureau, American Community Survey 2010 and 2015 5-year estimates; CA Department of Finance, Demographic Research Unit (total population) May 2016 E-4 Population Estimates for 2010 and 2015

[3] The data used in this table is derived from the American Community Survey, which estimates population using samples with relatively large margins of error. Population totals vary from the 10,640 figure reported in Table 5.1. This information is best used to identify relative proportions of population sub-categories (in this case, age groups). American Community Survey data was used to determine the percent of persons in each age group, which was multiplied by the total population figures reported in Table 5.1 to calculate the number of persons in each age group.

Figure 5.2
Morro Bay and California Age Distribution (2015)



Source: US Census Bureau, American Community Survey 2010 and 2015 5-year estimates

Diversity is another important factor in terms of attracting both companies and workers. The population of Morro Bay is significantly less diverse than the state as a whole (Table 5.3). The lack of diversity may be a drawback for some companies that are looking for a diverse workforce.

Table 5.3
Race and Ethnicity (2010–2015)

	Morro Bay				California			
	2010		2015[4]		2010		2015	
Total	10,234	100.00%	10,640	100.0%	37,253,956	100.0%	38,907,642	100.0%
White	9,712	87.10%	9,778	91.9%	22,762,167	61.1%	24,044,923	61.8%
Black or African American	0	0.40%	181	1.7%	2,272,491	6.1%	2,295,551	5.9%
American Indian	72	0.90%	106	1.0%	298,032	0.8%	272,353	0.7%
Asian or Pacific Islander	246	2.60%	202	1.9%	4,954,776	13.3%	5,485,978	14.1%
Other Race	133	1.3%	202	1.9%	5,550,839	14.9%	5,019,086	12.9%
Two or more Races	72	0.7%	170	1.6%	1,415,650	3.8%	1,789,752	4.6%
Hispanic Origin	1,167	11.4%	1,766	16.6%	13,672,202	36.7%	14,855,448	38.2%

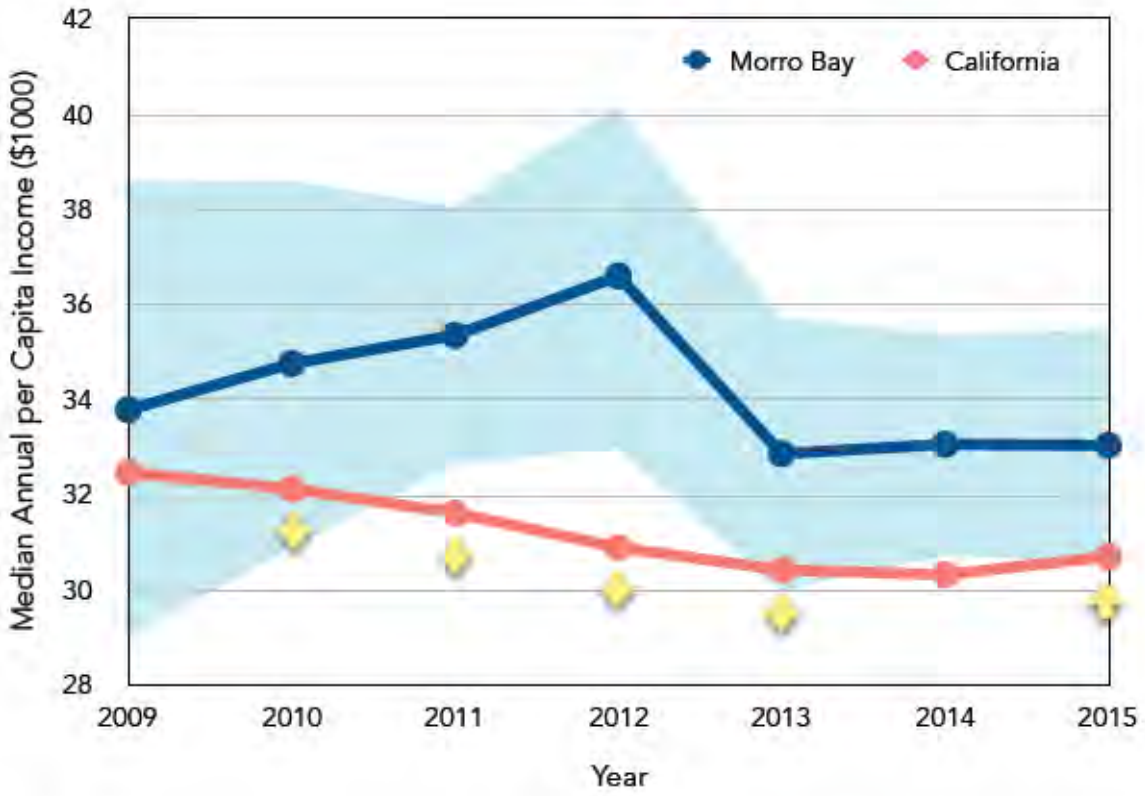
Source: US Census Bureau, American Community Survey 2010 and 2015 5-year estimates; CA Department of Finance, Demographic Research Unit (total population) May 2016 E-4 Population Estimates for 2010 and 2015.

Median household income is a general measure of standard of living as well as a measure of the typical wage and skill levels. Morro Bay has a lower household income than the state, and household income has declined from 2010 to 2015 (although per capita income has increased). It is important to point out that median incomes may be impacted by the age structure of the population, as retiree households often have significant savings and lower annual incomes than working age households.

Per capita income in Morro Bay is about 8 percent higher than the state average for 2015 (Figure 5.3).

[4] The data used in this table is derived from the American Community Survey, which estimates population using samples with relatively large margins of error. Population totals vary from the 10,640 figure reported in Table 5.1. This information is best used to identify relative proportions of population sub-categories (in this case, racial and ethnic groups).

Figure 5.3
Income Comparison Adjusted for Inflation (2009–2015)



Blue shaded area represents the 90% confidence interval for Morro Bay data.

90% confidence intervals for all California data is less than $200 and is too small to illustrate at this scale.

Yellow arrows indicate a significant ($p<0.10$) increase or decrease from previous year.

US Census Bureau, American Community Survey 2010 and 2015 5-year estimates

Housing

Morro Bay has a slightly larger share of renter-occupied housing than the state as a whole, which may be due in part to demand from students at California Polytechnic State University, San Luis Obispo (Cal Poly). In addition, because Morro Bay is a tourist destination, a large number of seasonal residents are reflected in the number of seasonal use housing units. About 20 percent of the total housing inventory consists of units held for seasonal use, compared to only 3 percent of the housing inventory statewide (Table 5.4). According to the 2000 Census, there were 5,006 housing units in Morro Bay. In 2000 there were a total of 1,280 vacant units and 1,069 (about 21 percent of total inventory) of those were for seasonal use. This segment of the Morro Bay housing stock has remained at about the same percentage of total units between 2000 and 2014 (City of Morro Bay 2009).

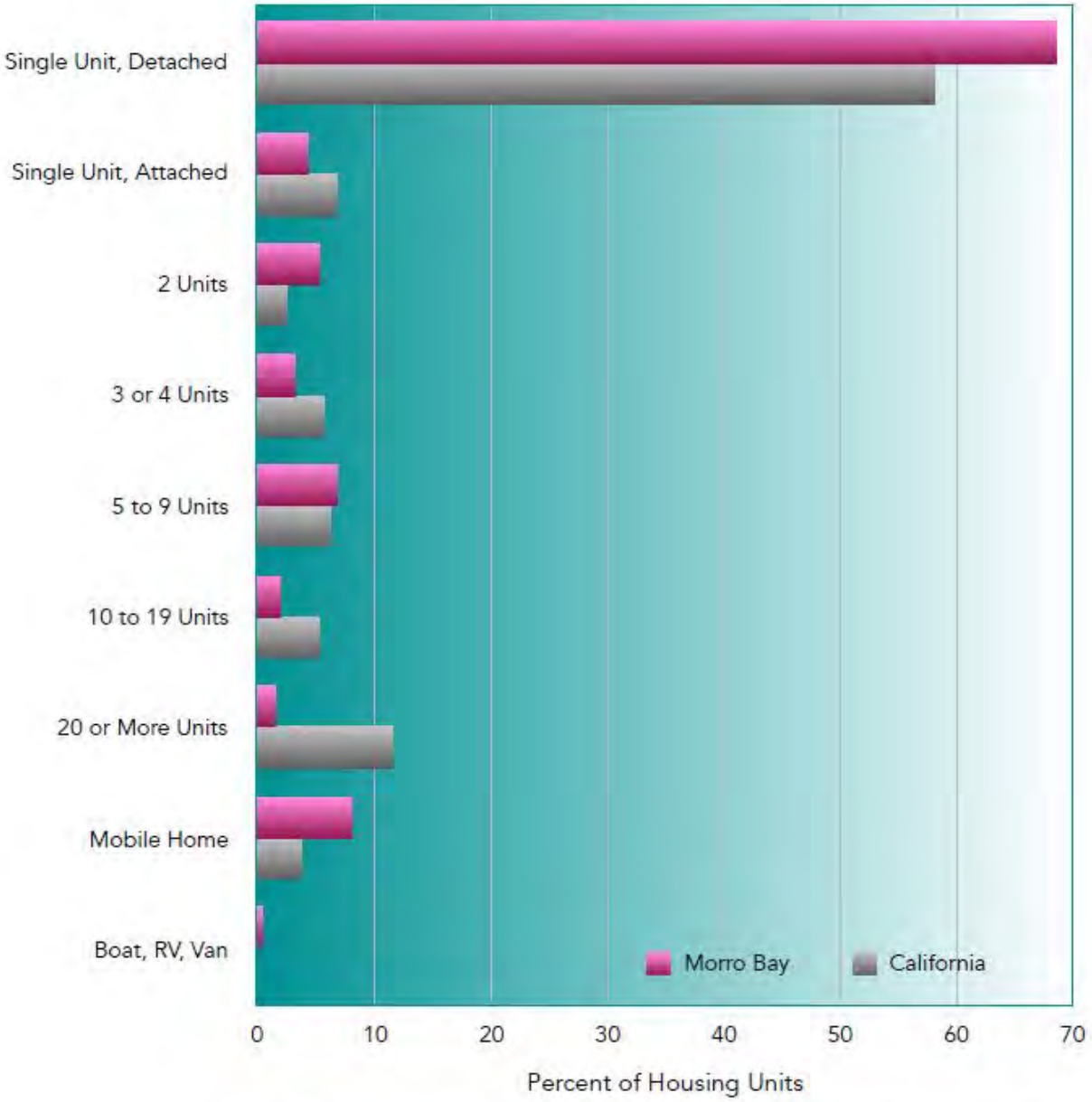
Table 5.4
Housing Inventory (2014)

	Morro Bay	California
Total Housing Units	6,421	13,845,790
Occupied	4,933	12,717,801
Owner	2,321	6,909,176
Renter	2,612	5,808,625
Percent Renter Occupied (as a percent of occupied units)	52.9%	45.7%
Vacant	1,488	1,127,989
Vacant for Seasonal Use	1,292	367,882
Other Vacant	102	299,493
Percent Seasonal Use Units (as a percent of vacant units)	86.8%	32.6%
Percent Seasonal Use Units (as a percent of all units)	20.1%	2.7%

Source: US Census Bureau, American Community Survey 2015 5-year estimates. Basis for percent renter occupied is total occupied units while the basis for percent vacant for seasonal use is total vacant units.

Figure 5.4 shows the different types of housing units in Morro Bay by the number of units in the structure. In Morro Bay, 68 percent of the housing units are single-family detached homes, while attached single-family homes are another 4 percent of the housing stock. Multi-family units (those in buildings of at least two units) constitute 19 percent and mobile homes make up 8 percent of the city's housing stock ().

Figure 5.4
Occupied Housing Units by Type (2015)



All differences shown are statistically significant ($p<0.10$) except for the categories "5 to 9 Units" and "Boat, RV, Van"

Source: US Census Bureau, American Community Survey 2015 5-year estimates.

Housing Affordability by Income Level

Housing affordability can be inferred by comparing the cost of renting or owning a home with the maximum affordable housing cost to households at different income levels. The area median income provides a benchmark for estimating the affordability of housing and the ability of newcomers to move into the community. Taken together, this information can generally demonstrate who can afford what size and type of housing and indicate the type of households most likely to experience overcrowding or a burden on housing cost (City of Morro Bay 2014).

In evaluating affordability, the maximum affordable price refers to the maximum amount that could be afforded by households in the upper range of their respective income category. Households in the lower end of each category can afford less in comparison. The maximum affordable home and rental prices for residents of San Luis Obispo County are shown in Table 5.5. The affordability of the county's housing stock for each income group is discussed below. HCD identified the 2014 county area median income to be $77,000 for a family of four (City of Morro Bay 2014).

Table 5.5 shows the maximum rents and sales prices that are affordable to extremely low-, very low-, low-, and moderate-income households. Affordability is based on the following assumptions: a household spending 30 percent or less of its total household income for shelter; the maximum household income levels established by HCD and the US Department of Housing and Urban Development; and maximum affordable sales prices based on 10 percent down with a 30-year fixed rate mortgage at a 5.75 percent annual interest rate (City of Morro Bay 2014).

Table 5.5
Housing Affordability by Income Level

Household Size	1	2	3	4	5	6
Extremely Low Income (Households at 30% of Median Income)						
Annual Income	$15,850	$18,100	$20,350	$22,600	$24,450	$26,250
Maximum Monthly Gross Rent[1]	$396	$453	$509	$565	$611	$656
Maximum Purchase Price[2]	$48,880	$59,141	$67,000	$74,460	$80,630	$86,460
Very Low Income (Households at 50% of Median Income)						
Annual Income	$26,400	$30,200	$33,950	$37,700	$40,750	$43,750
Maximum Monthly Gross Rent[1]	$660	$755	$849	$943	$1,019	$1,094
Maximum Purchase Price[2]	$86,400	$99,750	$111,230	$123,120	$133,340	$143,830
Low Income (Households at 80% of Median Income)						
Annual Income	$42,250	$48,250	$54,300	$60,300	$65,150	$69,950
Maximum Monthly Gross Rent[1]	$1,056	$1,206	$1,358	$1,508	$1,629	$1,749
Maximum Purchase Price[2]	$138,20	$157,930	$179,050	$198,390	$215,160	$230,960
Moderate Income (Households at 120% of Median Income)						
Annual Income	$64,700	$73,900	$83,150	$92,400	$99,800	$107,200
Maximum Monthly Gross Rent[1]	$1,618	$1,848	$2,079	$2,310	$2,495	$2,680
Maximum Purchase Price[2]	$210,120	$242,620	$251,780	$274,000	$327,230	$345,900

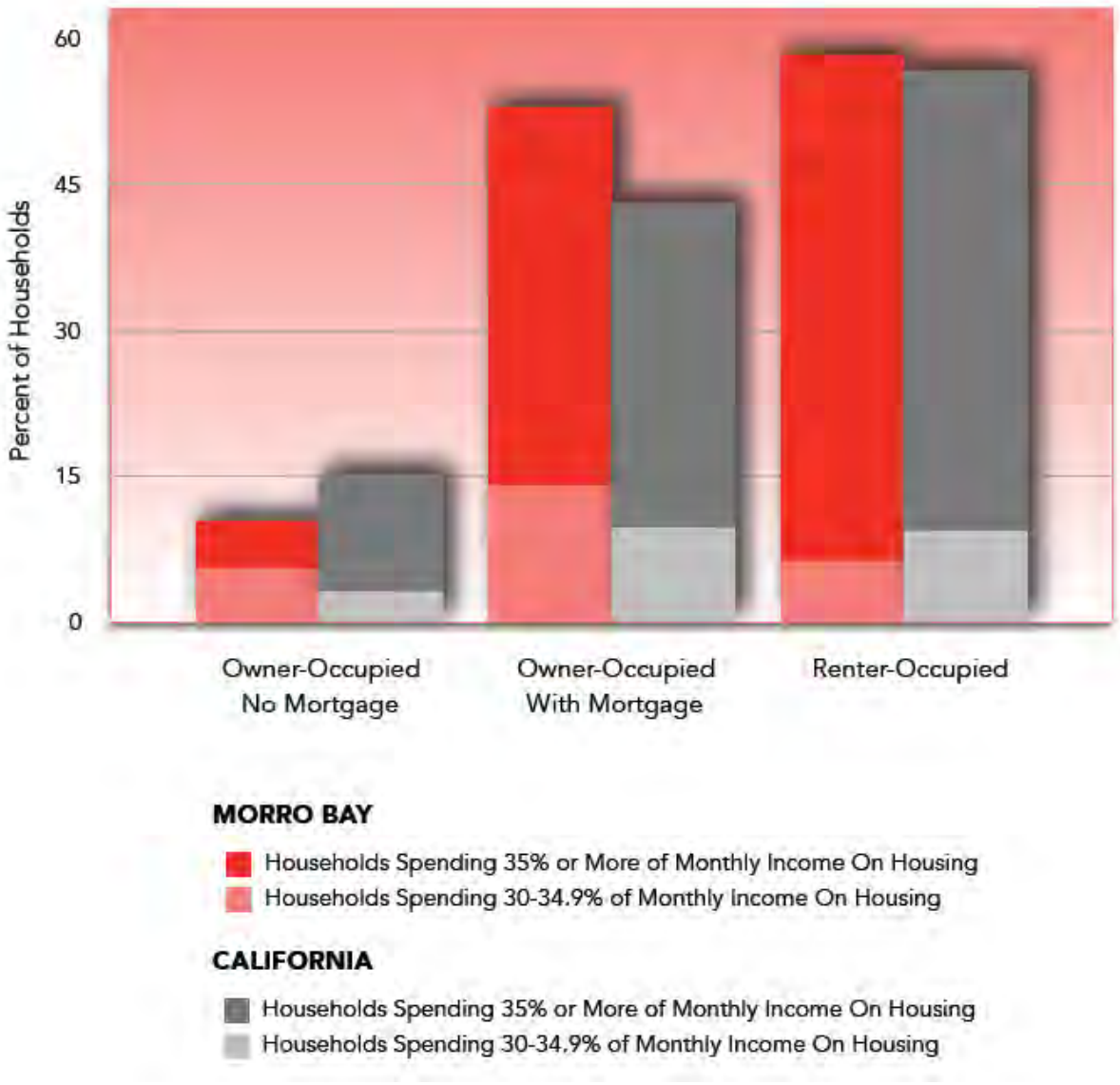
Source: 2014 Income Limits: Department of Housing and Community Development. Monthly mortgage calculation: http://www.realtor.com/home-finance/financial-calculators/home-affordability-calculator.aspx?source=web

1 Affordable housing cost for renter-occupied households assumes 30% of gross household income, not including utility cost.

2 Affordable housing sales prices are based on the following assumed variables: approximately 10% down payment, 30-year fixed rate mortgage at 5.75% annual interest rate.

Federal guidelines recommend that households spend no more than 30 percent of their monthly gross income on housing costs. More than half of Morro Bay renters and homeowners with a mortgage pay at least 30 percent of their monthly income on housing costs (Figure 5.5). These numbers are not statistically different from the statewide figures, and show that Morro Bay's challenges with housing affordability reflect the challenges seen at the statewide level.

Figure 5.5
Households Spending More Than 30% of Income on Housing (2013)



Source: US Census Bureau, American Community Survey 2010 and 2015 5-year estimates

Homelessness

Approximately 6 percent of homeless persons in San Luis Obispo County are in Morro Bay, and almost all of Morro Bay's homeless persons are unsheltered (Table 5.6). The largest populations of homeless persons in San Luis Obispo County are in San Luis Obispo, Paso Robles, and Atascadero.

Table 5.6
Homeless Population (2015)

Community	Sheltered	Unsheltered	Total
Morro Bay	4	87	91
Other coastal cities (Arroyo Grande, Grover Beach, and Pismo Beach)	41	174	215
San Luis Obispo	152	312	464
Inland cities (Atascadero and Paso Robles)	147	387	534
Unincorporated areas	48	163	211
Total	392	1,123	1,515

Source: San Luis Obispo County Homeless Point-In-Time Census & Survey 2015

Educational Attainment

The majority of jobs created in the United States over the next 10 years will require some post-high school education. Communities with capacity for growth are those that are able to attract and retain knowledge workers.

"Educational attainment" measures the highest degree generally attained by the adult population. In Morro Bay, about 46 percent of the adult population has an associate's degree or higher, compared to only 39 percent of the population in the state as a whole, and 37 percent nationally. Morro Bay also has a statistically significantly larger percent of the population with a bachelor's degree, and a statistically significantly smaller percent of the population without a high school diploma, relative to California at large (Table 5.7). This is likely due to the proximity to Cal Poly and the number of faculty members that live in the community. However, it also benefits the community in terms of economic development potential.

Table 5.7
Educational Attainment (2015)

	Morro Bay		California	
	Number	Percent	Number	Percent
Total Population (25+ Years)	8,036		25,257,858	
Less Than 9th Grade	355	4.4%	2,532,521	10.0%
9th to 12th Grade, No Diploma	351	4.4%	2,067,120	8.2%
High School Graduate	1,514	18.8%	5,231,824	20.7%
Some College	2,142	26.7%	5,516,887	21.8%
Associate's Degree	717	8.9%	1,970,322	7.8%
Bachelor's Degree	1,857	23.1%	5,002,596	19.8%
Graduate or Professional Degree	1,100	13.7%	2,936,588	11.6%
High School Graduate	7,330	91.2%	20,658,217	81.8%
College or Graduate Degree	3,674	45.7%	9,909,506	39.2%

Source: US Census Bureau, American Community Survey 2015 5-year estimates

Educational attainment appears to be highest among 35 to 44 year olds in Morro Bay, who tend to be more educated than both younger and older generations. The share of 25 to 34 year olds in the community with a bachelor's degree or higher is below the state average, while the educational attainment of all older cohorts is above the state average (Table 5.8). This indicates that the younger residents who are attracted to the community, or remain in the community after high school, are likely to be less educated.

Table 5.8
Educational Attainment by Age Cohort (2015)

	High School Graduate		Bachelor's Degree or Higher	
	Morro Bay	California	Morro Bay	California
25-34 Years	88.4%	85.7%	26.7%	32.6%
35-44 Years	84.7%	80.8%	43.2%	33.6%
45-64 Years	95.7%	81.7%	35.2%	30.9%
65 Years+	90.0%	78.5%	40.9%	28.8%

Source: US Census Bureau, American Community Survey 2015 5-year estimates

Workforce

The labor force includes both individuals who are employed as well as those who are unemployed and actively looking for work. From 2010 to 2015, Morro Bay's labor force has remained flat without any statistically significant changes, while the statewide labor force has grown by about 4 percent.

However, unemployment rates are very low in Morro Bay at only 3.9 percent, well below the statewide average of 6.2 percent. Morro Bay's economy was less impacted by the recession than other communities in the state. Unemployment in Morro Bay peaked at 7.9 percent in 2010 during the recession when the state was experiencing unemployment levels over 12 percent. Communities with higher educational attainment are often less impacted during recessionary periods.

In terms of employment, there has been modest growth since 2010 and Morro Bay is now above pre-recession employment levels. The state as a whole has actually seen significant increases in employment since 2010.

The labor force participation rate is a measure of the share of the population that is working or seeking work. Because the participation rate includes both employed and unemployed persons, it is a better metric for indicating the potential pool of workers.

In both Morro Bay and California, the workforce participation rate declined slightly from 2010 to 2015, although in Morro Bay there were steady increases through 2013, followed by a drop in 2014 and a slight rebound in 2015. The participation rate for 2015 is 63 percent in Morro Bay, compared to 65 percent statewide. Because participation rates were similar to the state, the decline in Morro Bay in 2014 may have been a temporary anomaly (Table 5.9).

Table 5.9
Labor Force and Employment (2010–2015)

	2010	2011	2012	2013	2014	2015	Change 2010–2015
Total Labor Force							
Morro Bay	5,600	5,700	5,800	5,800	5,500	5,600	0.0%
California	18,329,776	18,477,242	18,631,961	18,602,210	18,855,659	18,934,459	3.3%
Employment							
Morro Bay	5,200	5,200	5,500	5,500	5,200	5,400	3.8%
California	16,116,806	16,440,200	16,848,797	17,120,891	17,578,188	17,842,877	10.7%
Unemployment Rate							
Morro Bay	7.9%	7.5%	6.4%	5.2%	4.8%	3.9%	-50.6%
California	12.1%	11.0%	9.6%	8.0%	6.8%	5.8%	-52.2%
Labor Force Participation Rate (population age 18+)							
Morro Bay	62.3%	64.1%	64.2%	65.5%	62.0%	62.6%	0.5%
California	67.2%	66.8%	66.5%	65.4%	65.3%	64.7%	-3.7%

Source: Labor Force, Employment and Unemployment Rates from CA Employment Development Department, LMI Resources data for 2010–2015; population aged 18+ from the US Census Bureau, American Community Survey, 2010–2015

To understand Morro Bay's competitive position as a place to do business, it is important to understand in greater detail the types of skill sets represented in the resident workforce. Morro Bay has a higher share of workers in food preparation, architecture and engineering, building maintenance, and education occupations (among others) than the state as a whole. The share of residents in higher skilled occupations, such as management, science, and computers, is similar to the state average (Table 5.10).

This is indicated by the distribution of employment by occupation and by occupational location quotients that measure the share of employment in a particular occupation locally as compared to the state. A location quotient greater than one indicates a local specialization. The highest location quotients for Morro Bay are in architecture and engineering, community and social services, arts and entertainment, and building and grounds cleaning and maintenance. The lowest location quotients are in material moving, farming/fishing/forestry, protective services and legal occupations, where Morro Bay has only 51 percent or less of the normal share of these occupations.

Table 5.10
Resident Employment by Occupation (2015)

Occupations	Morro Bay		California		Location Quotient
	Employment	Distribution	Employment	Distribution	
Total	4,989		17,246,360		
Management, business and financial occupations	700	14%	2,610,836	15%	0.93
Computer and mathematical occupations	121	2%	538,724	3%	0.78
Architecture and engineering	202	4%	369,446	2%	1.89
Life, physical, and social science	53	1%	179,690	1%	1.02
Community and social services	119	2%	263,112	2%	1.56
Legal occupations	24	<0%	214,180	1%	0.39
Education, training, and library occupations	386	8%	940,369	5%	1.42
Arts, design, entertainment, sports, and media	227	5%	476,612	3%	1.65
Health practitioners and technologists	191	4%	840,815	5%	0.79
Healthcare support occupations	54	1%	346,284	2%	0.54
Protective services	54	1%	366,025	2%	0.51
Food preparation and serving	375	8%	973,459	6%	1.33
Building and grounds cleaning and maintenance	423	8%	750,210	4%	1.95
Personal care and service	176	4%	801,605	5%	0.76
Sales and related occupations	486	10%	1,888,333	11%	0.89
Office and administrative support	728	15%	2,201,552	13%	1.14
Farming, fishing, and forestry	40	1%	285,817	2%	0.48
Construction and extraction	127	3%	810,978	5%	0.54
Installation, maintenance, and repair	123	2%	484,026	3%	0.88
Production	200	4%	890,471	5%	0.78
Transportation	114	2%	552,342	3%	0.71
Material moving	66	1%	461,474	3%	0.49

Source: US Census Bureau, American Community Survey, 2015 5-year estimates

Similar data is available describing the resident workforce by industry (versus by occupation). Morro Bay has a higher than average share of workers in educational services, and arts and entertainment, for example, which is reflective of the tourism-based economy and the proximity to Cal Poly. Morro Bay has a substantially lower than average share of workers in certain fields such as manufacturing and finance/insurance. Note that this data is for the workforce living in Morro Bay, versus employers in Morro Bay (Table 5.11).

Table 5.11
Employment by Sector (Place of Residence) (2015)

Occupations	Morro Bay		California		Location Quotient
	Employment	Distribution	Employment	Distribution	
Total	4,989		17,246,360		
Agriculture	58	1%	379,780	2%	0.53
Mining	0	0%	33,170	<1%	0
Construction	245	5%	1,029,140	6%	0.82
Manufacturing	228	5%	1,687,092	10%	0.47
Wholesale Trade	95	2%	527,004	3%	0.62
Retail Trade	560	11%	1,910,340	11%	1.01
Transportation & Warehousing	190	4%	675,218	4%	0.97
Utilities	63	1%	133,396	1%	1.63
Information	183	4%	495,819	3%	1.28
Finance, Insurance & Real Estate	199	4%	1,075,345	6%	0.64
Professional & Scientific Services	376	8%	1,375,088	8%	0.95
Management of Companies	0	0%	11,183	<1%	0
Administrative & Support Services	210	4%	832,786	5%	0.87
Educational Services	751	15%	1,459,399	8%	1.78
Health Care	607	12%	2,156,957	13%	0.97
Arts, Entertainment, Recreation	370	7%	460,645	3%	2.78
Accommodation and Food Services	438	9%	1,303,484	8%	1.16
Other Services	253	5%	925,941	5%	0.94
Public Administration	163	3%	774,573	4%	0.73

Source: US Census Bureau, American Community Survey, 2015 5-year estimates

Employment by industry sector reflects employment by place of work, not by place of residence. The distribution of employment by industry is somewhat different in Morro Bay than in the state as a whole. Morro Bay has a greater share of employment in hospitality-related sectors (retail, accommodations, and food service). However, the city has a lower share of employment than the state in many other sectors, indicating a potential lack of diversity in the local economy (Table 5.12).

Table 5.12
Private Employment by Sector (Place of Work) (2014)

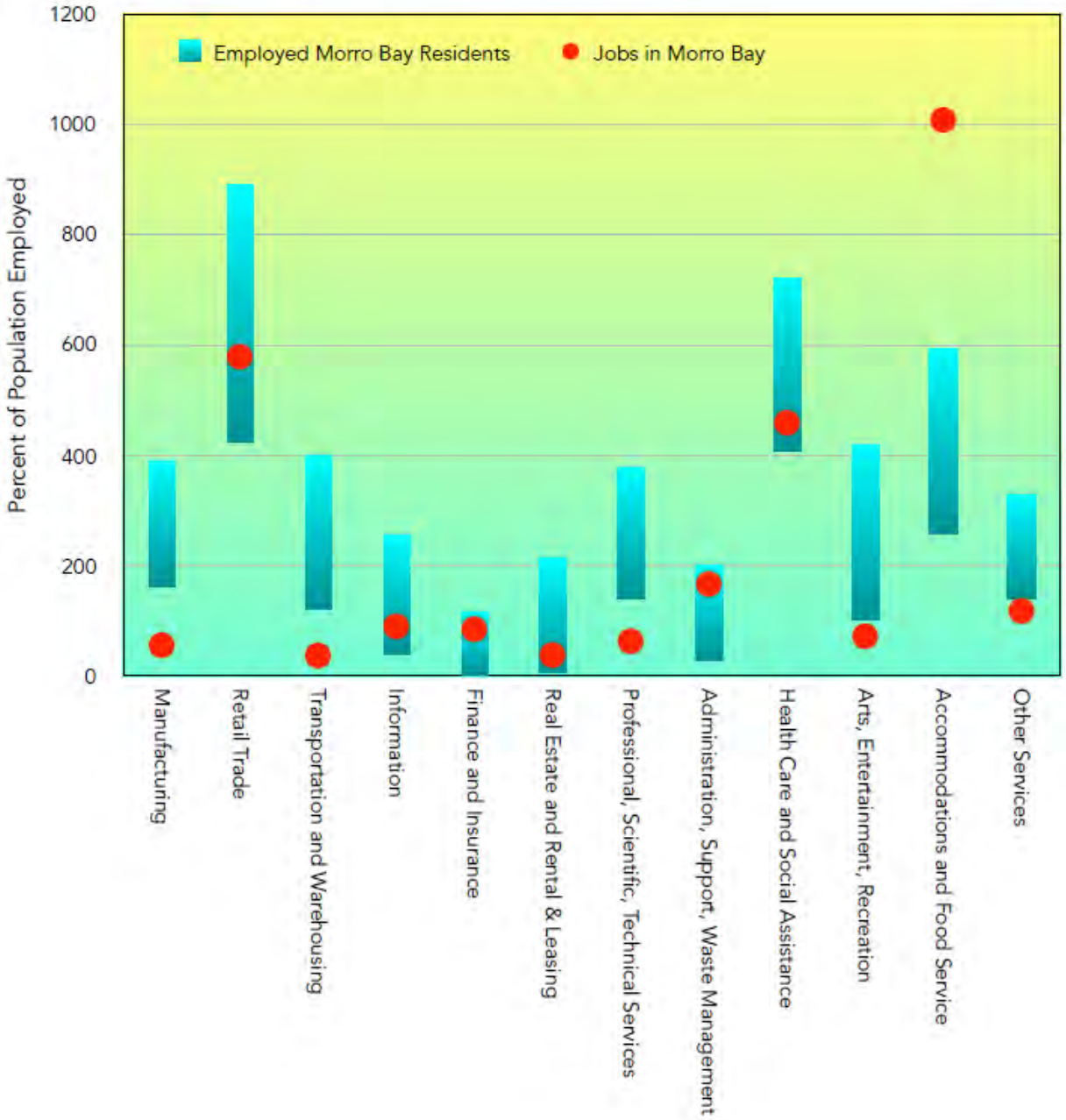
Industry	Morro Bay					California					City Location Quotient
	Employment			Distribution		Employment			Distribution		
	2010	2016	Change	2010	2016	2010	2016	Change	2010	2016	
Total	3,200	3,828	20%	100%	100%	14,665,400	16,637,225	13%			
Agriculture, Forestry & Fishing	42	44	5%	1%	1%	384,600	379,875	-1%	3%	2%	0.50
Mining	0	0	0%	0%	0%	25,100	23,975	<1%	<1%	<1%	0.00
Utilities	44	90	105%	1%	2%	57,700	58,450	1%	<1%	<1%	6.69
Construction	162	208	28%	5%	5%	559,800	740,925	32%	4%	4%	1.22
Manufacturing	106	96	-9%	3%	3%	1,244,000	1,275,525	3%	8%	8%	0.33
Wholesale Trade	25	26	4%	1%	1%	644,000	730,900	13%	4%	4%	0.15
Retail Trade	473	505	7%	15%	13%	1,517,700	1,665,925	10%	10%	10%	1.32
Transportation & Warehousing	113	34	-70%	4%	1%	408,600	499,500	22%	3%	3%	0.30
Information	31	38	23%	1%	1%	429,000	491,225	15%	3%	3%	0.34
Finance, Insurance & Real Estate	170	287	69%	5%	7%	759,700	800,725	5%	5%	5%	1.56
Professional & Scientific Services	74	77	4%	2%	2%	1,015,300	1,236,125	22%	7%	7%	0.27
Management of Companies	7	6	-14%	0%	0%	198,600	232,850	17%	1%	1%	0.11
Administrative & Support Services	257	392	53%	8%	10%	863,000	1,053,575	22%	6%	6%	1.62
Educational Services	6	5	-17%	0%	0%	291,000	367,850	26%	2%	2%	0.06

Industry	Morro Bay					California					City Location Quotient
	Employment			Distribution		Employment			Distribution		
Health Care & Social Assistance	287	445	55%	9%	12%	1,832,400	2,158,175	18%	12%	13%	0.90
Arts, Entertainment & Recreation	60	56	-7%	2%	1%	243,400	291,200	20%	2%	2%	0.84
Accommodation & Food Services	881	1,085	23%	28%	28%	1,258,200	1,563,300	24%	9%	9%	3.02
Other Services	388	334	-14%	12%	9%	484,900	546,975	13%	3%	3%	2.65
Government	60	65	8%	2%	2%	2,448,400	2,520,150	3%	17%	15%	0.11
Unclassified	14	35	150%	0%	1%	na	na	na	na	na	na

Source: California Employment Development Department 2016

In general, there is not a sufficient number of jobs within Morro Bay for several economic sectors. This is predominantly the case for jobs in the manufacturing, transportation/warehousing, professional/scientific, arts/entertainment/recreation, and other services sectors (Figure 5.6). On the other end of the spectrum, there are more jobs in the Accommodations and Food Service sector than the number of Morro Bay residents employed in that sector, so a significant portion of those jobs are filled with non-Morro Bay residents.

Figure 5.6
Resident Employment and Local Jobs (2014)



Source: US Census Bureau, American Community Survey, 2015 5-year estimates; US Economic Census 2012

The California Employment Development Department produces an Occupational Employment and Wage Data spreadsheet by metropolitan statistical area (MSA) yearly. Table 5.13 shows employment projections from 2010 through 2020 as related to job

growth for the San Luis Obispo-Paso Robles MSA, which includes Morro Bay. During the next four years, the San Luis Obispo-Paso Robles MSA expects new employment to be concentrated in a variety of occupations (City of Morro Bay 2014).

Of these ten occupational groups, the highest annual salary falls under the electrical power-line installers and repairers occupation at $92,435. The lowest annual salary is in the nonfarm animal caretaker occupation at $21,694 (City of Morro Bay 2014).

Table 5.13
San Luis Obispo-Paso Robles Metropolitan Statistical Area Projections of Employment (2014)

Occupation	Median Hourly Wage	Median Annual Salary	Estimated Employment		Percentage Change
			2010	2020	
Electrical Power-Line Installers and Repairers	$44.44	$92,435	190	300	58%
Home Health Aides	$10.49	$21,819	460	700	52%
Cost Estimators	$27.72	$57,657	180	270	50%
Market Research Analysts and Marketing Specialists	$26.44	$54,995	180	270	50%
Veterinary Technologists and Technicians	$14.63	$30,430	200	300	50%
Nonfarm Animal Caretakers	$10.43	$21,694	200	290	45%
Operating Engineers and Other Construction Equipment Operators	$33.80	$70,304	300	430	43%
Software Developers, Systems Software	$34.32	$71,385	120	170	42%
Insurance Sales Agents	$31.34	$65,187	170	240	41%
Construction Laborers	$23.90	$49,712	730	1,030	41%

Source: California Employment Development Department 2014

Note: Annual salary is calculated by multiplying hourly wages by 2,080.

Another way to consider the composition of the economic base in Morro Bay is to look at the distribution of business establishments by size. About 80 percent of establishments in Morro Bay have fewer than 10 employees, compared to 74 percent of establishments in the state overall. Only 1 percent of establishments in Morro Bay have 50 or more employees (Table 5.14). However, it is unclear whether the difference between Morro Bay and the state is statistically significant.

Table 5.14
Business Establishments by Size (2014)

	Morro Bay		California	
Employees	**Establishments**	**Distribution**	**Establishments**	**Distribution**
1 to 4	228	59%	499,482	56%
5 to 9	77	20%	158,081	18%
10 to 24	48	13%	108,909	12%
25 to 49	28	7%	76,835	9%
50 to 99	0	0%	26,569	3%
100 to 249	3	1%	14,229	2%
250 to 499	0	0%	3,439	0%
500 and higher	0	0%	2,102	0%
Total	384	100%	889,646	100%

Source: US Census Bureau, County Business Patterns, Zip Code 93442, 2014

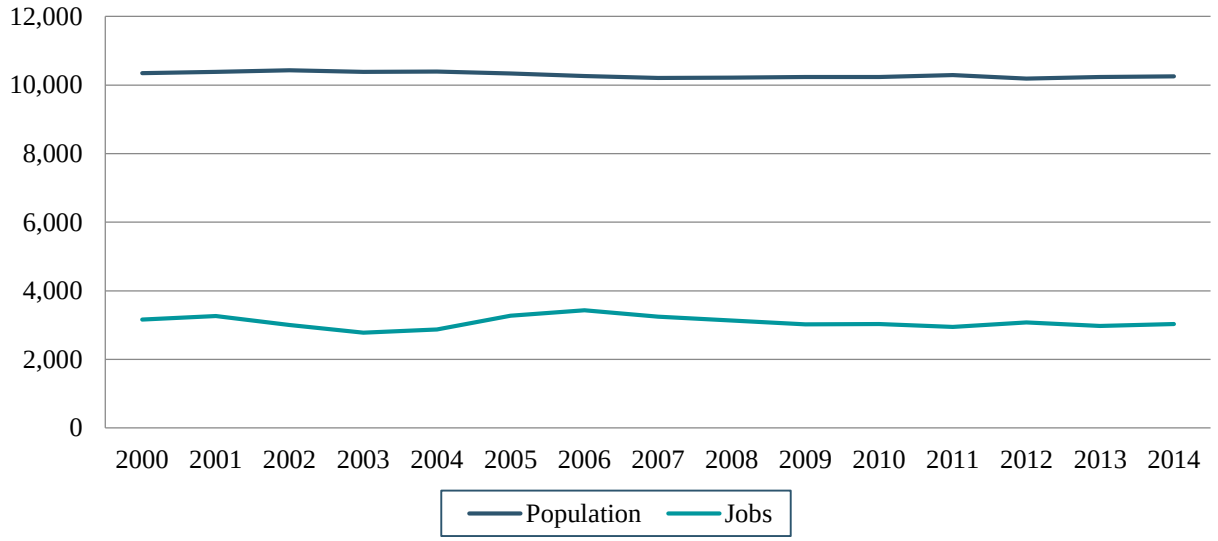
About one third of Morro Bay businesses are home businesses. 36 percent of Morro Bay businesses were home businesses in 2016 (City of Morro Bay 2016). The percent of home businesses statewide was 21 percent as of 2014 (US Census 2016), a substantially smaller percentage than Morro Bay.

An important measure of whether a community is successful at economic development is to compare population growth to job growth. Job growth can occur in two forms. Basic job growth increases the total number of export industry jobs. These basic jobs in turn support more non-basic or retail/service sector jobs in the local economy. Non-basic job growth can also occur in response to leakages to increase the range of goods and services offered in the local community. Morro Bay has a larger share of retail jobs than many communities because of its tourism industry, but the availability of resident-oriented services is limited due to the size of the community.

Any community where the economy is growing faster than the population, or where the economy is shrinking slower than the population, will have fiscal and economic sustainability (Lautman 2011). In Morro Bay, population growth has been flat since 2010. Some job growth occurred in the 2000 to 2006 period, but from 2006 forward, the job base in Morro Bay declined at an average of 2 percent per year. In 2014, which is the latest year of job data available, Morro Bay saw a 2 percent decrease in the number of jobs from 2013 levels, compared to virtually no change in population (Figure 5.7). Changes in job numbers from year to year are small enough that these changes may reflect random fluctuations in the economy rather than sustained trends, and

unemployment numbers for Morro Bay residents are the lowest they have been in recent years. However, it is unclear whether the types of jobs being provided in Morro Bay are consistent with community goals, or whether such jobs provide sufficient income to support employees living in the community.

Figure 5.7
Comparison of Population and Employment Growth (2000–2014)



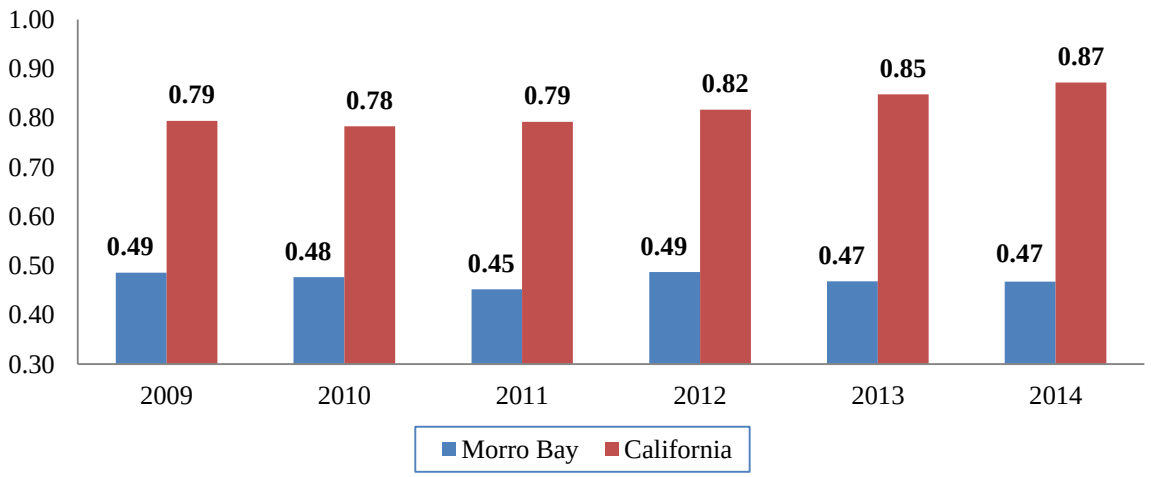
Source: US Census Bureau, County Business Patterns (jobs), 2009–2014; CA Department of Finance, Demographic Research Unit (population estimates), 2010–2014

Considering the types of job growth, it is possible to look at the number of basic jobs per household versus the number of non-basic jobs per household. Although a number of retiree households in Morro Bay do not require jobs, considering the jobs/housing balance over time for both basic and non-basic jobs yields an understanding of the nature of economic growth or decline. Basic jobs in this case include all sectors of the economy except retail, education, and personal services, which are considered non-basic.

The number of basic jobs per household in Morro Bay is significantly less than the rate for California as a whole (Figure 5.8). This is partly due to the retiree population, but also due to the lack of diversity in the local economy. In contrast, the number of non-basic jobs per household is much closer to the state average (Figure 5.9). In addition, there was little or no decline in the number of non-basic jobs per household at the local level (Figure 5.9). While this stability in non-basic (retail) jobs may be tied in part to the tourism

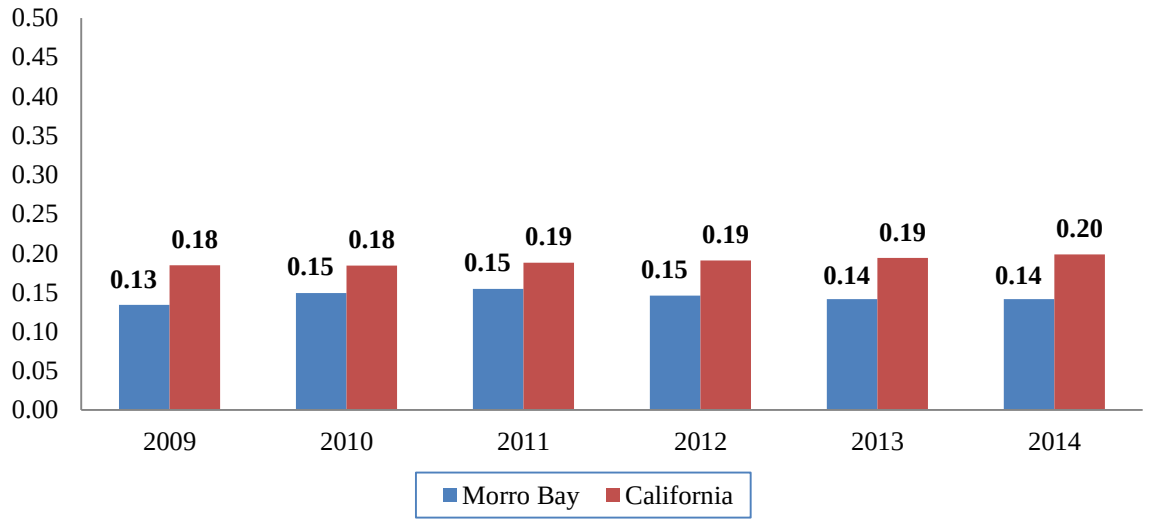
industry, these jobs tend to be lower paying and more cyclical. Creating basic or export industry jobs is crucial to sustaining the local economy over the longer term.

Figure 5.8
Basic Jobs per Household (2009–2014)



Source: US Census Bureau, County Business Patterns (jobs), 2009–2014; CA Department of Finance, Demographic Research Unit (households), 2010–2014.

Figure 5.9
Non-Basic Jobs per Household (2009–2014)



Source: US Census Bureau, County Business Patterns (jobs), 2009–2014; CA Department of Finance, Demographic Research Unit (households), 2010–2014.

Taxable sales are another key indicator of local economic conditions, particularly in an economy that relies heavily on tourism. Total taxable sales grew by 25 percent overall in Morro Bay between 2009 and 2014 (newest data available), although taxable sales grew by 32 percent statewide. During this same time period, San Luis Obispo County experienced an overall increase of 47 percent and outperformed the state in terms of percentage growth in taxable sales by retail sector in most categories.

Detailed data on collections by industry is not available at the city level, but from 2009 to 2014, Morro Bay experienced a decline in non-retail sales (Table 5.15). The share of non-retail sales in Morro Bay at 6 percent is significantly lower than the state, where non-retail sales accounted for 32 percent of the total in 2014. A larger reliance on non-retail sales tends to create greater stability in sales tax revenues.

Table 5.15 Taxable Sales ($1,000) (2009–2014)

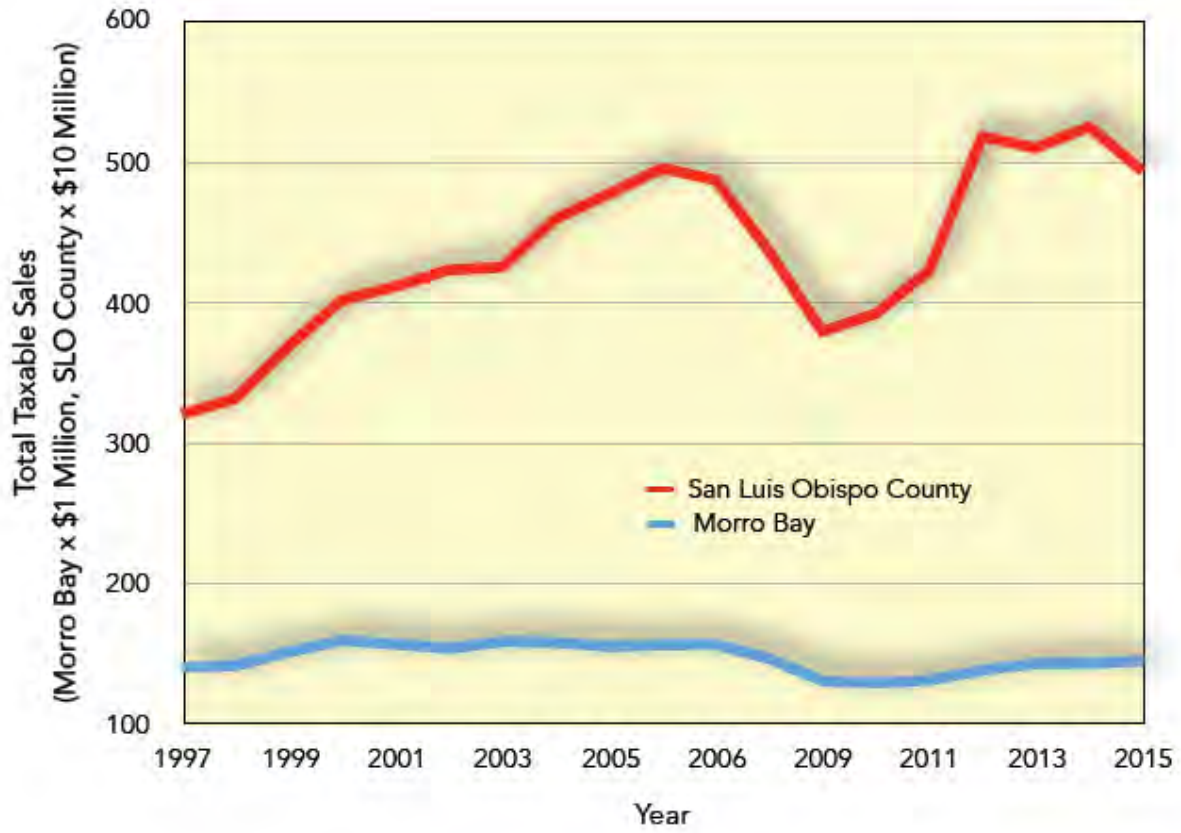
	Morro Bay			San Luis Obispo County			California		
	2009	2014 est.	Change	2009	2014 est.	Change	2009	2014 est.	Change
Retail and Food Services	$107.96	$139.39	29.11%	$2,495,350	$3,337,315	33.74%	$311,214,607	$410,766,421	31.99%
Motor Vehicles & Parts	N/A	N/A	N/A	$298,014	$530,385	77.97%	$44,488,199	$72,972,808	64.03%
Furniture & Home Furnishings	N/A	N/A	N/A	$58,543	$82,408	40.76%	$8,481,020	$11,053,779	7.39%
Electronics & Appliance Stores	N/A	N/A	N/A	$70,572	$67,328	-4.60%	$13,384,338	$14,373,859	31.16%
Building Materials & Supplies	N/A	N/A	N/A	$256,282	$340,240	32.76%	$23,978,313	$31,450,113	13.80%
Food & Beverage Stores	N/A	N/A	N/A	$219,833	$258,431	17.56%	$22,546,285	$25,657,919	22.27%
Health & Personal Care Stores	N/A	N/A	N/A	$74,401	$84,617	13.73%	$9,244,958	$11,303,451	48.94%
Gas Stations	N/A	N/A	N/A	$331,194	$518,000	56.40%	$39,077,835	$58,201,235	33.28%
Clothing & Accessory Stores	N/A	N/A	N/A	$178,574	$220,833	23.66%	$25,641,272	$34,175,725	0.73%
Sporting Good, Hobby, Book Stores	N/A	N/A	N/A	$94,647	$104,851	10.78%	$10,294,172	$10,369,749	6.24%
General Merchandise Stores	N/A	N/A	N/A	$320,635	$341,565	6.53%	$44,921,639	$47,724,256	12.32%
Misc. Store Retailers	N/A	N/A	N/A	$135,345	$158,001	16.74%	$16,385,169	$18,403,915	170.34%
Non-Store Retailers	N/A	N/A	N/A	$15,988	$52,959	231.24%	$2,849,864	$7,704,436	34.96%
Food Service and Drinking Places	N/A	N/A	N/A	$441,333	$577,696	30.90%	$49,921,542	$67,375,177	34.96%
All Other Outlets	$10,826	$9,301	-14.08%	$947,081	$1,728,707	82.53%	$145,278,340	$191,226,040	31.63%
Total All Outlets	$118,788	$148,688	25.17%	$3,442,432	$5,066,021	47.16%	$456,492,947	$601,992,461	31.87%
Percent Non-Retail Sales	9%	6%		28%	34%		32%	32%	

Source: California Board of Equalization 2009, 2014

Note: 2014 sales are estimated based on data for the first three quarters of that year.

When adjusted for inflation, Morro Bay's taxable sales have remained largely flat, despite significant growth in county-wide sales. Comparably, Morro Bay's share of county-wide sales has fallen by approximately one-third since 1997 (Figures 5.10 and 5.11).

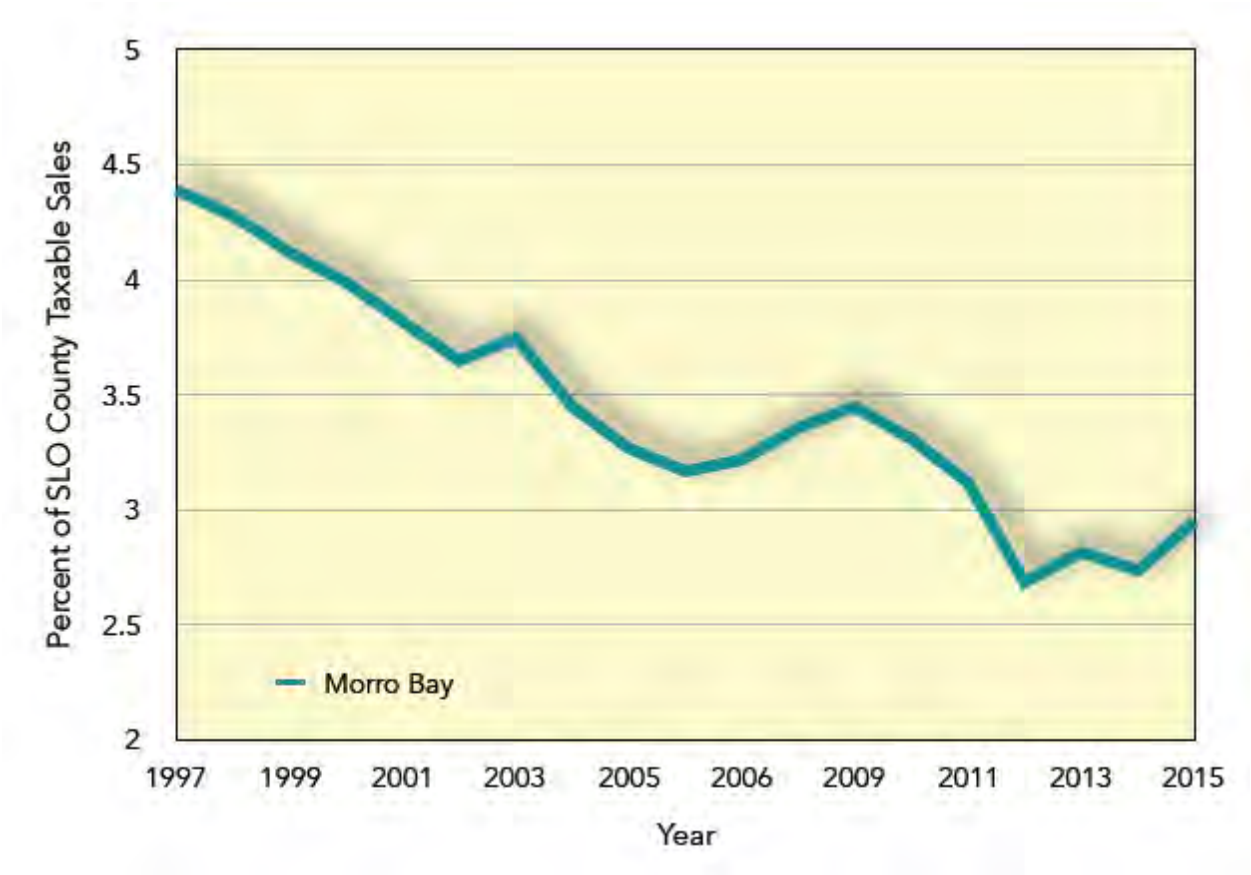
Figure 5.10
Morro Bay and San Luis Obispo County Taxable Sales, Adjusted for Inflation (1997–2015)



Adjusted for inflation to 2014 dollars using the CPI Inflation Calculator of the Bureau of Labor Statistics (https://data.bls.gov/cgi-bin/cpicalc)

Source: California State Board of Equalization

Figure 5.11
Taxable Sales in Morro Bay as a Percent of San Luis Obispo County Sales, Adjusted for Inflation (1997–2015)



Source: California State Board of Equalization

Construction activity is often a leading economic indicator. Residential construction activity in Morro Bay declined significantly from 2005 to 2012, similar to many communities in California. The total value of residential permits issued by the City fell from a high of $38.4 million in 2005 to a low of $7.8 million in 2009. Beginning in 2012, the activity level began to increase again to an annual construction value of $18.7 million in 2014.

The number of annual housing unit additions in Morro Bay actually peaked much earlier, from 1998 through 2001, with an average of 75 units added per year. While there is significant demand for additional housing in the region, there are other constraints to new development. However, the moderate increase in residential construction activity is a positive sign.

Quality of Life

Quality of life is a concern to businesses that need highly skilled labor, because it often impacts their ability to recruit workers from outside the local area. Ease of commuting directly impacts quality of life, both in terms of the time spent driving and the intensity of congestion. About 27 percent of the residents of Morro Bay commute more than 30 minutes to and from work each day, although the average commute is only 19 minutes, compared to a statewide average of 28 minutes. Only 38 percent of the residents work in the community, according to American Community Survey data, although a sizeable share of residents commutes only a short distance to San Luis Obispo.

Population turnover is another measure of the stability and character of a community. Although the recession has reduced mobility rates nationwide, healthy, growing communities tend to have a larger influx of in-migrants. About 17 percent of the residents in Morro Bay live in a different house than they did last year, compared to 14 percent of residents statewide. About 70 percent of those moved within San Luis Obispo County.

In terms of median home prices, prices for existing homes are about 12 percent higher in Morro Bay than the state as a whole, although given the coastal location and tightness of the regional housing market, this is not a sizeable price difference.

A sense of physical security affects both residents and businesses. The violent crime rate in Morro Bay is somewhat higher than the state average on a per capita basis, although property crimes are slightly lower (Table 5.16).

Table 5.16
Quality of Life Indicators (2014)

	Morro Bay	California
Average Commute Time (minutes)	18.8	27.6
Percent Commuting 30 or More Minutes Per Day	27%	40%
Population Turnover		
Same House One Year Ago	83%	86%
Different House One Year Ago	17%	14%
Same County	12%	10%
Same State	4%	2%
Out of State or Abroad	1%	1%
Median Existing Home Price	$548,440	$489,310
Crime Rates per 100,000 Population		
Violent	487	393
Property	2,282	3,459

Source: US Census Bureau 2014; California Dept. of Justice, 2014 Crime in California Report and CJSC Statistics Crimes and Clearances Database; California Association of Realtors 2015

Secondary Education

Having high quality local schools is essential to attracting and producing a quality work force. A comparative analysis of school quality includes class sizes (pupil-teacher ratio), graduation rates, spending per pupil, Scholastic Aptitude Test (SAT) scores, and college readiness.

The San Luis Coastal Unified School District (San Luis Coastal USD), which serves Morro Bay, has significantly higher graduation rates and a higher rate of graduates meeting University of California (UC)/California State University (CSU) requirements than the state as a whole. SAT scores are also higher. An estimated 59 percent of high school students from the San Luis Coastal USD meet the entrance requirements for state universities in California. Education spending per student in the San Luis Coastal USD is also higher at 118 percent of the state average (Table 5.17).

Table 5.17
Secondary Education (2013–2014 School Year)

	San Luis Coastal USD	California
Average Class Size (2014-15)	24.5	24.3
Education Expenditures per Student	$10,445	$8,867
Four Year Graduation Rate	96.80%	81%
% 9-12th Grade Students Taking the SAT	17.90%	15.20%
Average SAT Score	1,687	1,487
% Graduates Meeting UC/CSU Requirements	58.90%	41.90%

Source: California Department of Education 2016

Note: All data is for the 2013–14 school year unless noted.

California requires a high school exit exam for all students. At the 10th grade level, the percent of students that passed the exam in math and English ranged from 92 to 95 percent in the San Luis Coastal USD, compared to 83 to 85 percent at the state level, and 88 to 89 percent countywide. The San Luis Coastal USD has also been able to slightly increase the share of students that pass the exam over the past three years (Table 5.18).

Table 5.18
Secondary Education – Assessment

10th Grade CA High School Exit Exam	2011		2014	
	% Students Passing		% Students Passing	
	Math	English	Math	English
San Luis Coastal USD	93%	91%	95%	92%
San Luis Obispo County	88%	88%	89%	88%
California	83%	82%	85%	83%

Source: California Department of Education 2016

RETAIL MARKET ANALYSIS

The purpose of conducting a retail market analysis is to estimate the market demand for retail and service business categories and thereby identify potential new business opportunities and optimize land use distribution in the consideration of future development opportunities within the community. The information provided in this report can be useful to local entrepreneurs and to businesses preparing or updating business plans, product lines, and marketing.

Market analysis is a blend of art and science. No specific calculations will show with certainty the types of businesses, products, or services that will succeed in any given community. However, taking a comprehensive and realistic look at the market demographics, trends, and consumer behaviors may improve the likelihood of success. The following information provides a foundation for identifying retail business and future land use opportunities in Morro Bay.

Method

The first step in conducting a retail market study is to determine the trade area. The Morro Bay retail trade or market area encompasses approximately a 24-mile stretch from Cambria (north) to Los Osos (south) (Figure 5.12). This trade area estimation is based on conversations with City staff, a recent survey conducted by the Morro Bay Chamber of Commerce, local highways, and geography. The estimates of retail sales potential, average expenditures, consumer demographics, and purchasing behaviors are directly linked to this trade area.

Demand

In market analysis demand, spending potential is the amount of a product or service required to fulfill the needs of consumers in a trade area. This is driven by the size of the trade area, the number of consumers, their purchasing power, and behaviors.

Estimates for demand are based on historical data showing how much residents typically spend on different types of products and services in different types of stores. An average household expenditure for a type of merchandise is then applied to trade area demographics to obtain potential demand. The household expenditure figures in this report are customized to Morro Bay trade area households by The Nielsen Company, Nielsen Solution Center.[8]

[8] Nielsen derives demand data from the Consumer Expenditure Survey, which is conducted by the US Bureau of Labor Statistics. This survey aggregates data from two different surveys on the buying habits of American consumers, including data on expenditures, income, and household characteristics.

Supply

Supply is the amount of a product or service currently available in a trade area. This is organized by product category (e.g., grocery, home furnishings) and in this report is measured by retail sales. Supply estimates are derived from the US Census Bureau's Census of Retail Trade. The Census Bureau conducts an annual survey of year-end inventories, purchases, accounts receivable, and sales to estimate retail sales. Similar to preparing demand estimates, this data is applied to trade area demographics to obtain potential.

Retail Leakage and Surplus

Leakage occurs when demand exceeds supply. If retailers outside the market area are fulfilling the demand for retail products, sales are "leaking" out of the trade area. A sales leakage indicates that people living in the trade area are: (a) shopping outside of it, or (b) consuming less than expected given their income level.

Retail leakage does not mean that retail businesses are failing. A leakage means that total sales within a trade area are not as high as they could be based on the area population, demographics, and expected spending habits. This condition indicates an opportunity for new retailers to enter the trade area or for existing retailers to extend their marketing outreach.

Surplus occurs when supply of a product or service in the trade area exceeds demand. Sales surplus indicates that: (a) retailers are attracting shoppers that live outside the trade area, or (b) people living in the trade area consume more than is expected given their income level (Figure 5.13).

T:_GIS\San_Luis_Obispo_County\MXDs\Morro Bay\General_Plan_Update\CBA\Land_Use\Retail Trade Area.mxd (5/24/2016)

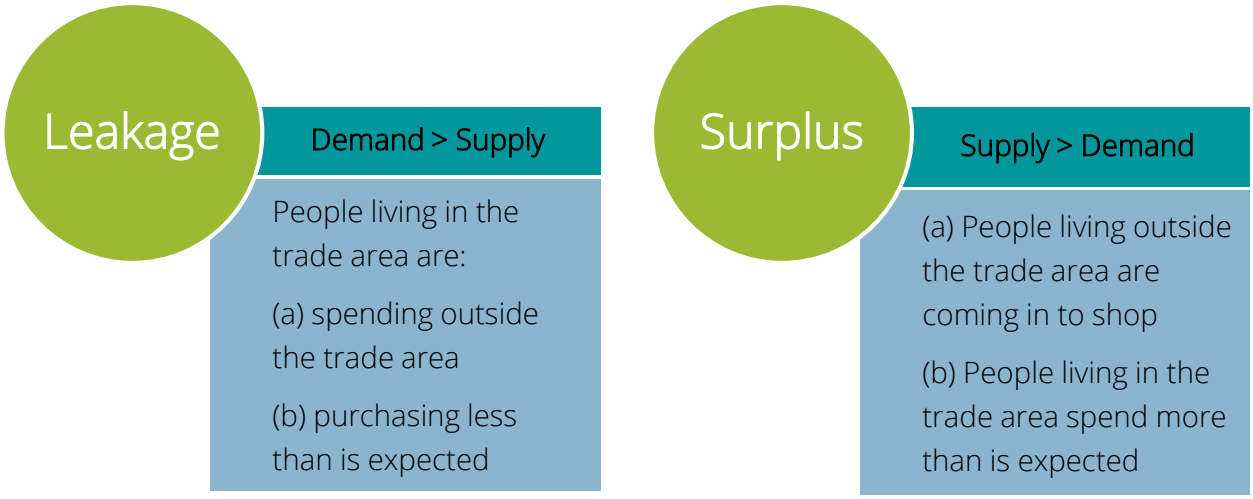
Plan MORRO BAY

FIGURE 5.12

Morro Bay Retail Trade Area

Page 2

Figure 5.13
Trade Leakage and Surplus



Analysis

Twelve retail categories are usually considered when conducting a retail market analysis. The categories are based on the North American Industry Classification System.

- Apparel, Accessories—clothing, shoes, jewelry, leather goods
- Home Furnishings—furniture, mattresses, floor coverings, window treatments, kitchenware
- Electronics, Appliances—televisions, computers, cameras, stereos, household appliances
- Building, Home Improvement, Garden—building materials, paint, wallpaper, hardware, lumber, nursery, garden center
- Sporting Goods, Hobby, Book, Music—sporting goods, hobbies, toys, games, sewing, musical instruments and supplies, records/CDs, new and used books, newsstands
- Grocery, Supermarkets—grocery and supermarkets

- Convenience Stores—food marts primarily engaged in retailing a limited line of goods, snacks
- Specialty Food Stores—gourmet or organic foods, meat, fish, and seafood markets, fruit and vegetable markets, baked goods, candy, nuts, coffee and tea, spices
- Health, Personal Care—pharmacies, cosmetics, beauty supplies, optical goods, food supplement stores, medical supply stores, hearing aids
- Restaurants, Bars—full service and limited service restaurants (deli, pizza, takeout, fast food), cafeteria, buffets, contractors and caterers, mobile food services, drinking places (bars, lounges, nightclubs, taverns)
- General Merchandise Stores—department stores, discount department stores, warehouse clubs, dollar stores, variety stores
- Specialty Retail—art, florists, office supply, stationery, gifts, novelty and souvenir, used merchandise, pet and pet supplies, manufactured homes, hot tubs and pool supplies, tobacco, trophy and awards

Table 5.19 shows the existing distribution of potential sales and supportable retail space in the Morro Bay market area among the 12 retail categories. Retail leakage occurs in the following seven categories.

- Apparel, Accessories
- Home Furnishings
- Sporting Goods, Hobby, Books (no leakage in sewing, needlework, music stores)
- Convenience Stores
- Specialty Food Stores
- Restaurants, Bars (no leakage in full-service restaurants or bars)
- General Merchandise Stores

By applying Urban Land Institute's estimate of typical sales per square foot to the amount of retail leakage, an estimate of the area's supportable retail space can be calculated. The Morro Bay trade area data indicates a total of 552,489 additional square feet could be supported. However, to be practical, one must look beyond the data (Table 5.19).

Morro Bay's larger visitor population will drive many of the purchases (e.g., convenience stores, specialty food markets, and possibly sporting goods and hobby items). Also, given the proximity to the City of San Luis Obispo market, it is likely that some of the leakage will never be captured by the Morro Bay trade area (e.g., apparel, general merchandise, home furnishings). The Morro Bay Chamber of Commerce's 1995 and 2013 retail market studies confirm this. While the number of shopping trips to San Luis Obispo remained the same, some of the shopping in Morro Bay appears to have been replaced with online shopping.

Table 5.19
Morro Bay Trade Area Retail Market Analysis Supply and Demand (2016)

Merchandise or Service Category	Demand (Spending Est.)	Supply (Retail Sales)	Leakage (or Surplus)	Target Sales/SF[5]	Potential Supportable Space (SF)
Shopper Goods					
Apparel, Accessories [1]	$28,439,841	$7,208,698	$21,231,143	$209	101,584
Home Furnishings	$13,380,243	$3,422,432	$9,957,811	$140	71,127
Electronics, Appliances	$11,785,883	$12,499,243	($713,360)	$199	
Building, Home Imprv, Garden	$73,040,637	$109,786,470	($36,745,833)	$140	
Sporting Gds, Hobby, Book, Music	$10,871,608	$7,347,846	$3,523,762	$216	16,314
Food Stores					
Grocery, Supermarkets	$53,970,290	$72,729,347	($18,759,057)	$390	
Convenience Stores	$3,605,422	$473,374	$3,132,048	$390	8,031
Specialty Food Stores	$7,215,384	$1,458,071	$5,757,313	$390	14,762
Health, Personal Care [2]	$39,491,504	$41,405,240	($1,913,736)	$365	
Restaurants, Bars	$76,227,141	$74,099,854	$2,127,287	$263	8,089
General Merchandise Stores [3]	$76,057,579	$4,219,865	$71,837,714	$216	332,582
Specialty Retail [4]	$17,285,832	$50,361,872	($33,076,040)	$216	
Total Retail Leakage or (Surplus)			$26,359,052		
Estimated Supportable Retail Space					552,489

Source: The Nielsen Company 2016

[1] Apparel includes clothing, shoes, jewelry, and leather goods.

[2] Health and Personal Care refers to pharmacies, drug stores, cosmetics, beauty supplies, perfume stores, optical goods, health food and supplement stores.

[3] General Merchandise Stores include department stores, discount department stores, national chain department stores, warehouse clubs and superstores, and miscellaneous general merchandise stores.

[4] Specialty Retailers includes florists, office supplies, stationery, and gift stores.

[5] Target Sales are based on Urban Land Institute's estimate of typical sales per square foot, as presented in Dollars and Cents of Shopping Centers. This estimate is applied to the leakage to convert potential retail sales to estimates of supportable space (SF).

Another source of potential retail demand includes visitors to Morro Bay and San Luis Obispo County. According to reports, transient occupancy taxes (TOT) collected in Morro Bay increased 5.4 percent from 2011 to 2015 (see Figure 5.14). In contrast, TOT collected in the county increased by an average of 10.5 percent over the same period. Preliminary

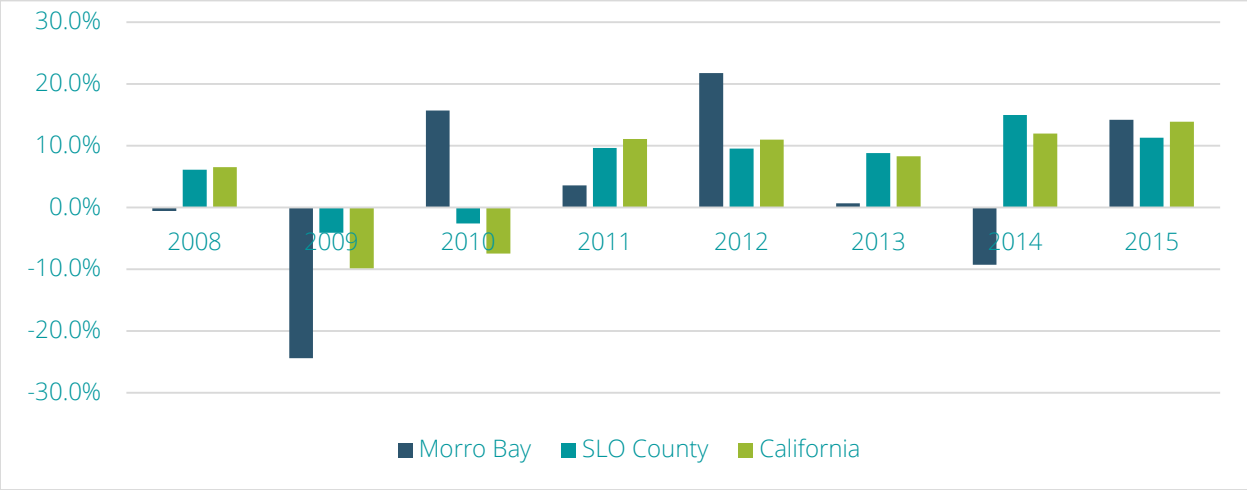
estimates for 2015 show Morro Bay and SLO collections at an all-time high ($2,902,400 and $36,387,000 respectively).

The travel industry is represented primarily by retail and service firms, including lodging and camping, restaurants and other food stores, retail, gasoline service stations, and other types of businesses that sell their products and services to travelers.

Visitors are attracted to areas that offer art and cultural events, an active downtown and night life, recreation, and entertainment events and venues. Visitor draws for Morro Bay include:

- Beaches, swimming, boating
- Wide variety of outdoor recreation, parks
- Museums, art galleries
- A variety of special events throughout the year including wine tastings, concerts, festivals, art exhibits, and competitions

Figure 5.14
Transient Occupancy Tax Collection Annual Growth (2008–2015)



Source: Dean Runyan Associates 2016

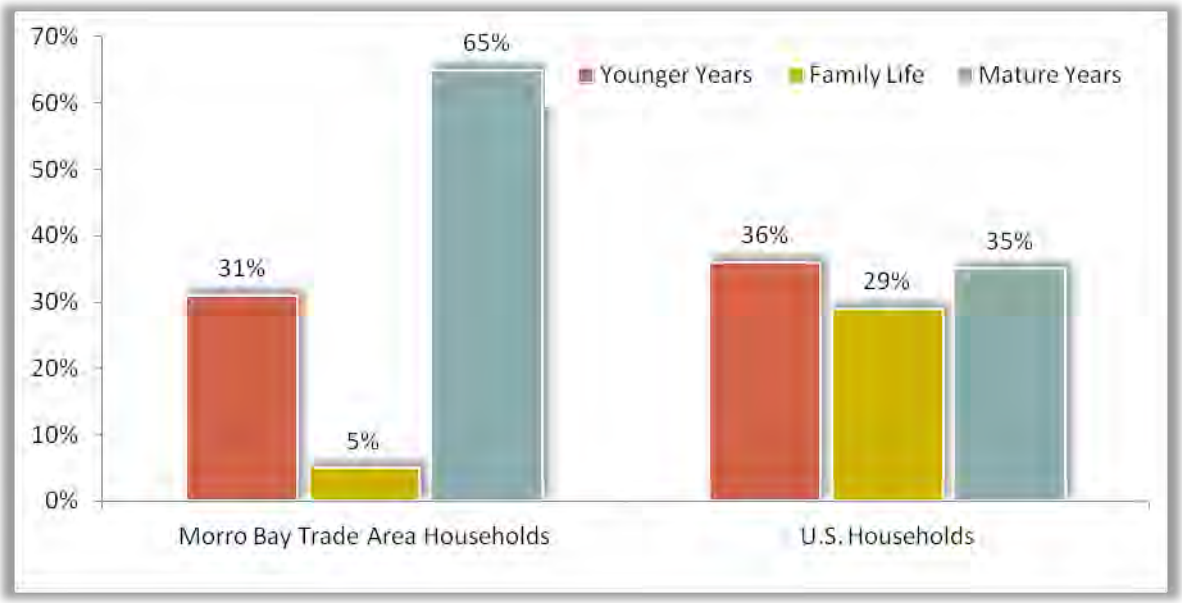
MORRO BAY TRADE AREA CONSUMER PROFILES

This final section of this chapter presents a socioeconomic profile of the Morro Bay retail trade area. People who share similar demographic characteristics may have divergent interests and shopping preferences. These representative profiles are prepared to give the City and local business owners an idea of the demographics and spending habits of households throughout the market area. They are intended to be used to better understand the consumers in the Morro Bay market area and judge the potential for a specific type of store or product line, which can help guide future economic growth and development in the community so as to satisfy the needs of local residents.

Nielsen Solution Center developed a system to categorize neighborhoods throughout the nation into 66 consumer segments. Neighborhoods are geographically defined by census blocks, which are analyzed and sorted by a variety of demographic and socioeconomic characteristics and other determinants of consumer behavior. The 14,966 households in the trade area are distributed into three life stage groups—younger years, family life, and mature years. Each group is further divided into 10 segments which are profiled.

The top consumer segments in the Morro Bay retail trade area are summarized in the graphs below. A strong majority of Morro Bay trade area households fall into the mature years category; about 70 percent of the trade area is in the baby boomer generation (9,700 households). These people are, for the most part, homeowners with incomes close to matching the median for the trade area ($57,790). Figure 5.15 and Tables 5.20 to 5.23 describe trade area market segment characteristics.

Figure 5.15
Distribution of Consumer Groups in the Morro Bay Trade Area and United States



(2016)

Table 5.20
Nielsen Consumer Segment – Younger Years (2016)

Segment	Young Achievers	Midlife Success	Striving Singles
% of Total HHs in Morro Bay Trade Area	12%	12%	7%
Age Range	45-64	30-40	20's
Children <18	No	No	No
Education	College Grads	High School	High School Grads
Employment	White Collar	Blue Collar	Service, Part Time, Student
Median Income	$53,000	$71,000	$35,000
Homeownership	Owners (new homes)	Mostly Owners (mid-priced)	Apartments
Lifestyle Interests and Spending Habits	Active, Progressive; biking, international vacations, skiing, backpacking, boating	Comfortable; boating, camping, biking, hunting, mountain biking	Fast-paced; sports, camping movies, music, fast food, water sports

Table 5.21
Nielsen Consumer Segment – Family Life (2016)

Segment	Mainstream Families	Young Accumulators	Accumulated Wealth
% of Total HHs in Morro Bay Trade Area	3%	1%	1%
Age Range	25-44	35-54	50+
Children <18	Yes	Yes	Mix
Education	High School (some college)	College	College
Employment	Blue Collar	Management	Professional, Executives
Median Income	$48,000	$72,000	$109,000
Homeownership	Own (modest or mobile)	Own (mid to large)	Own (large)
Lifestyle Interests and Spending Habits	Active; horses, sports, camping, hunt, fish, electronic toys, bulk groceries, 3+ cars	Upscale; outdoor sports, latest technology, camping, power boats, motorcycles	Upscale; electronic toys, top of the line sporting equipment, cars, vacations

Table 5.22
Nielsen Consumer Segment – Mature Years (2016)

Segment	Conservative Classics	Affluent Empty Nesters	Cautious Couples	Sustaining Seniors
% of Total HHs in Morro Bay Trade Area	28%	17%	13%	6%
Age Range	55+	55+	65+	65+
Children <18	No	No	No	No
Education	College	College	High School	High School
Employment	White Collar	Professional	Blue Collar or Retired	Retired
Median Income	$60,000	$89,000	$43,000	<$30,000 (fixed)
Homeownership	Own	Own	Own (modest)	Rent or Own
Lifestyle Interests and Spending Habits	Active; recent empty nesters nearing retirement, RV travel, shop in bulk	Active; country club, technology, travel, cultural events, community politics	Modest, rustic; hunting, fishing, boating, cooking, family restaurants	Sedentary and home-centered; gardening, sewing, woodworking

Table 5.23
Morro Bay Trade Area Demographics (2010–2021)

Generation	2010	2016	2021	Average Annual Growth (2016–2021)
Total Population Estimate	32,636	32,928	33,583	0.4%
Generation Z (Age 0-15)	4,220	4,266	4,238	(0.1%)
Next Generation (15-24)	3,358	3,109	2,757	(2.3%)
Millennials (25-34)	3,333	3,496	3,932	2.5%
Generation X (35-44)	3,252	3,313	3,438	0.8%
Baby Boomer (45-64)	10,903	9,644	12,217	5.3%
Retiring Baby Boomer (65+)	18,958	9,099	10,381	2.8%
Median Age	49.5	51.3	52.2	n/a
Male / Female	49% / 51%	48% / 52%	48% / 52%	n/a
Median Household Income	$42,249	$57,790	$61,410	1.3%
Single-Classification Race				
White	25,693	25,097	24,872	(0.2%)
Hispanic or Latino	4,826	5,391	5,962	2.1%
Asian	1,083	1,289	1,477	2.9%
Am.Indian / Alaska Native	148	175	205	3.4%
Black/African American	126	106	94	(2.3%)
Other	760	869	973	2.4%

Source: The Nielsen Company 2016

5.2 REGULATORY SETTING

LOCAL

Morro Bay City Council Goals and Objectives

The Morro Bay City Council adopted the 2016–2017 City Goals and Objectives on February 24, 2016. Goal number 6 (of 10) is to "Support Economic Development." This goal is supported by 13 actions (listed by letter, as identified in the goals document):

a) Tidelands Trust Lease Management Policy. Update and revise the City Lease Management Policy.

b) Economic Development Strategic Plan (EDSP). Launch the initial EDSP marketing toolkit and the 30-60-90-day action steps in the Morro Bay Economic Development Strategic Plan fostered by Chabin Concepts.

c) MBPP. Consider providing proactive support, including a possible "memorandum of cooperation", to any entity pursuing demolition, remediation and redevelopment {for non-energy producing purposes) of the Morro Bay Power Plant property.

d) Business Information on Website. Complete a full renovation of the "Doing Business" section of the City's website to enhance service for existing businesses and better market to potential new business for Morro Bay.

e) Business Incentives. Research, evaluate, and bring to Council for consideration business incentive opportunities that may encourage existing business reinvestments in Morro Bay or recruit new businesses to the community.

f) Commercial Real Estate Inventory. Partner with a local real estate agent to create a commercial real estate inventory and market this information on the City's website.

g) Aquarium Project. Work closely with the Central Coast Aquarium to bring a Concept Plan for approval to Council and the Coastal Commission.

h) Business Improvement Districts. Be receptive to, and provide City support, to any business improvement district opportunities proposed by Morro Bay business interests.

i) Economic Development Code Scrub. Complete a high-level analysis of the Morro Bay Municipal Code (MBMC) to revise/remove policies that impede or hamper an improved business climate.

j) Maritime Museum. Update the current Memorandum of Understanding and complete a license agreement with the Central Coast Maritime Museum.

k) Marine Services Facility. Contract for, complete, and bring to Council for consideration a full feasibility study for the proposed Marine Services Facility.

l) **Tourism Integration.** Complete the integration of the management of Tourism Business Improvement District operations with other aspects of the City's Economic Development plans and activities.

m) **Food Trucks.** Research and bring to Council for consideration a change to the MBMC to allow "food trucks" during approved events.

Local Economic Action Plan

The Local Economic Action Plan (LEAP) is a process started by the City in October 2014 to engage with residents and business owners to develop a short-term action plan for economic development. Most recently updated in August 2015, the LEAP includes the following initiatives:

1) Expedite processing for targeted businesses
2) Revitalize and link business districts to boost activity
3) Reinvent events to better serve residents, businesses, and visitors
4) Promote environmental assets of the area for residents and visitors to enjoy and to expand business and tourism results
5) Install a Pilot Parklet in business district to offer community spaces for residents and visitors to enjoy and to stimulate business activity
6) Assess fiber optic connectivity opportunities
7) Create an inventory of commercial properties and their features to expand and attract targeted businesses
8) Reassess business incubator and enhance local business building efforts
9) Outreach to attract businesses
10) Support for commercial and recreational marine interests

The findings from the LEAP process are included in the City's current efforts to develop an Economic Development Strategic Plan, which is expected to be completed in the first half of 2017.

5.3 PRIORITY FINDINGS

STAGNANT ECONOMIC INDICATORS

Since 2010, population growth has held relatively steady, while job growth has remained generally constant or decreased (the data is inconclusive). While this by itself is not necessarily worrisome, it is coupled with lower sales tax receipts than neighboring jurisdictions. This indicates a possibility that the local economy could face substantial structural challenges.

MARKET SURPLUS AND LEAKAGE

Based on an assessment of market surplus and leakage, the Morro Bay trade area data indicates a total of 552,489 additional square feet could be supported, although not all of the additional square footage would be needed or located in the City of Morro Bay. This assessment comes with the caveat that some of the identified sales leakage could be the result of online sales, which may be hard to compete with. While this is not meant to imply that an additional 500,000 or more of retail square footage should be located in or near Morro Bay, it does indicate that the community could support a number of new and varied retail stores.

MARKET SEGMENTS

A strong majority of Morro Bay trade area households fall into the mature years category; about 70 percent of the trade area is in the baby boomer generation (9,700 households). These people are, for the most part, homeowners with incomes close to matching the median for the trade area ($57,790). Future retail opportunities and other economic growth in Morro Bay should help meet the needs and buying habits of local market segments, including the baby boomers, although the city's economy should not cater exclusively to any particular type of resident or visitor.

6.0 Infrastructure and Public Services

Plan MORRO BAY

6.0 INFRASTRUCTURE AND PUBLIC SERVICES

This chapter identifies existing infrastructure and public services conditions in the planning area. Topics addressed include waste and recycling, water supply, wastewater facilities, storm drainage, energy, and telecommunications. This chapter also summarizes applicable regulations for infrastructure and service levels required for each type of infrastructure or service.

Topics relating to transportation infrastructure are described in Chapter 13.0 (Transportation and Mobility). Chapter 14.0 (Water and Water Quality) provides additional discussion of water quality conditions.

6.1 EXISTING CONDITIONS

WASTE AND RECYCLING

Solid Waste Provider and Facilities

The City contracts with a private franchise, Morro Bay Garbage, to provide residential and commercial waste collection services for the planning area. Morro Bay Garbage is a subsidiary of Waste Connections Incorporated, which serves the entire San Luis Obispo Integrated Waste Management Authority (IWMA) jurisdictional area. The IWMA includes San Luis Obispo County, the Cities of Arroyo Grande, Atascadero, Grover Beach, Morro Bay, Paso Robles, Pismo Beach, and San Luis Obispo, as well as numerous community service districts. The IWMA was formed in 1994 to plan and implement regional solid waste and hazardous waste programs to achieve state-mandated solid waste diversion goals. The current statewide goal is to divert 75 percent of solid waste from landfills through recycling, waste stream reduction, or composting by 2020.

Morro Bay Garbage provides collection service for household trash, recyclable materials, and clean green waste, such as untreated wood and cut grass. The estimated pounds of waste collected for Morro Bay between 2010 and 2014 ranged between 215,345 and 243,378 each year. There was no clear trend toward increasing or decreasing the

amount of waste collected during that time (CalRecycle 2015). Morro Bay previously had recycling centers where community members could drop off recyclable materials, including large volumes of materials or items that were not accepted in household collection bins; these facilities have since closed. The nearest recycling centers are in San Luis Obispo and Cambria.

Morro Bay Garbage deposits waste collected in Morro Bay at the Cold Canyon Landfill, one of three landfills in the IWMA jurisdictional area. Cold Canyon Landfill is located about 25 miles south of Morro Bay on State Route 227. Solid waste hauled to the landfill is either sorted and recycled, or deposited in the landfill. Cold Canyon also accepts scrap metal, glass, plastic, newspaper, cardboard, mixed paper, appliances, and yard waste directly and at various drop-off locations.

The estimated permitted landfill capacity of the Cold Canyon Landfill is just over 23 million cubic yards, as shown in Table 6.1. The landfill, recently expanded, is estimated to have 62 years of remaining life.

Table 6.1
Cold Canyon Landfill Estimated Site Life

Name of Facility	Total Estimated Permitted Capacity	Remaining Estimated Capacity	Estimated Remaining life
Cold Canyon Landfill	23,041,030 Cubic Yards	13,573,530 Cubic Yards	62 years

Source: Avenal and Cold Canyon Landfills 2016

The IWMA implemented the "SLO Take Back Program," which allows residents and businesses to dispose of materials that are not accepted in collection service bins, and instead drop off materials for free at designated sites. The SLO Take Back Program accepts fluorescent light tubes and compact fluorescent light bulbs (CFLs), motor oil and oil filters, and batteries. A related Home Generated Sharps Disposal Program issues residents a box for used needles, syringes, and other medically necessary sharp items. Residents can drop these boxes off at participating locations and receive a new empty box. Like the SLO Take Back Program, the Home Generated Sharps Disposal Program is free. Table 6.2 shows the locations in Morro Bay where participants can drop off materials.

Table 6.2
Participating Sites, SLO Take Back and Home Generated Sharps Disposal Programs

Name of Facility	Address	Accepted Materials
Albertson's	730 Quintana Road	Batteries, fluorescent tubes and bulbs
Arco AM/PM	940 Morro Bay Boulevard	Batteries
Auto Zone	450 Quintana Road	Motor oil and oil filters
Bottle Liquor	999 Main Street	Batteries
City of Morro Bay Wastewater Treatment Plant	160 Atascadero Road	Batteries, fluorescent tubes and bulbs, motor oil, and oil filters
Cookie Crock	490 Quintana Road	Batteries
Dollar Tree	710 Quintana Road	Batteries, fluorescent tubes and bulbs
Lighthouse Liquor	701 Morro Bay Boulevard	Batteries
Mobil	911 Morro Bay Boulevard	Batteries
Miner's Ace Hardware	510 Atascadero Road	Batteries, fluorescent tubes and bulbs
Morro Bay Drug & Gift	600 Morro Bay Boulevard	Medical sharps
Morro Bay Market & Spirits	395 Morro Bay Boulevard	Batteries
RadioShack/Coast Electronics	510 Quintana Road	Batteries
Rite Aid	740 Quintana Road	Medical sharps
Spencer Fresh Market	2650 Main Street	Batteries, fluorescent tubes and bulbs
Strictly PC	3118 Main Street	Batteries
Sunset Liquor	396 Atascadero Road	Batteries
Valero	900 Morro Bay Boulevard	Batteries

Source: San Luis Obispo Integrated Waste Management Authority 2016a, 2016b, 2016c, 2016d

The IWMA also provides hazardous waste service, by special request or if brought to a designated drop-off facility at the wastewater treatment plant, to small businesses that generate less than 27 gallons or 220 pounds of hazardous waste per month. Hazardous wastes are collected weekly on Saturdays, from 11 am to 3 pm. There are no hazardous waste treatment facilities in the area. Most hazardous wastes are transported to other states for incineration (Worrel 2016). Oil hazardous waste is processed at a facility in Morro Bay or is transported to the Los Angeles area. Two facilities in Morro Bay are designated "PaintCare" sites, where individuals can drop off paint for reuse, reprocessing, or safe disposal.

Disposal Rates

The California Department of Resources Recycling and Recovery (CalRecycle) reports per capita disposal rates, measured in pounds per person (both residential population and employed population) to establish compliance with Assembly Bill (AB) 939. Disposal rates are reported for the San Luis Obispo IWMA, and are not separated by jurisdiction. Between 2010 and 2014, per capita disposal rates for the IWMA ranged between 4.3 and 4.9 pounds, and disposal rates per employee ranged between 11.5 and 13.8 pounds, as shown in Table 6.3. Both trends are below established state targets for jurisdictions. It likely that Morro Bay's per capita disposal rates do not differ dramatically from that of the IWMA as a whole.

Table 6.3
IWMA Per Capita Disposal Rates (2010–2014)

Year	Disposal (tons)	Population	Residents Disposal (lbs./person/day)	Employment	Employees Disposal (lbs./person/day)
2010	226,987	269,333	4.6	89,968	13.8
2011	228,975	270,966	4.6	99,642	12.6
2012	215,345	271,483	4.3	102,420	11.5
2013	234,918	272,177	4.7	105,591	12.2
2014	243,378	272,357	4.9	108,904	12.2

Source: CalRecycle 2015

WATER SUPPLY

Service Area and Service Provision

The Morro Bay Public Works Water Division provides water service to the city. The city's water service area is bounded by the City of Morro Bay's sphere of influence (SOI), which includes the City limits and a small area north of the city, west of State Route 1 (see Figure 1.3 for reference). In 2010, the service population was 10,608 people. The most recent Urban Water Management Plan (UWMP), which provides estimates for demand and water supply for a period of 25 years into the future, was prepared in 2010. The UWMP projects the service area population to reach 12,255 by 2035 (City of Morro Bay 2010). Public Works staff has collected additional water supply information from 2015 (provided in discussions below) in anticipation of preparing a One Water Plan for the city.

Water Supply and Demand

Sources

The city derives its water supply mostly from the State Water Project (SWP), purchased through San Luis Obispo County, and local groundwater. A desalination plant supplements the city's water supply in drought conditions (City of Morro Bay 2010). In 2015, total water production available to the City was 1,088 acre feet (City of Morro Bay 2016b).

Surface Water

The city's existing water supplies are provided almost entirely (about 97 percent) by the SWP. The City is contractually entitled to 1,313 acre-feet per year of state water from the County of San Luis Obispo, plus an additional 174 percent drought buffer to ensure reliability when the SWP has to reduce overall deliveries during dry years (City of Morro Bay 2010).

Groundwater

The City has access to, and water rights permits for, two local groundwater basins: the Morro and Chorro Basins. The Chorro Creek water rights include a condition that the City can only pump its wells when Chorro Creek flow exceeds 1.4 cubic feet per second (cfs), which can limit the availability of the resource for use as a water supply. In total, the City has pumping rights to 1,723.5 acre-feet per year from both basins; up to 1.2 cfs and 581 acre-feet per year from Morro Basin, and up to 3.171 cfs for Chorro Creek underflow. The City has historically operated seven drinking water wells, four of them active, in the Morro Groundwater Basin, and eight wells in the Chorro Groundwater Basin, only one of them active due to high nitrate levels in the others. The Chorro Basin water has not been used since 2012 for these reasons. It is sampled annually to establish water quality (City of Morro Bay 2016b).

Desalination

In 1992, the City constructed a seawater desalination plant during a drought emergency. The plant utilizes a sweater reverse osmosis (SWRO) system to desalinate seawater produced from five seawater wells located along the Morro Bay harbor.

In 1995, the California Coastal Commission approved Morro Bay LCP Amendment LCP 1-94 allowing the desalination plant to operate "as needed to ensure that the City's minimum water quality standards are met, as routine replacement, and to offset drought conditions." However, after completion, the plant operated for several months and was shut down due to excessive operating costs and after increasing iron concentrations in the raw water caused rapid fouling of the desalination plant's pretreatment system. As a result, between 1995 and 2002, the desalination plant was not operated. Limited pilot testing was conducted during June/July 2001 to evaluate potential methods to minimize the impact of the raw water's high iron concentrations.

Currently, the desalination plant is operated to offset seasonal peaking and for routine supply replacement, such as SWP outages. In the future, the desalination plant may be utilized more regularly once the iron fouling issues have been resolved. The City's permits for outfall and sea well operation have expired; however, City staff has discussed with the Coastal Commission the possibility for operating the facility under certain emergency conditions. The Public Works Department is currently working on obtaining the appropriate permits.

Projected Demand

In 2010, there were 5,384 active water accounts in the Morro Bay SOI. The City delivered a total of 1,255 acre feet to these accounts. The plurality of accounts, 764, were supporting residential units. The remainder were commercial, governmental, and landscape accounts. Morro Bay has a large tourist influx, as well as numerous housing units that are only used seasonally. Consequently, average annual occupancy rates for dwellings with active water accounts for most of the year are around 80 percent.

Water demand in Morro Bay has gradually increased as population increased in the latter half of the twentieth century. However, as a result of water conservation measures taken by the City, per capita water use has dropped considerably over time. Per capita water use dropped from over 140 gallons per capita per day (gpcd) before 1990 to under 106 gpcd in 2010 (City of Morro Bay 2010). One of the reasons that Morro Bay has such low per capita water consumption is that many of the water conservation measures implemented during the ongoing drought, such as plumbing retrofits and prohibitions against wasting irrigation water, continue to benefit the community.

Water demand is expected to continue increasing slowly through 2035, with a projected 1,452 acre-feet delivered per year by that time (City of Morro Bay 2010).

Projected Supply

The City's water supply is projected to remain relatively constant from 2015 to 2035 to meet associated projected water demands, with the majority of this demand being met by imported surface water, and the remaining supplies serving as a backup for reliability. The City is expected to have an available supply in excess of projected demands through 2035. Details describing imported water, native groundwater, and desalination facility supplies are presented in the following section. Table 6.4 details water supply by source as of 2010.

Table 6.4
Morro Bay Water Supply (2010, 2015)

Water Supply Source	Acre Feet/Year 2010	Percent	Acre Feet/Year 2015	Percent
Purchased from County (SWP)	873	69%	950	87%
Groundwater	128	10%	0	5%
Recycled Water	0	0%	0	0%
Desalination Water	258	20%	138	13%
Total	1,259	100%	1,088	100%

Source: Morro Bay 2010, 2016b

In the case of a multiple-dry year drought, the City would expect to see a reduced supply from the SWP and groundwater sources, and a consistent supply of desalinated water. However, the City also has entitlement to an additional drought buffer of 174 percent from the SWP, which allows the City to receive deliveries up to its full allocation of 1,313 acre-feet per year when SWP water deliveries are reduced due to drought conditions. If the anticipated reduced water imports from local and regional agencies occur, the City will be able to fully support demand. The anticipated reliability of supply, as calculated in the 2010 UWMP, is shown in Table 6.5.

Table 6.5
Morro Bay Projected Water Supply under Dry-Year Conditions

Source	Normal (avg) Water Year	Single-Dry Water Year	Multiple-Dry Water Years			
			Year 1	Year 2	Year 3	Year 4
Imported Water from SWP w/Drought Buffer	1,313	144	1,223	1,223	1,223	1,223
Morro Groundwater	581	581	581	581	581	581
Chorro Groundwater	1,143	566	566	566	566	566
Desalination Facility	645	645	645	645	645	645
Total	3,682	1,936	3,015	3,015	3,015	3,015
Percent of Normal		53%	82%	82%	82%	82%

Source: Morro Bay 2011

However, conditions in local and distant areas affecting the groundwater and SWP supply can impact the reliability of supplies. For instance, water from the SWP is vulnerable to drought. In significant drought years, water deliveries from the SWP may be substantially curtailed from normal levels. The most severe drought known to have occurred in Morro Bay began in 2012 and has persisted into early 2016. The drought, which is part of a historic statewide drought, has had significant impacts on SWP water supplies.

Over the last decade, the City of Morro Bay had difficulty meeting water demand, in part because the capabilities of its groundwater sources, the Chorro and Morro wells, were degraded as the result of water quality concerns and in-stream minimum flow requirements. The City was able to meet demands during a high drought period through agreements with the Central Coast Water Authority for additional SWP supply. The City has also, at times, supplemented water supplies with water pumped from the Chorro Basin, and on several occasion used emergency exchange water from the California Department of Corrections and Rehabilitation (CDCR) California Men's Colony water treatment plant.

Water Infrastructure

The City had historically had high water losses resulting from pipeline leakage and unaccounted-for use. Consequently, the City has initiated an extensive pipeline replacement program to reduce pipeline losses.

Significant capital improvements are needed within the next five years to address existing system deficiencies. Projects include new groundwater wells, water storage tanks and pipeline improvements to improve reliability and fire flow, desalination plant rehabilitation and upgrades, and conversion to automatic meter reading.

The City is considering construction of new groundwater wells in two areas: as many as four additional wells in the Romero Well Field area, and as many as six additional domestic water wells in the Ashurst Well Field Area (Morro Bay 2012a, 2012b). Both areas are within the Chorro Valley Groundwater Basin. In 2015, the City put out a bid for development of an Integrated Fixed-Network Advanced Metering Infrastructure with Meter Data Management. The project includes installation of 534 new water meter registers throughout the city. In the long term, funding will be needed to rehabilitate and replace old, substandard pipelines. The City anticipates seeking low-rate subsidized financing to help fund high-priority near-term needs. The adopted 2016–2017 budget for water services is approximately $5.14 million dollars, which is funded almost exclusively by water sales and service fees (City of Morro Bay 2016c).

WASTEWATER FACILITIES

The City of Morro Bay Public Works Department provides wastewater collection services within the SOI. The City co-operates its sewer system and wastewater treatment plant through a Joint Powers Authority (JPA) with the Cayucos Sanitary District. The JPA sets forth the respective rights of Morro Bay and Cayucos for purposes of ownership and capacity rights to the plant, related facilities, collection system, and operation and maintenance of the wastewater treatment plant.

The district's wastewater system encompasses five lift (pump) stations and approximately 23.1 miles of gravity collection sewer lines. Wastewater is conveyed through a main line to the Morro Bay-Cayucos Wastewater Treatment Plant (also known as the Morro Bay Cayucos Sanitary District, or MBCSD) located on Atascadero Road in

Morro Bay. The MBCSD currently serves a population of approximately 13,300 people, and has an average daily flow of 1.089 million gallons per day (City of Morro Bay 2016).

The MBCSD is aging and no longer has adequate capacity, resulting in primary-treated only sewage being discharged directly into the ocean at the rate of roughly a million gallons a day. The City of Morro Bay has been considering the reconstruction and expansion of the wastewater treatment plant for a number of years.[1] Under a ruling by the California Coastal Commission, the MBCSD plant cannot be replaced on its existing site. Discussions are ongoing about the location, type, financial structuring, and ownership of the replacement plant. The City has convened the Water Reclamation Facility Citizen Advisory Committee to represent the community and provide recommendations based on review and feedback. The committee was formed at the direction of the City Council in early 2014.

The replacement of the MBCSD wastewater plant is part of a larger set of ongoing projects identified in the Sewer System Management Plan. Other infrastructure improvement projects include ongoing storm drain improvements, primarily funded by Measure Q funds, and ongoing maintenance and repair of sewer pipelines and lift pumps. Morro Bay's adopted 2016–2017 budget allocates approximately $5.61 million dollars, funded almost entirely by sewage use fees (City of Morro Bay 2016c).

STORM DRAINAGE

City engineering staff are responsible for restoration, protection, and preservation of surface waters and water quality in the City of Morro Bay as well as maintenance, repair, mapping, and evaluation of drainage systems within the public domain, including all street rights-of-way. The City of Morro Bay's Storm Drainage Master Plan (SDMP), adopted in 1987, provides the most recent comprehensive look at storm drainage and flood control collection. The City has recently undertaken an effort to update the plan, which will incorporate updated capital project needs, address major maintenance of the existing storm drain system, and address water quality and low-impact development.

[1] The Cayucos Sanitary District had originally been involved in the reconstruction and expansion plans, but elected to withdraw from the process and construct its own separate wastewater treatment plant.

Currently, staff reviews development applications to ensure they provide on-site storm drainage designs which are environmentally conscious, enhance water quality, and preserve and protect coastal waters and resources. All development and redevelopment projects which create or replace more than 2,500 square feet of impervious area must incorporate stormwater management controls as described in the Stormwater Management Guidance Manual for Low Impact Development and Post-Construction Requirements. The manual is a supplement to the City of Morro Bay Department of Public Works Standard Drawings and Specifications of the City's Municipal Code.

Additional discussion of storm drainage in relation to water quality is located in Chapter 14.0 (Water and Water Quality).

ENERGY

Electricity

Pacific Gas and Electric (PG&E) supplies electricity to customers in Morro Bay. PG&E is an investor-owned utility that provides electricity to most of the northern two-thirds of California.

In 2015, PG&E provided 45,487,838 kilowatt-hours of electricity service to customers in Morro Bay. Of that supply, 46 percent was for residential use, 49 percent for commercial use, 0 percent for industrial use, and 5 percent for municipal use. Use by rate class is described in Table 6.6.

Table 6.6
Morro Bay Electricity Consumption by Rate Class (2005–2015)

Rate Class Description	2005 kWh	2015 kWh	Change 2005-2015	Percent Change 2005-2015
Residential	24,063,944	23,611,140	-452,804	-2%
Commercial	2,360,372	2391113	-5,996,840	-24%
Municipal	2,363,279	2,396,002	32,723	1%

Source: PG&E 2016

Overall electricity use has decreased since 2005, the base year for the Climate Action Plan analyses. Overall, per capita electricity use has declined from 51,904,759 kWh in

2005 to 45,487,838 in 2015. The drop is primarily due to reduced use in the commercial sector. Per capita residential use has increased since 2005—up from 242 kWh per capita in 2005 to 339 per capita in 2015.

Power Plant and Substation Facilities

A power plant once used by PG&E for electricity production was decommissioned in 2014. Close to $800,000 in revenues for the City from the plant were lost with its decommissioning. The power plant, located directly north of the Morro Bay Rock, occupies a prominent visual place on the Morro Bay coast. Dynegy, a Houston-based company, owns a large portion of the retired Morro Bay Power Plant property. The PG&E substation behind the Dynegy property is accessed from the sea via existing subterranean channels and is still operational. Dynegy has leased portions of the property; private interests, as well as state and local officials, are considering a range of new projects that would redevelop the property.

Natural Gas

In Morro Bay, natural gas is provided by Southern California Gas Company (SoCalGas), which is owned by Sempra Energy. Sempra Energy also owns San Diego Gas & Electric (SDG&E). The SoCalGas territory covers approximately 20,000 square miles from San Luis Obispo and Visalia in the north to the Mexican border, with the exception of San Diego County. Natural gas services are provided to residential, commercial, industrial, utility electric generation companies, and wholesale customers. Table 6.7 shows natural gas consumption in Morro Bay broken down by sector; there are no industrial customers in the city. In 2015, natural gas use was 2,443,163 therms across all sectors.

Table 6.7
Morro Bay Natural Gas Consumption (2015)

Sector	# of Customers	Natural Gas Use (Therms)	Percent of Total
Commercial	335	833,841	34%
Single-Family Residential	4,572	1,288,524	53%
Multi-Family Residential	1199	320,798	13%
Total Therms		2,443,163	100%

Source: SoCalGas 2016

TELECOMMUNICATIONS

The two primary telecommunication providers in Morro Bay are AT&T and Charter Communications. Both companies offer landline telephone, wired Internet, and television services. According to the US Census, telephone service is available in approximately 98.5 percent of Morro Bay households (US Census Bureau 2014). The Census does not have information about the availability of other telecommunication services in Morro Bay.

Morro Bay is a key node in the global telecommunications network. Two underwater cables connect to land at Morro Bay. One cable, the Japan-US Cable, runs offshore in a loop between Morro Bay, Manchester (100 miles north of San Francisco), three locations in Japan, the island of O'ahu in Hawaii, and then back to Morro Bay. Morro Bay is also an end point in the Southern Cross Cable Network, which runs from Morro Bay to the Big Island of Hawaii, New Zealand, Australia, Fiji, O'ahu, and ends at Hillsboro, Oregon (TeleGeography 2016). These underwater cables connect to data cables on land, which run to Los Angeles, the San Francisco Bay Area, and the Central Valley (Durairajan et al 2015).

FIRE PROTECTION

The Morro Bay Fire Department provides fire protection, first response emergency medical services, ocean fire and rescue, and technical rescue services in the planning area. The department also undertakes hazardous material operations along with other services such as training activities, fire prevention and code enforcement, public education and assistance, disaster preparedness, and management of the City's Emergency Operations Center.

Stations, Equipment, and Staffing

The City currently employs a fire chief, 10 career fire suppression personnel, a half-time administrative technician, a part-time fire marshal, and up to 20 part-time reserve firefighters. Fire personnel operate from one staffed fire station (Fire Station 53/Headquarters) located at 715 Harbor Street and one non-staffed fire station (Fire Station 54) located at 460 Bonita Street. Ambulance transport services are provided by

San Luis Ambulance, a private paramedic ambulance provider, which has one ambulance located in Morro Bay.

The Fire Department, like other City departments, does not have an equipment replacement plan for major equipment. However, Fire Department staff members have used community donations, in-kind donations, and grants to maintain a modern fleet. The City is in the process of establishing a capital replacement fund for equipment. The adopted 2016–2017 budget for the Morro Bay Fire Department was $2.33 million (City of Morro Bay 2016c).

Aid Agreements

The Fire Department has mutual and automatic aid agreements with neighboring communities. These reciprocal agreements give fire departments authority to rapidly deploy resources to areas outside jurisdictional boundaries when the need arises. Firefighter/paramedics also respond cooperatively with the Morro Bay Harbor Patrol and US Coast Guard to provide emergency services for incidents occurring offshore.

The City shares use of the San Luis Obispo Emergency Command Center operated by a central County office, which dispatches for seven other fire departments.

Medical Service

Regional communications and dispatch services are provided directly by the City Fire Department. Of the 1,908 incidents resulting in Fire Department responses in 2014, the most recent reporting year, the majority were medical related. Common medical-related calls include incidents for critical patients requiring advanced life support, medical aid requiring basic life support, and vehicle accidents.

Response Time and Insurance Rating

The Fire Department has divided the city into nine response zones or districts and averaged its response time to each zone. The department uses three additional zones (10, 11, and 12) to identify automatic or mutual aid calls outside the city limits. The department's goal is to maintain an average response time of 5 minutes 90 percent of the time. Response time incorporates the sum of dispatch time, firefighter reflex time, and driving time (City of Morro Bay 2009).

The Insurance Service Office (ISO), a national rating service sponsored by fire insurance carriers to measure firefighting capability to reduce structural fire losses, provides rankings of firefighting capability, including response time, on a scale of 1-10, with 1 being best level of service and 10 being no service at all. The ISO assigned the City of Morro Bay a Class 4 rating as of 2013.

2014 was the busiest year for the Fire Department to date, with 1,908 incidents. The department experienced a 3.6 percent increase over the previous year's incidents, with a 10-year average of 2 percent increase annually (City of Morro Bay 2015a). The Fire Department has limited capacity to respond to increasing demands.

POLICE PROTECTION

The Morro Bay Police Department (MBPD) provides police protection services to preserve peace and prevent crime and disorder by enforcing state laws and city ordinances within the planning area. The MBPD has two divisions:

- The Operations Division includes code enforcement, equipment/fleet management, investigations, patrol operations, special operations, and training programs.
- The Support Services Division includes business and support operations, public safety communications, police finances, police records, and property and evidence.

MBPD officers undertake a variety of roles, including patrol, school resource officer, detectives, Explorer advisor, regional SWAT team operator, bicycle patrol, and drug recognition evaluator. The MBPD also runs or participates in a variety of community-based programs, including a police volunteer program, a police Explorer program, and an active neighborhood watch program.

Stations and Staffing

Current MBPD staffing includes a police chief, a commander, a support services coordinator, four sergeants, two corporals, nine officers (including two senior officers), one part-time officer, and one part-time evidence/property technician. This staffing reflects a reduction since 2010 due to budget constraints. The adopted 2016–2017

budget for the MBPD was $3.15 million, plus an additional $233,000 for police support services (City of Morro Bay 2016c).

The MBPD headquarters are located in the old Fox Building located at 850 Morro Bay Boulevard.

Aid Agreements

The City has mutual aid agreements with neighboring communities, including Los Osos, Cayucos, Cambria, and San Luis Obispo County. As of mid-2014, the MBPD conducts dispatching with the San Luis Obispo Sheriff's Office as the result of an agreement for both fire and police dispatching. The regionalized dispatching is intended to provide enhanced coordination for multiple jurisdictional responses during emergencies, improved organizational efficiency using multiple dispatchers, and increased access for the community.

Types of Calls

In 2014, the most recent reporting year, the MBPD had 12,959 individual items to respond to, including calls for service and actions initiated by police officers. Based on more detailed data available from previous years, most calls for service were information-only calls or to report items that had already happened. Officers made 471 arrests, issued 813 citations, and responded to 146 traffic collisions. The most commonly reported offenses in Morro Bay in 2014 were public drunkenness (116 reports), outstanding warrant charges (73 reports), larceny (72 reports), and narcotic offenses (60). Morro Bay had no reported homicide or arson cases in 2014 (Morro Bay Police Department 2015).

SCHOOLS

The San Luis Coastal Unified School District (San Luis Coastal USD) provides elementary school (K-12) public education to students living in Morro Bay. The system includes 10 elementary schools, 2 middle schools, 2 comprehensive high schools, and 1 continuation high school. Two of these schools are located in the planning area: Del Mar Elementary and Morro Bay High School. Table 6.8 identifies these schools and their enrollments for the 2014–2015 school year. Table 6.9 shows enrollment trends for the

two schools in Morro Bay. Middle-school aged children (grades 6-8) attend Los Osos Middle School, which is in the unincorporated town of Los Osos, to the south of Morro Bay.

Table 6.8
San Luis Coastal Unified Schools Enrollment (2014–2015)

School	Grades	Enrollment	Classrooms	Staff (Teachers)	Average Class Size
Del Mar Elementary	TK-5	443	27	52 (30)	24
Morro Bay High	9-12	867	60	84 (49)	24

Source: California Department of Education 2016

Table 6.9
San Luis Coastal Unified Schools Enrollment Trends

School	Annual Student Enrollment						Percent change, 2009-2010 to 2014-2015
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	
Del Mar Elementary	448	438	463	484	456	443	-1.1%
Morro Bay High	857	849	845	852	825	867	1.2%

Source: California Department of Education 2016

The planning area is located just west of the post-secondary learning institutions of California Polytechnic State University, San Luis Obispo (Cal Poly), located adjacent to San Luis Obispo; and Cuesta Community College, located along Highway 1 between Morro Bay and San Luis Obispo.

Quality and Capacity

In 2014-15, per pupil spending at Del Mar Elementary was $10,096 for basic teaching expenses, which is slightly lower than the district as a whole, and also lower than spending on average across the state. However, this changes year over year, and in past years, expenditures have been comparatively higher. Similarly, Morro Bay High School's per pupil spending was $9,463, which was slightly lower than other schools in the district, but higher than the statewide average. Average class size for both schools was 24. The student to teacher ratio was 14.8 at Del Mar and 18.7 at Morro Bay High, both lower than the district as a whole as shown in Table 6.10.

The Federal Elementary and Secondary Education Act (ESEA), also known as No Child Left Behind (NCLB), establishes the definition of highly qualified teachers as having at least a bachelor's degree, an appropriate California teaching credential, and demonstrated core academic subject area competence. Using this definition, both schools have 100 percent highly qualified teachers.

Table 6.10
San Luis Coastal Unified Schools staffing ratios (2013–2014)

Grades	Student: Teacher ratio
K-3	25 : 1
4-6	28.5 : 1
7-12	31 : 1.2

Source: San Luis Coastal Unified School District 2015 Budget Adoption Report

The district assumed a $4.4 million budget reduction in 2014–2015 for its "fair share" of the state-mandated cuts to education, and this reduction has carried over to the 2015–2016 year. The total budget for the 2015–2016 year was $80.4 million. School site discretionary allocations are budgeted based on current year California Basic Educational Data System data.

During the 2013–14 school year, San Luis Coastal USD updated its Facility Master Plan. This process included updating educational specifications, conducting a needs assessment, and putting together a vision for potential facility plans throughout the district. It provides macro-level information about the buildings, grounds, existing conditions, and enrollment in the district and overlays this information on each site to help visualize the potential transformation into a more optimal facility for teaching and learning. The full cost of the recommended updates is $400 million. Voters approved Measure D in November 2014, which could generate $177 million in bond money for school repairs, modernization, upgrades, and new construction identified as priorities in the Facility Master Plan. A Measure D Citizens' Oversight Committee oversees and approves expenditures of the monies, in accordance with the bond authorization.

The 2015–2016 budget for the San Luis Coastal USD is approximately $80.45 million. The largest source of district revenue (approximately $63.90 million) comes from local property taxes. Other large sources of revenue include the federal Special Education program, NCLB grants, and the California state lottery (San Luis Coastal Unified School District 2015a). One of the largest sources of property taxes in the district, the Diablo

Canyon nuclear plant operated by the Pacific Gas and Electric Company (PG&E), is set to close in 2025. The closure of the plant will likely mean a loss of approximately $9.52 million annually to the district, although district officials suggest that increased state funding to schools may be able to at least partially make up the gap (Finucane, Leslie, and Sneed 2016).

Facilities Maintenance

San Luis Coastal USD maintenance staff ensures that repairs necessary to keep schools in good repair and working order are completed in a timely manner. A work order process is used to ensure efficient service and that emergency repairs are given the highest priority. Many San Luis Coastal USD facilities were rehabilitated as part of the Measure A Building Program, which began in 1996. In general, district facilities are in very good shape. According to the 2014/2015 School Accountability Report Cards for Del Mar Elementary School and Morro Bay High School (San Luis Coastal Unified School District 2015b, 2015c), system inspections show that school structures are in good condition.

COMMUNITY HEALTH

Medical Facilities

There are no hospitals in Morro Bay, but there is an urgent care clinic located at 783 Quintana Road. There are also a number of health clinics and hospitals within 20 miles. Nearby hospitals are identified in Table 6.11.

Table 6.11
Hospitals Located Near Morro Bay

Hospital	Location	Distance from Morro Bay
Sierra Vista Regional Medical Center	San Luis Obispo	12.4 miles
French Hospital Medical Center Dignity Health Hospital	San Luis Obispo	13.8 miles
Atascadero State Hospital	Atascadero	18.1 miles
Twin Cities Community Hospital	Templeton	23.5 miles

Five public health clinics are located in San Luis Obispo County: one in the City of Morro Bay at the corner of Quintana Road and Kennedy Way; two clinics in San Luis Obispo; one clinic in Grover Beach; and one clinic in Paso Robles.

The Public Health Department of San Luis Obispo County offers a range of health services, including many at these clinics. Services include environmental health services, family health programs, emergency medical services, and public health education.

Senior Services

A number of services oriented toward or of special importance to seniors are provided by the City in concert with county and other organizations.

Transportation

In partnership with the City, Morro Bay Senior Citizens, Inc. (MBSCI), a local nonprofit organization, has developed a Senior Transportation Program (STP) for the local community. Seniors can call a hotline operated by the MBSCI to request a vehicle and driver. Priority is given to medical-related appointments, but service is provided for a range of nonmedical trips as well. The City also operates Call-A-Ride and fixed-route transit services.

Services

The City participates in the Good Neighbor Program, a volunteer effort designed to bridge gaps in safety net services for seniors over 55 and adults over 18 with disabilities throughout San Luis Obispo County. Volunteers donate their time and talents to provide services such as light housework, yard work, minor home repairs, meal preparation, and shopping.

Activities

The MBSCI operates a senior citizens center on Kennedy Way. The center provides a range of informational sessions as well as free health screenings (e.g., blood pressure, pulse, weight readings). The Senior Legal Services Project, a nonprofit organization dedicated to helping seniors with their legal needs, provides scheduled appointment consultations at the center once a month. The City of Morro Bay Recreation Department

also highlights ongoing classes oriented toward seniors including music classes, dance and art clubs, and various exercise programs.

OTHER SERVICES AND FACILITIES

Port and Fishery Facilities

The port and fishery facilities play an important role in Morro Bay's economy. In 2013, more than $250 million in commercial fishing earnings were landed through the City's port. Port infrastructure is a key component of the Morro Bay fishing industry. Critical infrastructure, such as docks, piers, offloading hoists, ice, and fuel, attract visiting vessels and add to commercial fishing activity and earnings.

There are presently four offloading facilities in Morro Bay. Ocean Star Trading Inc. took over a wharf owned by Morro Bay Commercial Fisherman's Organization (MBCFO) in 2008, and operates an offloading facility there. Morro Bay Fish Company operates a facility at 715 Embarcadero and a facility at Santa Monica Seafood at 1235 Embarcardero, and DeGarimore's operates a facility at 1099 Embarcadero. Each facility provides bait. DeGarimore's also dispenses fuel, gasoline, and ice. The MBCFO operates a 35 ton storage capacity/18 ton per day ice processing facility. There is one small commercial fish processing facility, Tognazzini's Dockside Too, that has a capacity of about one ton per week.

Morro Bay has experienced declining port infrastructure in recent years. Much of the fishing infrastructure was developed, maintained, and expanded during the 1980s and 1990s when Morro Bay was a major groundfish port with over a dozen active trawlers. However, due to an economic slump in the fishing industry between the 1990s and late 2000s, much of the infrastructure suffered from poor maintenance and some components are now out of date for current fishing industry needs. Since that time, the City, in partnership with the MBCFO, has invested in extensive planning and infrastructure improvements. The California Coastal Conservancy funded the preparation of a waterfront restoration plan, and provided $1.2 million for a variety of waterfront projects including pier and dock reconstruction, urban parkland acquisition, floating slip construction, a waterfront park, public access facility planning and construction, and commercial fishing gear storage. Additional infrastructure investments would continue to foster the recovering industry. The City is currently considering

investment in additional infrastructure, including a new boatyard, and improvements to respond to rising sea levels such as raised foundations, floating facilities, and new levees.

6.2 REGULATORY SETTING

The following federal, state, and local plans, policies, regulations, and laws pertain to public services, utilities, and recreation in Morro Bay.

FEDERAL

Water, Wastewater, and Storm Drainage

National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves from flood damages. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce floodplain management ordinances that meet or exceed Federal Emergency Management Agency (FEMA) requirements to reduce the risk of flooding. These ordinances should reduce future flood risks to new construction in Special Flood Hazard Areas (SFHA). The SFHAs and other risk premium zones applicable to each participating community are depicted on Flood Insurance Rate Maps. FEMA manages the NFIP and oversees the floodplain management and mapping components of the program.

Clean Water Act and National Pollutant Discharge Elimination System

Authorized by the Clean Water Act in 1972, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Any industrial, municipal, or other facility which discharges directly to surface waters must obtain permits through the authorized states. In California, the State Water Resources Control Board (SWRCB) serves as the authorized agency to issue NPDES permits.

STATE

Waste and Recycling

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the California legislature passed the California Integrated Waste Management Act of 1989 (AB 939, Statutes of 1989), effective January 1990. According to this act, all cities and counties were required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000.

To help in the increase of diversion rates, each jurisdiction is required to create an integrated waste management plan. Each city plan must demonstrate integration with the relevant county plan. The plans must promote source reduction, recycling and composting, and environmentally safe transformation and land disposal. Elements of the plans must be updated every five years.

AB 939 established the California Integrated Waste Management Board to oversee integrated waste management planning and compliance. The bill's passage led to the refinement of a statewide system of permitting, inspections, maintenance, and enforcement for waste facilities in California, and also required the board to adopt minimum standards for waste handling and disposal to protect public health and safety and the environment. The board is responsible for approving permits for waste facilities, approving local agencies' diversion rates, and enforcing the planning requirements of the law through local enforcement agencies. Local enforcement agencies are responsible for enforcing laws and regulations related to solid waste management, issuing permits to solid waste facilities, ensuring compliance with state-mandated requirements, coordinating with other government agencies on solid waste-related issues, and overseeing corrective actions at solid waste facilities. These agencies inspect facilities, respond to complaints, and conduct investigations into various aspects of solid waste management.

Assembly Bill 341

AB 341 was passed in 2011 and went into effect in 2012. It requires all businesses in California that produce more than 4 cubic yards of commercial waste weekly, and all multi-family housing units with at least five housing units, to provide recycling service. Jurisdictions must implement AB 341 through education and public outreach programs and may also impose additional enforcement if desired through actions such as adopting mandatory recycling ordinances or imposing fines for noncompliance. CalRecycle evaluates the implementation of AB 341 during review of the Integrated Waste Management Act. If jurisdictions are not making an effort to implement, they may be placed on a compliance order.

Public Resources Code Section 4649.8 et seq.

Public Resources Code Section 42649.8 et seq. requires mandatory organic waste (e.g., food waste, green waste/yard trimmings, food-soiled paper waste) recycling services for commercial businesses. Local communities must set up a recycling program for commercial organic wastes by the beginning of 2016. Beginning April 1, 2016, businesses that produce 8 cubic yards of waste a week must participate in the organic waste recycling program. Beginning January 1, 2017, businesses producing at least 4 cubic yards of waste a week must also participate, and beginning January 1, 2019, businesses producing at least 2 cubic yards of waste a week must participate unless granted a deferment for one year. The law also requires that local communities annually report progress toward these goals to CalReycle, which will review implementation of the program as part of its authority under the Integrated Waste Management Act.

Water, Wastewater, and Storm Drainage

Senate Bill 610

Senate Bill (SB) 610 (Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code) requires the preparation of water supply assessments for large developments (e.g., for projects of 500 or more residential units; at least 500,000 square feet of retail commercial space; or at least 250,000 square feet of office commercial space). It is unlikely that this type of development will occur in Morro Bay.

Groundwater Management Act

The Groundwater Management Act, AB 3030, signed into law in 1992, provides a systematic procedure for, but does not require, an existing local agency to develop a groundwater management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to manage the basin (extraction, recharge, conveyance, and quality). In some basins, groundwater is managed under other statutory or juridical authority (such as adjudicated groundwater basins) and is not subject to the provisions of this act for groundwater management plans.

Urban Water Management Act

The California Urban Water Management Planning Act of 1983 requires that each urban water supplier, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare, update, and adopt its Urban Water Management Plan (UWMP) at least once every five years on or before December 31, in years ending in 5 and 0. The plan describes and evaluates sources of water supply, projected water needs, conservation, implementation strategy, and schedule. The City last prepared an UWMP in 2010 and is currently preparing the 2015 UWMP.

Water Conservation Act of 2009

The Water Conservation Act of 2009 (SB X7-7) affects urban water and agricultural water. The 20x2020 Water Conservation Plan sets forth a statewide road map to maximize the state's urban water efficiency and conservation opportunities between 2009 and 2020 and beyond for urban water. It aims to set in motion a range of activities designed to achieve the 20 percent per capita reduction in urban water demand by 2020. These activities include improving an understanding of the variation in water use across California, promoting legislative initiatives that incentivize water agencies to promote water conservation, and creating evaluation and enforcement mechanisms to ensure regional and statewide goals are met. The City is required to establish water conservation targets for the years 2015 and 2020. Alternative approaches are also specified in the law (Division 6 Part 2.55 of Water Code Sections 10608–10631.5).

Sewer System Management Plan

The SWRCB adopted new policies in December 2004 requiring wastewater collection providers to report sanitary sewer overflows and to prepare and implement sewer system management plans (SSMP). SSMP requirements are modeled on proposed federal capacity, management, operations, and maintenance plans. The SSMP policy requires dischargers to provide adequate capacity in the sewer collection system, take feasible steps to stop sewer overflows, identify and prioritize system deficiencies, and develop a plan for disposal of grease, among other requirements. In addition, wastewater providers must now report sanitary sewer overflows to the Los Angeles Regional Water Quality Control Board, must keep internal records of these overflows, and must produce an annual report on overflows. Overflows from laterals on private property, if caused by an owner, are not required to be reported.

Energy

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates a variety of privately owned utilities, including electricity and natural gas companies. The CPUC establishes energy rates for privately owned utility companies, including PG&E, and administers energy efficiency and renewable energy programs, often in conjunction with the California Energy Commission. It regulates the safety of California energy transmission and distribution systems, approves power purchase contracts for privately owned utilities, and reviews applications for new electricity transmission lines. The CPUC also represents California in proceedings before the Federal Energy Regulatory Commission.

Renewables Portfolio Standard (RPS)

California's RPS is codified in Public Utilities Code Sections 399.11–399.32. The RPS requires all retail sellers of electricity in California, including Southern California Edison, to procure 33 percent of their electricity by the end of 2020 from eligible renewable sources. The RPS expanded in scope in 2015, when Governor Brown signed SB 350 into law. This legislation established an additional target of 50 percent renewable energy by 2030 for all electricity providers. The program is administered jointly by the California

Energy Commission and the CPUC. Additional discussion of RPS is included in the GHG Emissions Section 2.2 of this background report.

Police and Fire

Fire Prevention Fee (AB X1 29)

On July 7, 2011, AB X1 29 was signed into law, establishing the Fire Prevention Fee. The bill required the state Board of Forestry and Fire Protection to establish emergency regulations to implement the new fee at an amount not to exceed $150 per habitable structure within the State Responsibility Area plus an inflation cost adjustment factor. The state uses the money collected from fees to fund a variety of fire prevention activities as specified in the law.

California Occupational Safety and Health Administration

In accordance with the California Code of Regulations, Title 8, Sections 1270 and 6773, the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

Uniform Fire Code

The Uniform Fire Code contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The code also contains specialized technical regulations related to fire and life safety.

Schools

California Department of Education Facilities and Planning Division

The California Education Code contains various provisions governing the siting, design, and construction of new public schools (e.g., Education Code Sections 17211, 17212, and 17212.5). In addition, to help focus and manage the site selection process, the Department of Education's School Facilities and Planning Division has developed screening and ranking procedures based on criteria commonly affecting school selection (Education Code Section 17251[b], Title 5 of the California Code of Regulations, Section 14001[c]). The foremost consideration in the selection of school sites is safety. Certain health and safety requirements are governed by state statute and Department of Education regulations. In selecting a school site, a school district should consider factors such as proximity to airports and railroads, proximity to high-voltage power transmission lines, presence of toxic and hazardous substances, and hazardous air emissions within one-quarter mile.

School Facility Fees

Education Code Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement against any development project for the construction or reconstruction of school facilities, provided that the district can show justification for levying of fees. Government Code 65995 limits the fee to be collected to the statutory fee (Level I) unless a school district conducts a Facility Needs Assessment (Government Code Section 65995.6) and meets certain conditions. These fees are adjusted every two years in accordance with the statewide cost index for Class B construction, as determined by the State Allocation Board.

SB 50 (1998) instituted a new school facility program by which school districts can apply for state construction and modernization funds. This legislation imposed limitations on the power of cities and counties to require mitigation for school facility impacts as a condition of approving new development. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property" (Government Code Section 65996[b]). Additionally, a local agency cannot require participation in a Mello-Roos district for

school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos district. Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation" under the California Environmental Quality Act.

REGIONAL AND LOCAL

Waste and Recycling

Municipal Code Section 8.16

Municipal Code Section 8.16 is the City's solid waste management ordinance. The ordinance is intended to conserve disposal capacity, and to provide for an efficient solid waste management system which includes collection of solid waste and recyclable materials. The ordinance requires solid waste permits and removal of solid waste and recyclables to designated collection sites. The ordinance also lays out the requirements and obligations for any waste contract entered into by the City.

Expanded Polystyrene Ordinance

In 2016, the Morro Bay City Council passed an ordinance regulating the use and sale of expanded polystyrene (commonly referred to as Styrofoam) food containers and products. The ordinance is intended to protect the natural environment and decrease the amount of waste sent to landfills. The ordinance applies to all businesses in the City of Morro Bay including restaurants, bars and pubs, cafeterias, caterers and event organizers, convenience and liquor stores, delis and coffee shops, ice cream and yogurt shops, mobile food vendors, grocery and drug stores, and retail outlets.

San Luis Obispo County Integrated Waste Management Authority and Programs

The San Luis Obispo County IWMA is charged with planning and implementing regional solid waste and hazardous waste programs. These programs are intended to ensure that member jurisdictions can achieve the state-mandated goal of a 75 percent reduction in solid waste by the year 2020. IWMA participants include San Luis Obispo

County and the Cities of Arroyo Grande, Atascadero, Grover Beach, Morro Bay, Paso Robles, Pismo Beach, and San Luis Obispo, and several community service districts.

Water, Wastewater, and Storm Drainage

Municipal Stormwater Management Program

The Stormwater Management Program is prepared by the City of Morro Bay to comply with mandatory requirements of the US Environmental Protection Agency NPDES Phase II Final Rule and the SWRCB General Permit. The Stormwater Management Program provides an integrated approach for prevention of pollution from stormwater quality and quantity runoff control. The program relies on public outreach, education, and participation to help prevent pollution problems at the source. Example program actions include requiring low-impact development, preventing illicit discharges, and ensuring that municipal operations do not contribute to pollution.

Storm Drain Master Plan

The 1987 Storm Drain Master Plan includes an atlas of maps cataloging existing and proposed storm drain facilities and an overview of existing drainage conditions. It also recommends capital improvement projects for Morro Bay's sewer infrastructure and measures to implement the plan, including budgeting and financing alternatives.

The plan is out of date and is currently being updated, along with other Public Works water-related master plans, to become the One Water Plan. The One Water Plan represents an integrated and collaborative approach to water supply, wastewater treatment, and stormwater planning, managing the city's future water needs in a way that provides for sustainable, long-term water supplies as well as greater resiliency to drought conditions and climate change.

Water Allocation Program (Resolution No. 06-16)

Chapter 13.20 of the Morro Bay Municipal Code calls for the City Council of the City of Morro Bay to adopt a yearly Water Allocation Program based on a report by the Public Works director. Ordinance Number 266 requires the City Council to set an annual limit on new residential units and to prescribe the mix of multi-family and single-family residences allowed within that limit.

In 2016, the City Council adopted a Water Allocation Program (Resolution No. 06-16), which states that 95.08 available water equivalent units (WEUs) are available for 2016. The Water Allocation Program also notes that any additional allocations must be offset on a two-to-one basis by providing retrofits to existing uses or by paying an in-lieu fee of $6,032 per WEU. For a full description of how WEUs relate to development potential, please refer to Morro Bay Municipal Code Section 13.20.070.

Police and Fire

Cal Fire/San Luis Obispo County Fire Consolidated Fire Protection Strategic Plan

The Cal Fire/San Luis Obispo County Fire Consolidated Fire Protection Strategic Plan, adopted in 2012, is a planning document that serves as a guide for the Board of Supervisors and other partners in the Cal Fire/San Luis Obispo County Fire consolidated fire protection program. It identifies desired levels of service for fire protection, makes an assessment of the current delivery system, and forecasts necessary changes to fire protection services. The plan describes and presents data regarding fire protection in the county using community demographics, service levels, staffing models, governance, and funding options.

Other

Morro Bay and Port San Luis Commercial Fisheries Business Plan

The Morro Bay and Port San Luis Commercial Fisheries Business Plan, completed in 2008, complies with the project implementation requirements of the California Coastal Conservancy grant to the City of Morro Bay to fund the Conserving the Working Waterfront and Ocean Habitats: Morro Bay and Port San Luis Harbors program. The plan provides a framework and recommendations to enable Morro Bay fisheries to increase revenue while attaining conservation goals.

Morro Bay Fishing Community Sustainability Plan

The Morro Bay Fishing Community Sustainability Plan satisfies a requirement of a grant awarded by the National Fish and Wildlife Foundation to develop Community

Sustainability Plans (CSP). The foundation grant funded Morro Bay's studies of the economic, social, and environmental implications of fishing industries and working waterfronts. CSPs are cited in the Magnuson Stevens Fishery Conservation and Management Act as a requirement for communities that wish to remain eligible to participate in programs such as the Individual Transferable Quota that was instituted in the federal groundfish fishery in 2011. The act is the overriding law for all federal fisheries in the United States. The Morro Bay CSP assesses critical infrastructure and services; quantifies the number of jobs supported by the fishing industry; addresses synergies with tourism, aquaculture, and recreational fishing; and distinguishes fishing's prominent role in Morro Bay's cultural identity and marine stewardship.

6.3 PRIORITY FINDINGS

WATER SUPPLY AND DESALINATION

Morro Bay's access to flows from the SWP, groundwater, and desalination provide several backups to cover shortfalls or contamination problems from any one source. However, no single water source will be capable of meeting projected demands. The City needs to ensure that it has sufficient water supplies to serve the community, including in situations when existing water supplies are threatened by long-term drought conditions. Potentially available actions that have been considered by the City include:

- Purchasing additional SWP drought buffer from County's unallocated SWP entitlement.
- Purchasing additional SWP allocation.
- Upgrading the wastewater treatment plant to tertiary treatment to provide recycled water.
- Upgrading the desalination plant processes to resolve iron fouling issues.
- Constructing additional groundwater wells to increase the City's supply from local groundwater basins.
- Increasing water conservation efforts in the community to improve the efficient use of existing water supplies.

- Replacing water lines as needed to reduce leakage, and exploring the feasibility of rainwater capture and storage systems.

The second option, to purchase an additional SWP allocation, is currently considered cost prohibitive as it would require upgrades to delivery capacity at the Polonio Pass Treatment Plant. In January 2013, the California Coastal Commission denied the permit for construction of an upgraded wastewater treatment plant at the MBCSD's existing location on the basis of zoning inconsistency, failure to avoid coastal hazards, failure to include a sizable reclaimed water component, and the project's location within a designated sensitive view area.

The appropriate infrastructure improvements necessary to prevent iron fouling issues caused at the desalination plant have not yet been studied at depth, but remain an option for increasing water supply from the plant.

WASTEWATER TREATMENT PLANT REPLACEMENT

Morro Bay's existing wastewater treatment plant, jointly owned by the City of Morro Bay and the Cayucos Sanitary District, was built in 1954. The aging plant does not meet minimum Clean Water Act standards; the plant has operated for some time under a Clean Water Act Section 301(h) waiver, which allows it to discharge treated effluent that does not meet full secondary treatment standards. The existing plant is located at 160 Atascadero Road in Morro Bay, and initial plans to replace it on-site were denied by the Coastal Commission. The City is now working to locate an appropriate new site and build a replacement plant as quickly as possible in order to stop environmental damage that results from the discharge of insufficiently treated effluent into the ocean.

The City currently also has a pending application with the Central Coast Regional Water Quality Control Board that would extend Morro Bay's permit for its existing plant for five more years. The five-year timeline to build the new plant would coincide with the expiration of that permit and honor an agreement with the board to phase out its need to discharge treated wastewater into the ocean.

A range of sites have been considered for siting the new plant. As of June 2016, the City was considering multiple sites, including one just north of the intersection of State Route 1 and South Bay Boulevard, one in Morro Valley called Righetti Ranch, and one in the southeastern corner of Rancho Colina on Highway 41. The City must negotiate with the

private owners for use or purchase of these properties. Sewer bills for Morro Bay residents are expected to nearly double over the next four years to help pay for the new plant and other updates to the sewer collection infrastructure. The Morro Bay City Council approved the new rate structure, which includes an even larger increase in water bills, prior to Cayucos deciding to pull out of the wastewater plant project.

CONTRACT FIRE SERVICE DELIVERY

The City has considered two alternative recommendations related to the provision of fire suppression services in the city. The existing City model relies significantly on part-time reserve firefighters to supplement daily staff. Due to the geographic and demographic constraints that limit Morro Bay's ability to recruit and train staff, having a paid on-call fire service is not a viable option. The Cal Fire contract option was explored during 2007 and 2008. A series of community workshops and staff analysis have been conducted regarding the option to contract with Cal Fire to provide service. Analysis conducted by the Morro Bay fire chief suggests that Cal Fire could provide comparable levels of service to those offered by the existing municipal fire department. Assuming similar contract costs as the Los Osos Community Services District, the operational costs for Cal Fire services are likely to be close to the City's existing expenditure levels. However, should the City pursue contract personnel through Cal Fire, the City's unfunded pension liability obligation would likely decrease. Determining if cost savings can be generated by contracting for fire service remains an open issue. At this time, the City is not exploring contract fire service delivery.

NEW PORT INFRASTRUCTURE (BOATYARD AND SEA LEVEL RISE ADAPTATION FACILITIES)

The fishing industry, civic leaders, and stakeholders on Morro Bay's waterfront have identified the need for a boatyard—a facility capable of hauling out, repairing, maintaining, and storing vessels. The existing boatyard in Morro Bay at 261 Main Street (Morro Bay Boatyard) is limited by its capacity to accommodate approximately one 30-foot boat at a time.

As identified in Chapter 3.0 (Coastal Resources and Resiliency), sea level rise will have an adverse effect on existing fishery and dock infrastructure. Improvements and alterations to these structures could help provide greater adaptability for the industry in the years ahead.

USE OF THE PG&E SUBSTATION IN RELATION TO THE DECOMMISSIONED DYNEGY FACILITY

The Morro Bay Power Plant, decommissioned in 2014, occupies a prominent visual place on the Morro Bay coast. A decision for what to do with the property and decommissioned plant facilities has not yet been made. Dynegy, a Houston-based company that owns most of the property, has leased portions of the property and put the remainder up for sale. The power plant is located adjacent to a substation owned by PG&E, which remains operational.

A potential wind energy project that would use the Dynegy facility is currently being considered by the Coastal Commission. The project could produce electricity for up to 300,000 households and would be the first of its kind in the state. The installation as proposed would result in the installation of 100 floating wind turbines, tethered to the ocean floor about 20 miles offshore. The project is being proposed by the company Trident Winds.

Trident Winds proposes to use the City's outfall facility at the northeast side of Morro Rock as an access point to hook up to the PG&E substation. The outfall was leased by Dynegy as part of the water cooling system for the power plant before the plant was decommissioned in 2014. The City is considering what should be approved in the permits for the Dynegy site. Outreach to the community and stakeholders is ongoing. The City also has an opportunity to make site improvements or to change permitted uses of the PG&E-owned substation adjacent to the Dynegy-owned property.

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7.0 Land Use, Community Form, and Coastal Uses

Plan MORRO BAY

7.0 LAND USE, COMMUNITY FORM, AND COASTAL USES

This chapter identifies existing land use plans, existing "on the ground" land uses, community form, and coastal use conditions in Morro Bay and summarizes applicable regulations for land use and coastal uses.

7.1 EXISTING CONDITIONS

EXISTING LAND USES IN THE PLANNING AREA

Since there are buildings and land uses that existed before the adoption of the current Land Use Element, some on the ground land uses do not match the uses identified in the General Plan. Existing land use data is used to describe what uses are currently in each area of the city (for a description of General Plan Land Use designations, see Section 7.2, Regulatory Conditions).

Existing on-the-ground land use data in the planning area is maintained by the San Luis Obispo Council of Governments (SLOCOG). SLOCOG land use data is collected and analyzed based on the designations given in the San Luis Obispo County General Plan (San Luis Obispo Board of Supervisors n.d.), which are categorized differently, but in a parallel manner, to the Morro Bay General Plan land use designations. Existing on-the-ground land uses for Morro Bay using the SLOCOG designations are provided in Table 7.1, with a map of these land uses provided as Figure 7.1.

Nearly half of the land in Morro Bay is either a part of Morro Bay State Park or the beach. Single-family homes make up another 14 percent; multifamily homes make up less than 1 percent. Parks and open space combined comprise 18 percent of the land area, and combined agricultural uses represent 6.25 percent. Just over 1 percent of the land in Morro Bay is currently undeveloped, and as a result any new population growth will likely require increased redevelopment density or annexation of new land.

Table 7.1
Morro Bay Existing On-The-Ground Land Use

Land Use Designation	Sum of Acres	Percent of Area
Single-Family Residential	605.53	14.03%
Multiple-Family Residential	39.51	0.92%
Downtown	31.27	0.72%
Commercial Retail/Office	63.34	1.47%
Commercial Service/Industrial	74.61	1.73%
School	75.93	1.76%
Major Public Facility	99.97	2.32%
Public Facility/Public Land	26.46	0.61%
Cultural Facility/Religious Facility/Event Center	19.42	0.45%
Visitor-Serving	19.79	0.46%
Community Park/Regional Park/Golf Course/Other Recreation	388.10	8.99%
Open Space Area/Conservation Area/Riparian Area	397.59	9.21%
State Park/Beach	2,139.06	49.55%
Undeveloped	54.02	1.25%
Agriculture (Other)	216.82	5.02%
Agriculture (Grazing/Ranchland)	54.14	1.25%
Road/Other	11.11	0.26%
Total	4,316.70	100.00%

Source: San Luis Obispo Council of Governments 2016

The planning area also includes approximately 100 acres outside of the city limits but within Morro Bay's sphere of influence (SOI), which is under county jurisdiction but indicates the city's probable future boundary and service area. Most of Morro Bay's SOI is part of the Morro Bay Estuary located just outside of the marina, and allows the City to more effectively permit dredging and other maintenance activities. Morro Bay's SOI also includes a small beachfront amount of land at the northern end of the city, west of Highway 1. The planning area boundaries may be redefined as work on *Plan Morro Bay* proceeds.

Figure 7.2 presents a map of the existing General Plan land use designations. Some of these designations or allowed uses differ from existing on-the-ground land uses.

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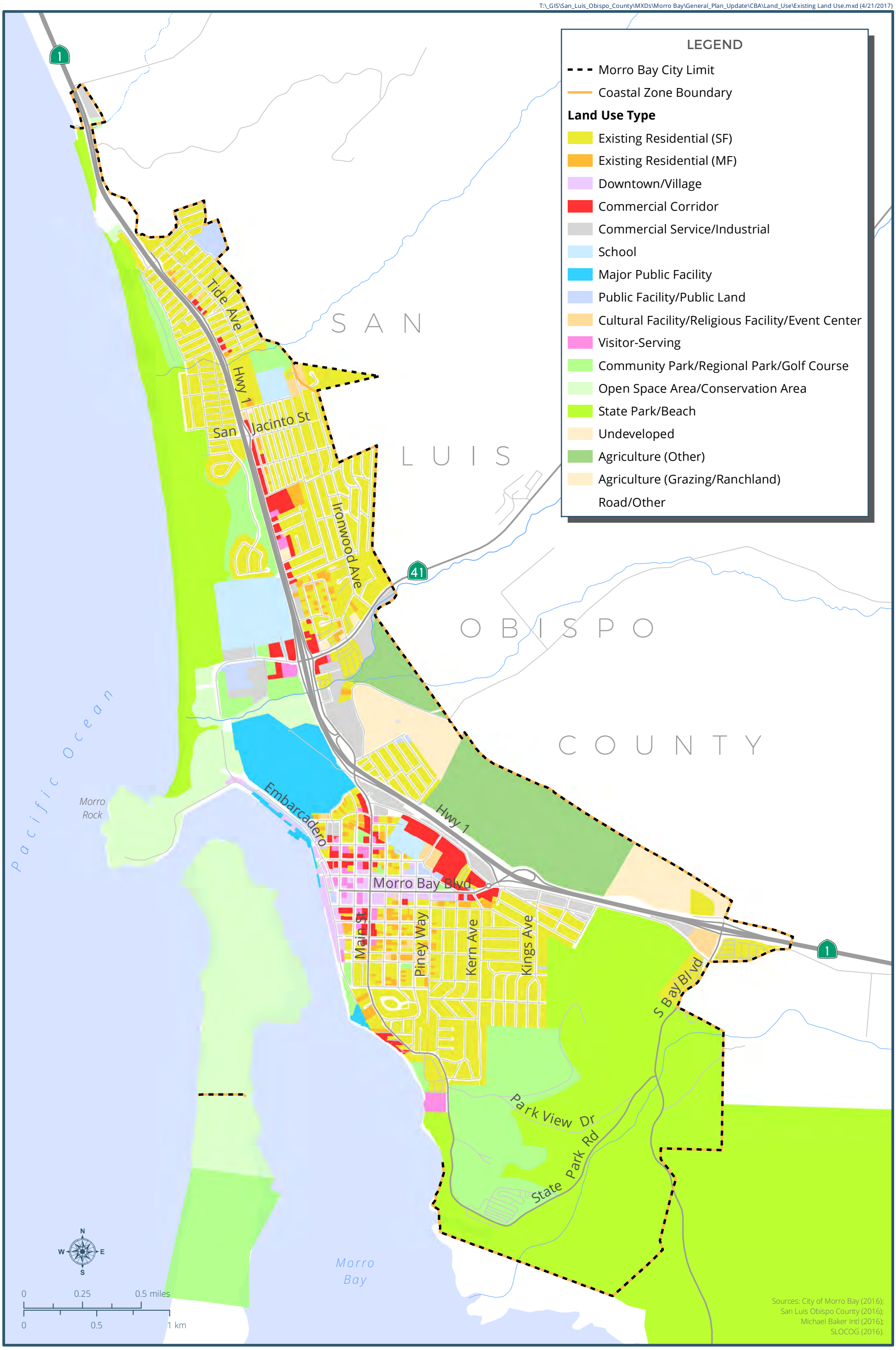

Plan MORRO BAY

FIGURE 7.1

Existing On-The-Ground Land Use

Page 2

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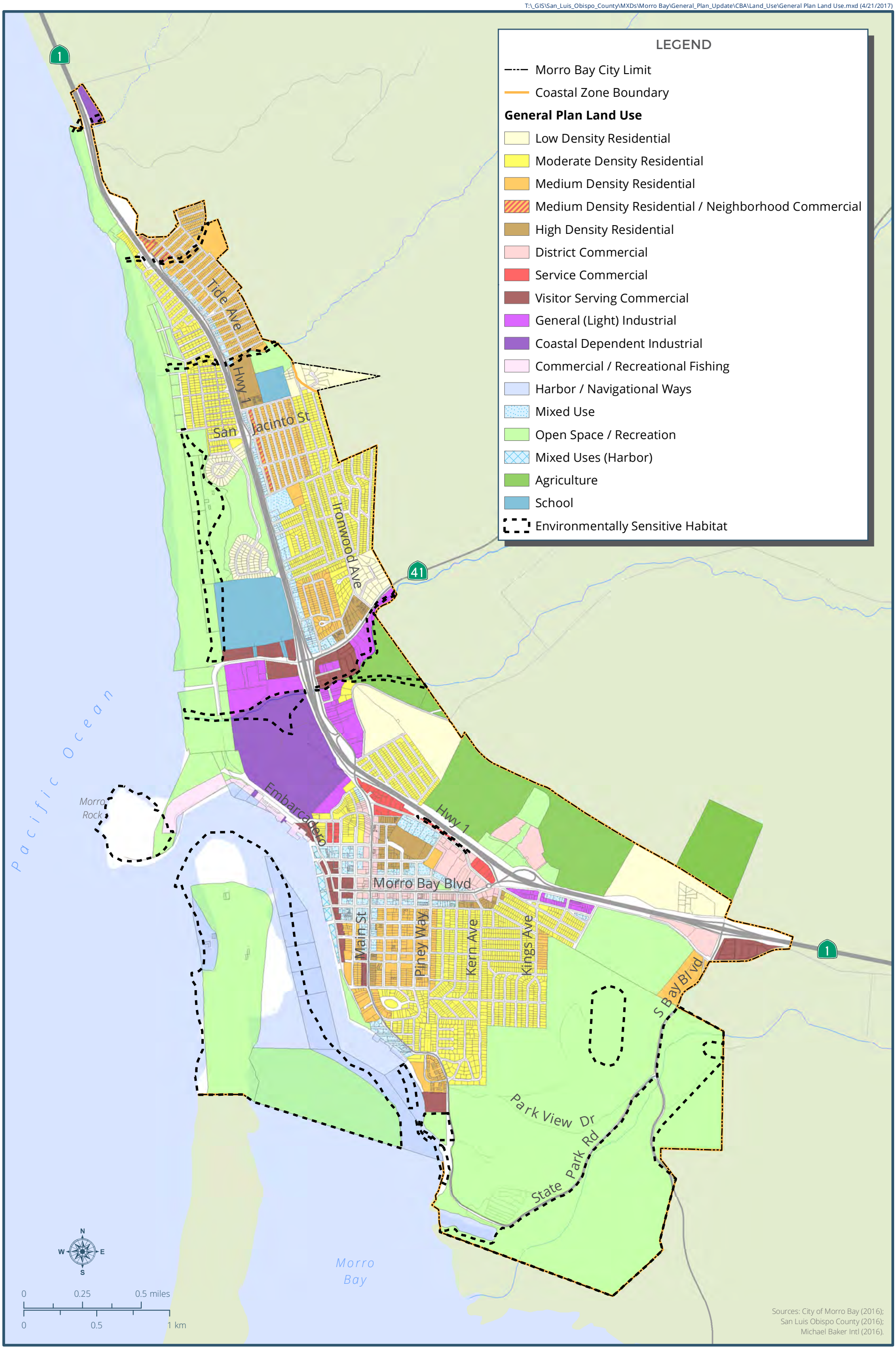


Plan MORRO BAY

FIGURE 7.2

Existing General Plan Land Use Designations

Page 2

COASTAL-DEPENDENT USES

With the exception of a small part in the northeastern area, nearly all of the city is located in the Coastal Zone. The Coastal Zone boundary is defined by the California Coastal Act, which also defines and prioritizes coastal-dependent uses. The Coastal Zone boundary aligns with Ironwood Avenue for about half of the block between Sequoia Court and where Ironwood Avenue dead-ends into Del Mar Park. The area outside the Coastal Zone includes the Church of Jesus Christ of Latter Day Saints and five residences located on Sequoia Court. All other uses within the city described above are found in the Coastal Zone.

The Coastal Act places a high priority on coastal-dependent uses, which includes prioritizing the protection and maximization of recreation and visitor-serving land uses, including low- or moderate-cost amenities within the Coastal Zone. Visitor-serving uses include hotel and lodging accommodations, commercial fishing infrastructure and facilities, restaurants, parking facilities, and shopping or entertainment uses for visitors and tourists. The majority of existing recreational or visitor-serving uses are found in The Embarcadero, Downtown, and State Park areas. Other coastal-dependent uses include agriculture, aquaculture, coastal industrial uses, and energy-related uses.

Per Measure D, certain areas are designated for commercial fishing infrastructure and facilities. These areas are located on the north Embarcadero and are designated CF on the City's Zoning Map. The purpose of the CF District is to promote and accommodate the commercial fishing industry and noncommercial recreational fishing activities in appropriate waterfront areas (City of Morro Bay 2008).

Affordable Accommodations

The Coastal Act requires that all members of the public have equal access to the coast. Development cannot interfere with this right, and adequate parking, facilities, and accommodations must be available and affordable for the general public to use. In addition, the provision of lower-cost visitor-serving accommodations is a primary goal when protecting and maximizing recreation and visitor-serving land uses (Coastal Act Sections 30212.5, 30213, 30220 through 30224, 30250, 30252, 30253(5), and 30254). The below outlines tourism statistics in Morro Bay, and provides a description of visitor-serving overnight accommodations available in the city.

Tourism Trends in Morro Bay

TOT Taxes and Occupancy Rates

Data provided by the Morro Bay Tourism Bureau show that Morro Bay is a significant tourist destination on the Central Coast. This is exemplified by revenue from transit occupancy tax (TOT) funds in fiscal year 2014–2015 and fiscal year 2015–2016 to date. TOT revenues comprise taxes collected from motels, RV parks, and vacation rentals.

The majority of TOT are generated from motel guests. In fiscal year 2014–2015, the City generated $2.9 million in TOT, of which approximately $2.4 million was from motels. The highest revenue-generating months were June, July, and August. Motel occupancy rates ranged from 47 percent to 83 percent in that year, with higher occupancy rates occurring in the summer months. Thus far in fiscal year 2015–2016, the City has generated $1.9 million in TOT, of which approximately $1.5 million was from motels. Occupancy rates have ranged from 43 percent to 85 percent, again with higher rates during summer months. Figure 7.3 shows the taxes collected, along with occupancy rates between July 2014 and January 2016.

While motels generate the majority of TOT, trailer parks and vacation rentals also contribute to this revenue. In fiscal year 2014–2015, trailer parks generated approximately $200,580 in TOT, and vacation rentals generated approximately $279,393 in TOT. Figure 7.4 shows tax revenue generated from all visitor-serving accommodations between July 2014 and January 2016.

The large increase in TOT generated by vacation rentals from 2014 to 2016 is due to a business license audit conducted by the City. Prior to this audit, there were many unlicensed vacation rentals that were not generating TOT.

Figure 7.3
Motel Tax Collected and Motel Occupancy Rates (July 2014–January 2016)

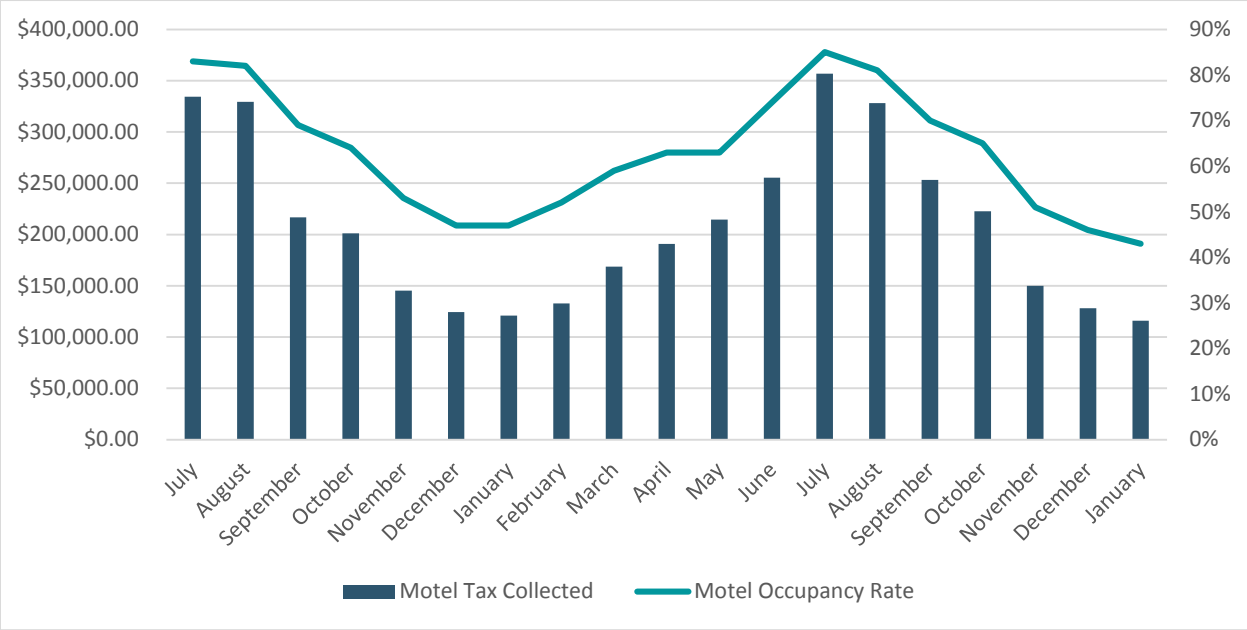
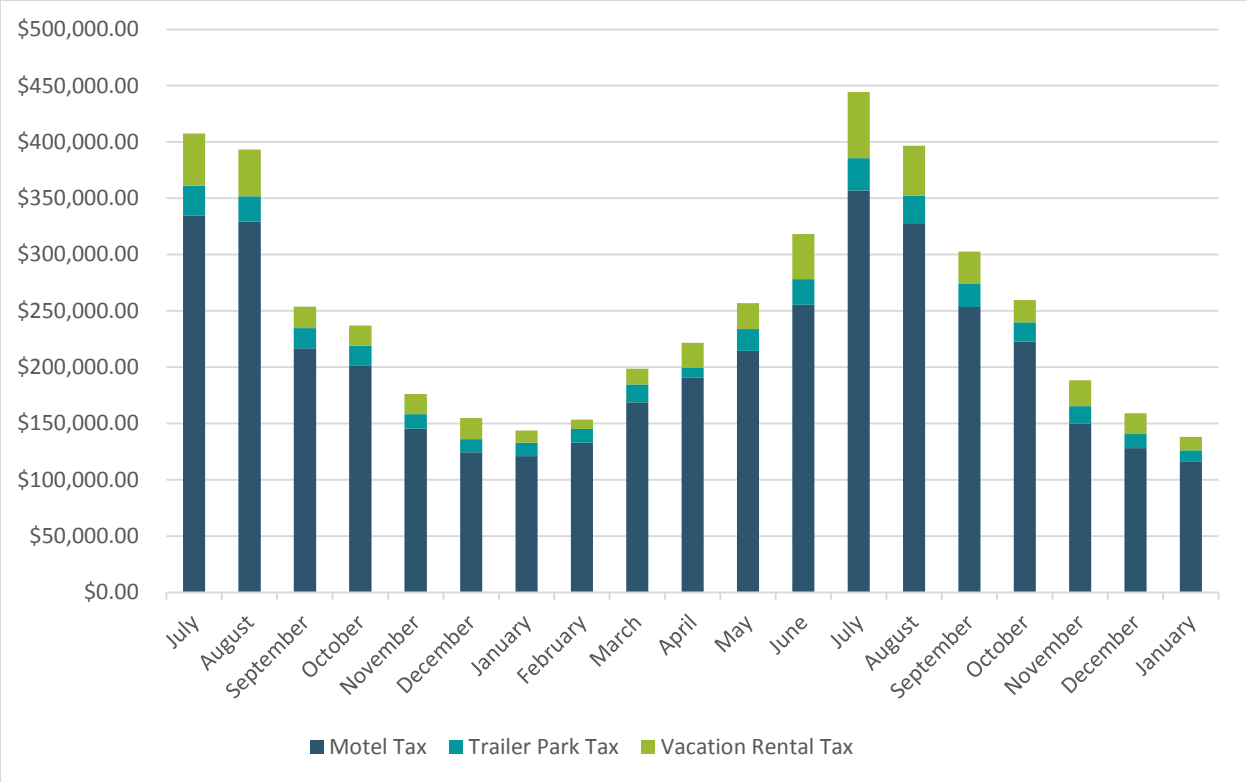


Figure 7.4
Transient Occupancy Tax – Motels, Trailer Parks, and Vacation Rentals (July 2014–January 2016)



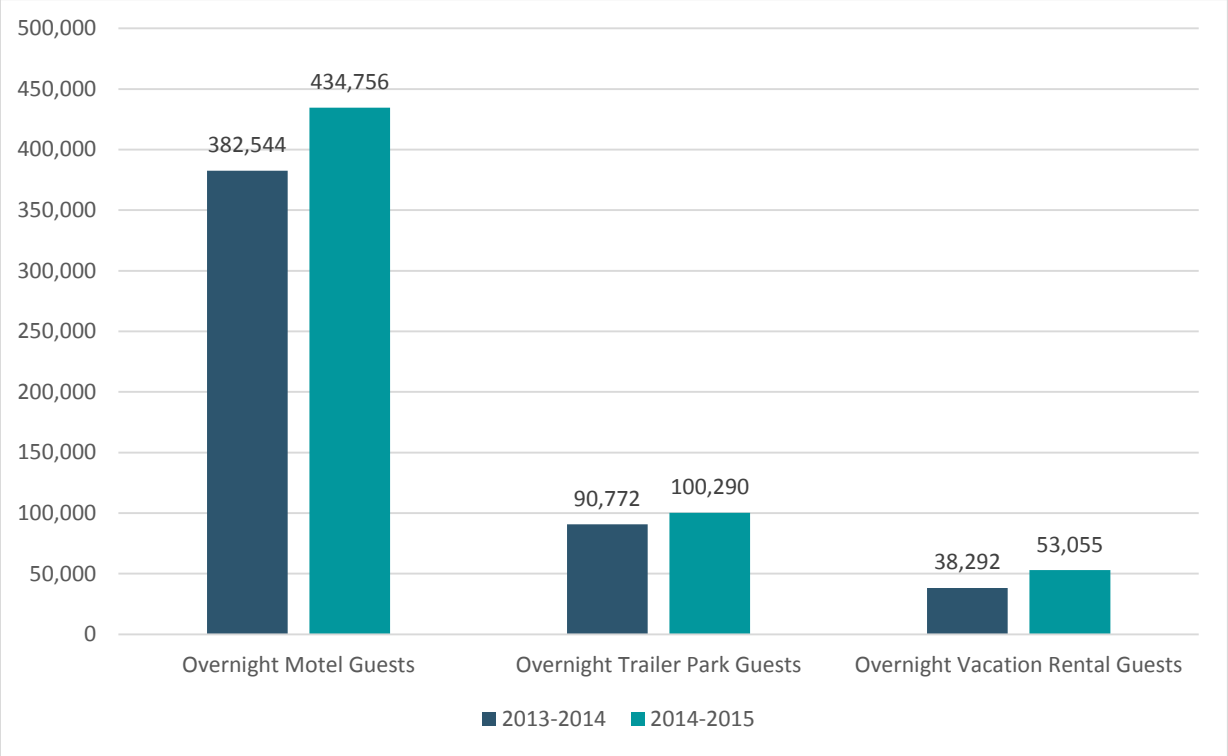
Motel, Trailer Park, and Vacation Rental Guests

Morro Bay Tourism Bureau data from hotel, motel, and vacation rental receipts provides estimates on overall overnight guests in Morro Bay per year in fiscal years 2013–2014 and 2014–2015.

In fiscal year 2013–2014, Morro Bay had an estimated 382,544 overnight hotel/motel guests, 90,772 overnight camping guests, and 38,292 overnight vacation rental guests. This had a $43 million economic impact to Morro Bay. In fiscal year 2014–2015, Morro Bay had an estimated 434,756 overnight hotel/motel guests, 100,290 overnight camping guests, and 53,055 overnight vacation rental guests. This had a $48.9 million economic impact on Morro Bay.

Figure 7.5 shows these trends from 2013 to 2015. The increase in number of vacation rentals from 2013 to 2015 is also due to the business license audit conducted by the City, which factored in previously unlicensed vacation rentals.

Figure 7.5
Estimated Guests at Overnight Accommodations (2013–2014 and 2014–2015)



Overnight Visitor-Serving Accommodations in Morro Bay

Michael Baker International evaluated visitor-serving overnight accommodation options and usage in the City of Morro Bay in March 2016 to determine existing conditions and methods to comply with the California Coastal Act. This survey found a variety of options at a variety of price levels in the city. Pricing information was obtained using internet searches of advance prices available on each accommodation's website for the date of June 23, 2016, to obtain insight on pricing in popular summer months. The prices selected and shown in Tables 7.2 and 7.3 reflect the least expensive options available for that date; all accommodations surveyed have a variety of pricing options, with the exception of campgrounds and RV parks.

Currently, low-cost accommodations are defined as those that are at or below the state median from April 2012 (most recently available) of $118.07 per night (Smith Travel Research 2012). This number changes over time and should be confirmed on a regular basis during the horizon of this plan. In total, there are 42 overnight accommodation options in Morro Bay. This number includes hotels, motels, inns, bed & breakfasts (B&Bs), campgrounds, and RV parks, but does not include short-term rentals. Based on an analysis of the prices for these accommodations, 63 percent are at or below the threshold dollar amount, and would be considered low-cost (Tables 7.2 and 7.3). Figure 7.6 illustrates visitor-serving accommodations in Morro Bay.

Campgrounds and Recreational Vehicle Parks

Morro Bay contains five accommodations that are classified as campgrounds or recreational vehicle (RV) parks. These are typically the lowest cost option for overnight accommodations, and range in price from $30 to $46 per night, with an average cost of $37 per night. All of these are below the amount considered low cost. One of these accommodations, Morro Dunes RV Park, has varying pricing options depending on the hook-up; the remaining sites have one base price. These accommodations range from 8 sites to 170 sites. Between all of the options, there are 516 sites available.

Table 7.2
Visitor-Serving Accommodations Inventory - Hotels, Motels, Inns, and Bed & Breakfast Inns (2016)

Name	Type (motel, hotel, inn, B&B)	Location/Address	Owner	Public/ Private	Lowest Cost per night	Percentage of state median price	Capacity	Notes
Anderson Inn	Inn	897 Embarcadero St, Morro Bay, CA 93442	Anderson Inn	private	$249.00	211%	8	1
Ascot Suites/ "Inn at the Rock"	Inn	260 Morro Bay Blvd, Morro Bay, CA, 93442	Ascot Suites	private	$139.00	118%	32	1
Bay View Inn	Motel	225 Harbor St, Morro Bay, CA 93442	Bay View Inn	private	$69.00	58%	22	1
Bayfront Inn at the Waterfront	Inn	1150 Embarcadero, Morro Bay, CA 93442	Bayfront Inn	private	$129.99	110%	16	1
Beach Bungalow Inn & Suites	Inn	1050 Morro Avenue, Morro Bay, CA 93442	Beach Bungalow	private	$160.55	136%	12	1
Best Western El Rancho	Hotel	2460 Main St, Morro Bay, CA 93442	Best Western	private	$107.99	91%	27	1
Best Western San Marcos	Hotel	250 Pacific Street, Morro Bay, CA 93442	Best Western	private	$125.99	107%	32	1
Best Western Tradewinds	Hotel	225 Beach St, Morro Bay, CA 93442	Best Western	private	$112.49	95%	24	1
Blue Sail Inn	Inn	851 Market Avenue, Morro Bay, CA 93442	Blue Sail Inn	private	$194.99	165%	48	1
Coastal Breeze Inn	Hotel	1098 Main St, Morro Bay, CA 93442	Coastal Breeze Inn	private	$90.00	76%	22	1
Comfort Inn	Inn	590 Morro Avenue, Morro Bay, CA 93442	Choice Hotels	private	$140.00	119%	32	1
Days Inn	Hotel	1095 Main St, Morro Bay, CA 93442	Days Inn	private	$109.00	92%	45	1

Name	Type (motel, hotel, inn, B&B)	Location/Address	Owner	Public/ Private	Lowest Cost per night	Percentage of state median price	Capacity	Notes
Econo Lodge	Hotel	1100 Main St, Morro Bay, CA 93442	Econo Lodge	private	$110.00	93%	18	1
Embarcadero Inn	Inn	456 Embarcadero, Morro Bay, CA 93442	Embarcadero Inn	private	$139.00	118%	32	1
Estero Inn	Inn	501 Embarcadero, Morro Bay, CA 93442	Estero Inn	private	$249.00	211%	8	1
Fireside Inn	Motel	730 Morro Ave, Morro Bay, CA 93442	Fireside Inn	private	$74.00	63%	24	1
Front Street Inn	Inn	1140 Front Street, Morro Bay, CA 93442	Front Street inn	private	$199.00	169%	2	1
Grays Inn	Inn	561 Embarcadero, Morro Bay, CA 93442	Grays Inn	private	$239.00	202%	3	1
Harbor Front Suites	Inn	591 Embarcadero, Morro Bay, CA 93442	Harbor Front Suites	private	$350.00	296%	3	1
Holland Inn and Suites	Hotel	2630 Main St, Morro Bay, CA 93442	Holland Inn	private	$80.10	68%	23	1
La Roche Suites	Inn	575 Embarcadero, Morro Bay, CA 93442	La Roche Suites	private	$350.00	296%	3	1
La Serena Inn	Inn	990 Morro Avenue, Morro Bay, CA 93442	La Serena Inn	private	$153.99	130%	38	1
Marina Street Inn B&B	B&B	305 Marina Street, Morro Bay, CA 93442	Marina Street Inn	private	$140.00	119%	4	2
Masterpiece Hotel	Hotel	1206 Main St, Morro Bay, CA 93442	Masterpiece Hotel	private	$116.99	99%	27	1
Morro Crest Inn	Inn	670 Main St, Morro Bay, CA 93442	Morro Crest	private	$58.00	49%	17	1
Morro Shores Inn & Suites	Hotel	290 Atascadero Rd, Morro Bay, CA 93442	Morro Shores Inn	private	$49.66	42%	30	1

Name	Type (motel, hotel, inn, B&B)	Location/Address	Owner	Public/ Private	Lowest Cost per night	Percentage of state median price	Capacity	Notes
Motel 6	Motel	298 Atascadero Rd, Morro Bay, CA 93442	Motel 6	private	$69.99	59%	70	1
Pacific Cottage Motel	Motel	2830 Alder Avenue, Morro Bay, CA 93442	Pacific Cottage Motel	private	$80.00	68%	14	2
Pacific Shores Inn	Inn	890 Morro Avenue, Morro Bay, CA	Pacific Shores	private	$59.00	50%	22	1
Pleasant Inn Motel	Motel	235 Harbor Street, Morro Bay, CA 93442	Pleasant Inn Motel	private	$119.00	101%	10	1
Rockview Inn and Suites	Inn	1080 Market Ave, Morro Bay, CA 93442	Rockview Inn and Suites	private	$85.00	72%	31	1
Sandpiper Inn	Inn	540 Main St, Morro Bay, CA 93442	Sandpiper Inn	private	$66.00	56%	21	1
Sea Air Inn	Inn	845 Morro Ave, Morro Bay, CA 93442	Sea Air Inn	private	$74.00	63%	25	1
Seaside Inn	Inn	220 Beach St, Morro Bay, CA 93442	Seaside Inn	private	$109.00	92%	33	1
Sundown Inn	Inn	640 Main St, Morro Bay, CA 93442	Sundown Inn	private	$99.00	84%	17	1
The Breakers Motel	Motel	780 Market Ave, Morro Bay, CA 93442	Breakers Motel	private	$113.05	96%	26	1
The Inn at Morro Bay	Hotel	60 State Park Rd, Morro Bay, CA 93442	The Inn at Morro Bay	private	$118.00	100%	98	1

[1] *Price was surveyed for the same date, Thursday, June 23, 2016, and acquired using each accommodation's website. Each price reflects the* ***least expensive*** *option available.*

[2] *The prices for these accommodations were acquired by making phone calls, as they had no online reservation options.*

Table 7.3
Visitor-Serving Accommodations Inventory – Campgrounds and Recreational Vehicle Parks (2016)[1]

Name	Type (campground, RV park)	Location/Address	Owner	Public/ Private	Lowest Cost per night	Percentage of state median price	Capacity
Bay Pines Travel Trailer Park	RV Park	1501 Quintana Rd, Morro Bay, CA 93442	Bay Pines	private	$40.00	34%	112
Cypress Morro Bay RV & Mobile Home Park	RV Park	1121 Main Street, Morro Bay, CA 93442	Cypress	private	$46.00	39%	36
Morro Bay State Park Campground	RV and/or Tent Camping	60 State Park Road, Morro Bay, CA 93332	CA State Parks	public	$35.00	30%	122
Morro Dunes RV Park	RV and/or Tent Camping	1700 Embarcadero, Morro Bay, CA 93442	Morro Dunes	private	$29.97	25%	170
Morro Strand State Park campground	RV and/or Tent Camping	Hwy 1 & Yerba Buena, Morro Bay, CA 93442	CA State Parks	public	$35.00	30%	76

[1] *Price was surveyed for the same date, Thursday, June 23, 2016, and acquired using each accommodation's website. Each price reflects the* ***least expensive*** *option available.*

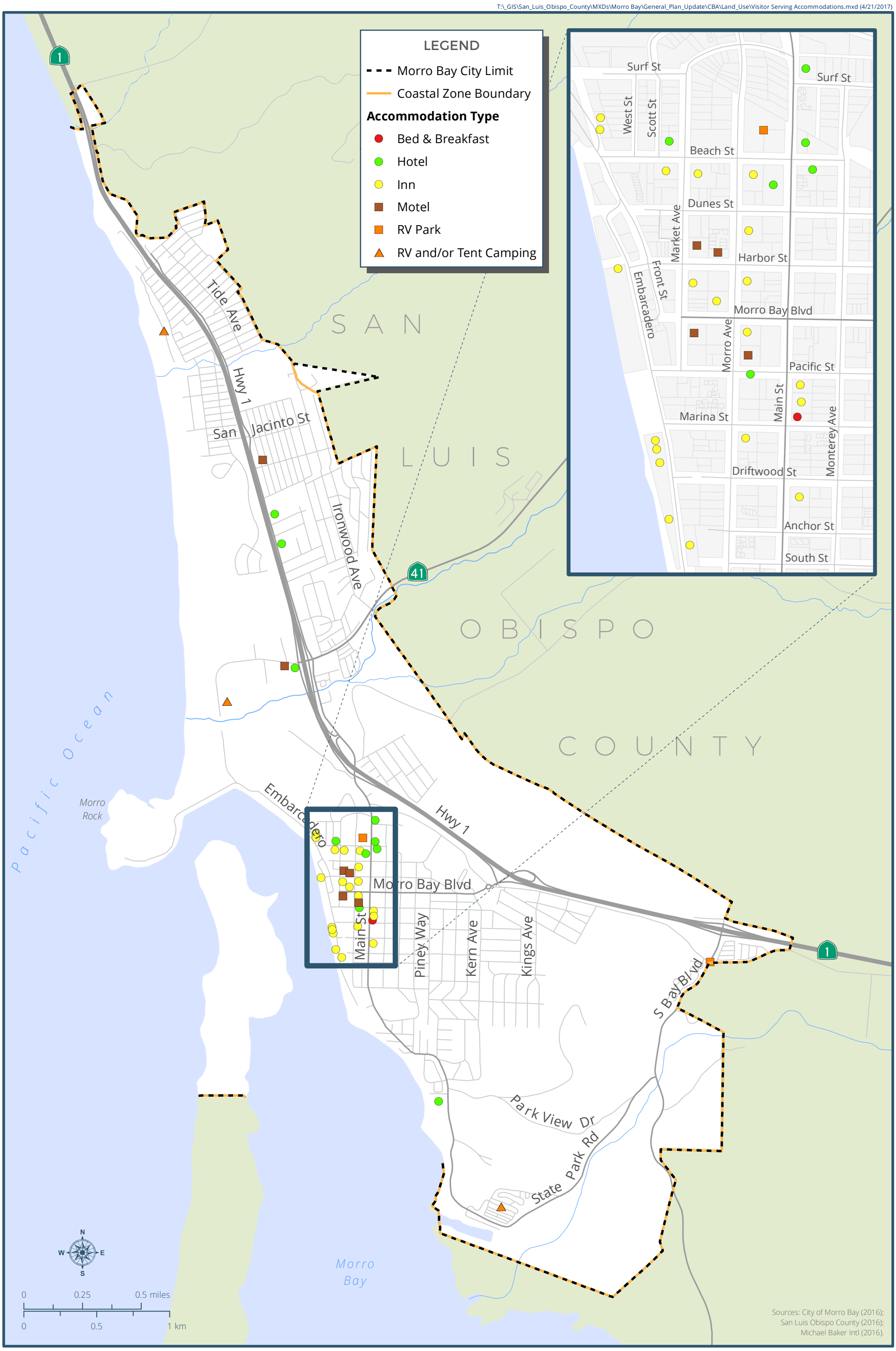


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FIGURE 7.6

Existing Visitor-Serving Accommodations

Page 2

Short-term Rentals

An emerging trend in coastal communities and other popular locations in California is the propagation of private, short-term vacation rentals. Owners of private homes and apartments advertise primarily on the internet using commonly used websites. Local agencies are catching up to this phenomenon, enacting rules and ordinances that regulate or prohibit such commercial activities in residential areas. While these rental units do not contribute to TOT in Morro Bay, they are an important component of the City's stock of overnight accommodations and do pay business license fees.

Michael Baker International evaluated short-term rental accommodation options in Morro Bay in March 2016 to understand how they contribute to the number of overnight accommodations in the city (Table 7.4). This short-term rental survey gathered data using a point-in-time approach for advance reservations for June 23, 2016. However, this survey was different from the other accommodations listed, as only a sample of the overall number of short-term rentals available was surveyed, not the complete list of available accommodations. Short-term rental accommodations ranging from private bedrooms in shared homes to private 1-bedroom, 2-bedroom, 3-bedroom, and 4+ bedroom homes were selected and priced from two websites, Airbnb and HomeAway. Prices ranged from $83 to $670 per night, depending on the size and location of the accommodation.

When comparing the nightly rates for short-term rentals to the state median cost, it is evident that most average nightly rates exceed the "low-cost" threshold of $118.07 per night. The only short-term rentals that may fall below this threshold are certain listings for private rooms in shared homes; the lowest cost surveyed for this type of listing was $83 per night. The lowest prices surveyed for every other type of listing were over 140 percent above the state median price, when surveyed on a per-unit basis. However, the low-cost threshold of $118.07 refers to single hotel rooms, the equivalent of one bedroom. When the price of short-term rental units with multiple rooms is compared on a per-room basis to the state median cost for a hotel room, short-term rentals with at least two bedrooms are less expensive than a median hotel room.

Therefore, while single-bedroom short-term rentals are more expensive than the state median cost for a hotel room, multiple-bedroom short-term rentals are less expensive than hotel rooms on a per-room basis, although the total cost of the rental remains more expensive.

Table 7.4
Visitor-Serving Accommodations Inventory – Survey of Short-Term Rentals (2016)

Type	Number of units surveyed	Low Price	Highest Price	Average	Average per room	Percentage of state median price
Shared Room	None available in Morro Bay					
Private Room	3	$83.00	$170.00	$120.33	$120.33	102%
Entire House						
Studio	None available in Morro Bay					
1 bedroom	3	$159.00	$179.00	$166.00	$166.00	141%
2 bedroom	2	$130.00	$225.00	$177.50	$88.75	75%
3 bedroom	3	$190.00	$268.00	$228.67	$76.22	65%
4+ bedroom	3	$268.00	$671.00	$406.00	$101.50	86%
Total Units Surveyed	14					

Sources: Airbnb.com 2016; Homeaway.com 2016

Commercial Fishing, Recreational Boating, and Infrastructure

Commercial Fishing

Morro Bay's commercial fishing industry is a small but vital part of the city's economy. Commercial fishing was a priority for Morro Bay beginning with the building of the harbor during World War II by the Department of the Navy. The industry thrived and grew for decades afterwards (Endersby 2016; City of Morro Bay 1988). However, between the mid-1980s and mid-2000s, a sharp decline in commercial fishing landings took place. In addition, regulations have been adopted in recent decades by the federal government that limit how and where commercial fishing can occur. In the mid-2000s, the catch share quota system was instituted, which has resulted in a more sustainable fishery both in Morro Bay and in other West Coast ports (NOAA 2015). Part of the shift has been away from a mostly trawl fleet to a more varied fleet of smaller vessels with different catch methods. Landings and revenue hit their lowest point in 2007 and have increased every year since, through 2014 (City of Morro Bay 2015b).

As of 2015, the most economically important fish species in Morro Bay were sablefish, Dungeness crab, market squid, hagfishes, and shortspine thornyhead. These species

made up 84 percent of the landings in 2014 (City of Morro Bay 2015b). In addition, species that have not been plentiful in quite some time have been a greater part of the catch in recent years including lingcod and pink shrimp (City of Morro Bay 2015b and Joseph Conchelos, personal communication, October 2016).

Efforts to support and revitalize Morro Bay's commercial fishing industry have included regular analysis and reports published by the City of Morro Bay, the Morro Bay Commercial Fisherman's Organization (MBCFO), the Nature Conservancy, and other partners. Key publications and organizations supporting a viable commercial fishery in Morro Bay are listed below:

- Commercial Fisheries Business Plan (City of Morro Bay 2008)
- Annual Morro Bay Commercial Fisheries Economic Impact Reports (2011, 2012, 2013, 2014, 2015)
- Morro Bay Commercial Fisherman's Organization (MBCFO)
- Central Coast Women for Fisheries (CCWF)
- Community-based Fishing Association (CBFA)
- The Nature Conservancy
- Morro Bay Community Quota Fund (MBCQF)

Commercial Fishing Infrastructure

Morro Bay's commercial fishing infrastructure has declined since the mid-1990s when the industry as a whole began to decline. In particular, there has been a loss of process facilities. The only fish processing facility in Morro Bay currently is at Tognazzini's Dockside Too on the north Embarcadero. Steady improvements to existing facilities and infrastructure continue to be made. Some notable improvements in recent years include new steel hoists at Dockside Too and DeGarimore's, and investments in trucks and storage equipment at offloading facilities (City of Morro Bay 2014a). The following commercial fishing infrastructure is located in Morro Bay:

- Offloading facilities
  - City Wharf (tenants: Central Coast Seafood/Santa Monica Seafood)

  - Ocean Star (715 Embarcadero). Bait is sold at this facility.
  - DeGarimore's Central Coast Marin Fuel and Ice (1099 Embarcadero). Bait, fuel, gasoline, and ice is sold at this facility.
  - Tognazzini's Dockside Too
- Ice facility on north Embarcadero near Dockside Too
- Two freezer facilities
- Docks, piers, and tie-ups. All of the docks and piers specifically for commercial fishing vessels are located along the north Embarcadero. There are 50 slips owned by the Harbor Department that are designated for commercial fishing.
- Commercial fishermen's dry storage and gear repair facility (1620 Embarcadero)

Figure 7.7 and associated Table 7.5 provide a map and list of commercial fishing and recreational boating related infrastructure, businesses, and services in Morro Bay.

Recreational Boating

Recreational boating is an important feature of tourism and the community character of Morro Bay. Several kayak and stand-up paddleboard businesses are located in the city, as well as businesses offering glass-bottom boat tours, dinner cruises, whale watching, and fishing. The Harbor Department manages slips and moorings that are available for rent to noncommercial vessels (Endersby 2016).

Figure 7.7 and Table 7.5 describe and identify the locations of commercial fishing and recreational boating related infrastructure, businesses, and services in Morro Bay.

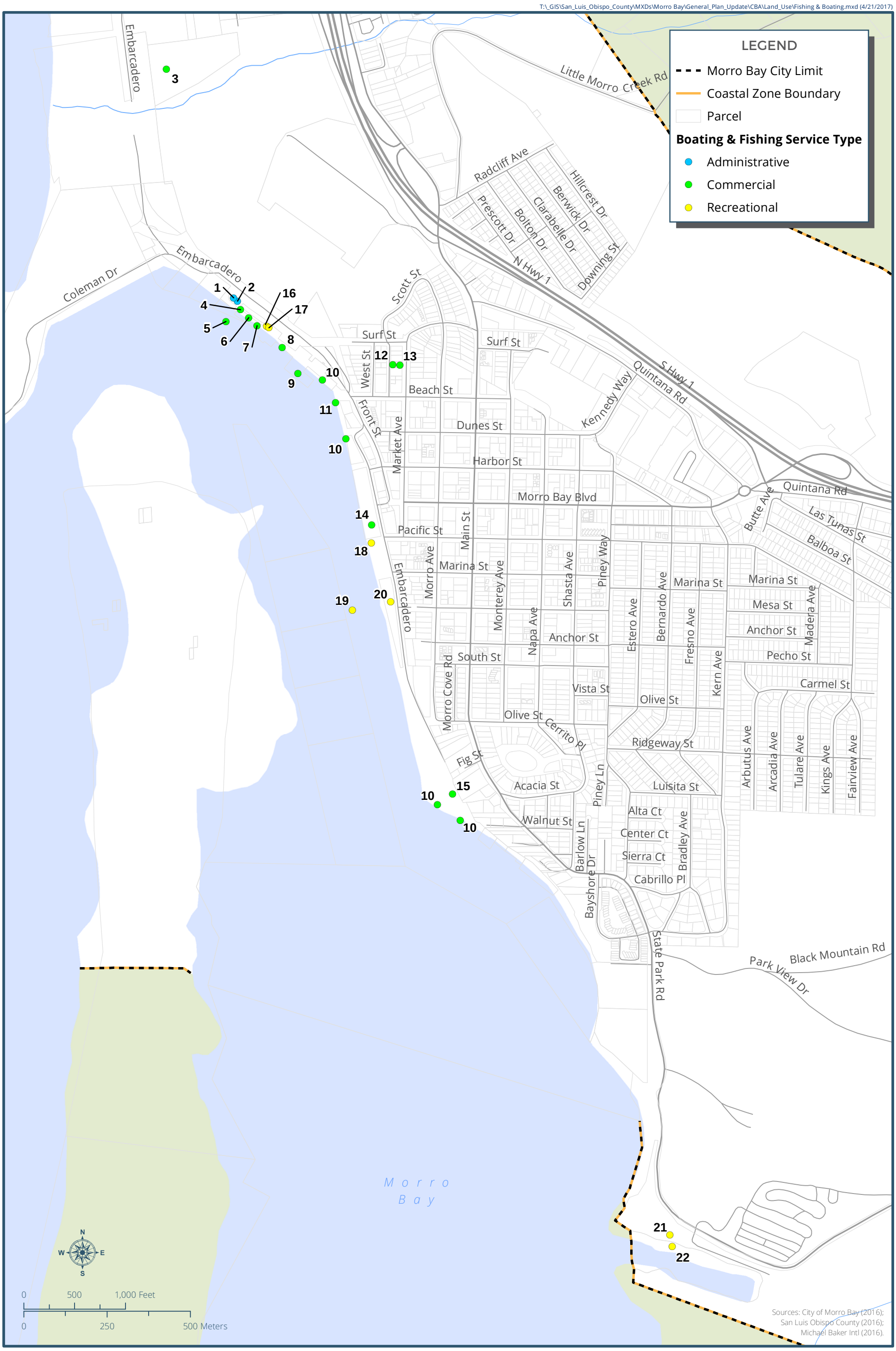

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FIGURE 7.7

Fishing and Boating Related Services

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Table 7.5
Commercial Fishing and Recreational Boating-Related Infrastructure, Businesses, and Services (2016)

Map ID	Type	Description
1	Administrative	U.S. Coast Guard
2	Administrative	Harbor Department
3	Commercial	Commercial Fishermen's Dry Storage & Gear Repair Facility
4	Commercial	Dockside Too
5	Commercial	North T-Pier
6	Commercial	Municipal Wharf
7	Commercial	Ice Machine & Delivery Chute
8	Commercial	Virg's Landing (dock)
9	Commercial	South T-Pier
10	Commercial	Slips Designated For Commercial Fishing (50)
11	Commercial	DeGarimore's Central Coast Marine Fuel & Ice
12	Commercial	Jerry's Marine & Tackle
13	Commercial	Virg's Landing
14	Commercial	715 Embarcadero facility, Ocean Star
15	Commercial	Boat Launch at Pirate Park
16	Recreational	Central Coast Paddling
17	Recreational	Chablis Cruises
18	Recreational	Sub Sea Tours
19	Recreational	Other boat slips open to noncommercial vessels
20	Recreational	Kayak Horizons
21	Recreational	Kayak Shack
22	Recreational	State Park Marina

Sources: Morro Bay 2014a

Industrial Uses

Desalination Plant

As also described in Chapter 6 (Infrastructure and Public Services), in 1992, the City constructed a seawater desalination plant during a drought emergency. The plant utilizes a sweater reverse osmosis (SWRO) system to desalinate seawater produced from five seawater wells located along the Morro Bay harbor. The California Coastal Commission approved a Local Coastal Program (LCP) Amendment to allow the desalination plant to operate as needed to ensure that minimum water quality standards are met, as routine replacement, and to offset drought conditions in 1995. Due to iron fouling issues, between 1995 and 2002, the desalination plant was not

operated. Limited pilot testing was conducted during June and July 2001 to evaluate potential methods to minimize the impact of the raw water's high iron concentrations.

Currently, the desalination plant is operated to offset seasonal peaking and for routine supply replacement, such as during State Water Project (SWP) outages. In the future, the desalination plant may be utilized more regularly once the iron fouling issues have been resolved. The City's permits for outfall and sea well operation have expired; however, City staff has discussed with the Coastal Commission the possibility for operating the facility under certain emergency conditions. The Public Works Department is currently working on obtaining the appropriate permits.

Agricultural Resources

Agriculture in the Coastal Zone is protected under the Coastal Act. The act mandates that the maximum amount of prime agricultural land be maintained in production and that threats to prime agricultural land be countered by supporting various techniques to promote agricultural productivity. These include "establishing stable urban-rural boundaries, agricultural buffers, development priority on lands not suitable for agriculture, subdivision restrictions, and public service expansion controls" (California Coastal Commission 2013). Agricultural uses inside the planning area are limited; almost all are located on the east side of Highway 1 near the southeast end of the city (see Figure 7.8).

A small amount of prime agricultural land is located just south of Morro Creek and Highway 41 east of Highway 1. The remainder of the agricultural land in Morro Bay is categorized as unique farmland, farmland of local potential, and grazing land. None of the agricultural land in Morro Bay is located outside of the Coastal Zone.

Aquaculture

Oyster farming has a long history in Morro Bay and has made a resurgence in recent years (Morro Bay Oyster Company 2016). The oyster farming estuary occurs primarily at the south end of the bay near the estuary as well as near Tognazzini's along the northern section of the Embarcadero.

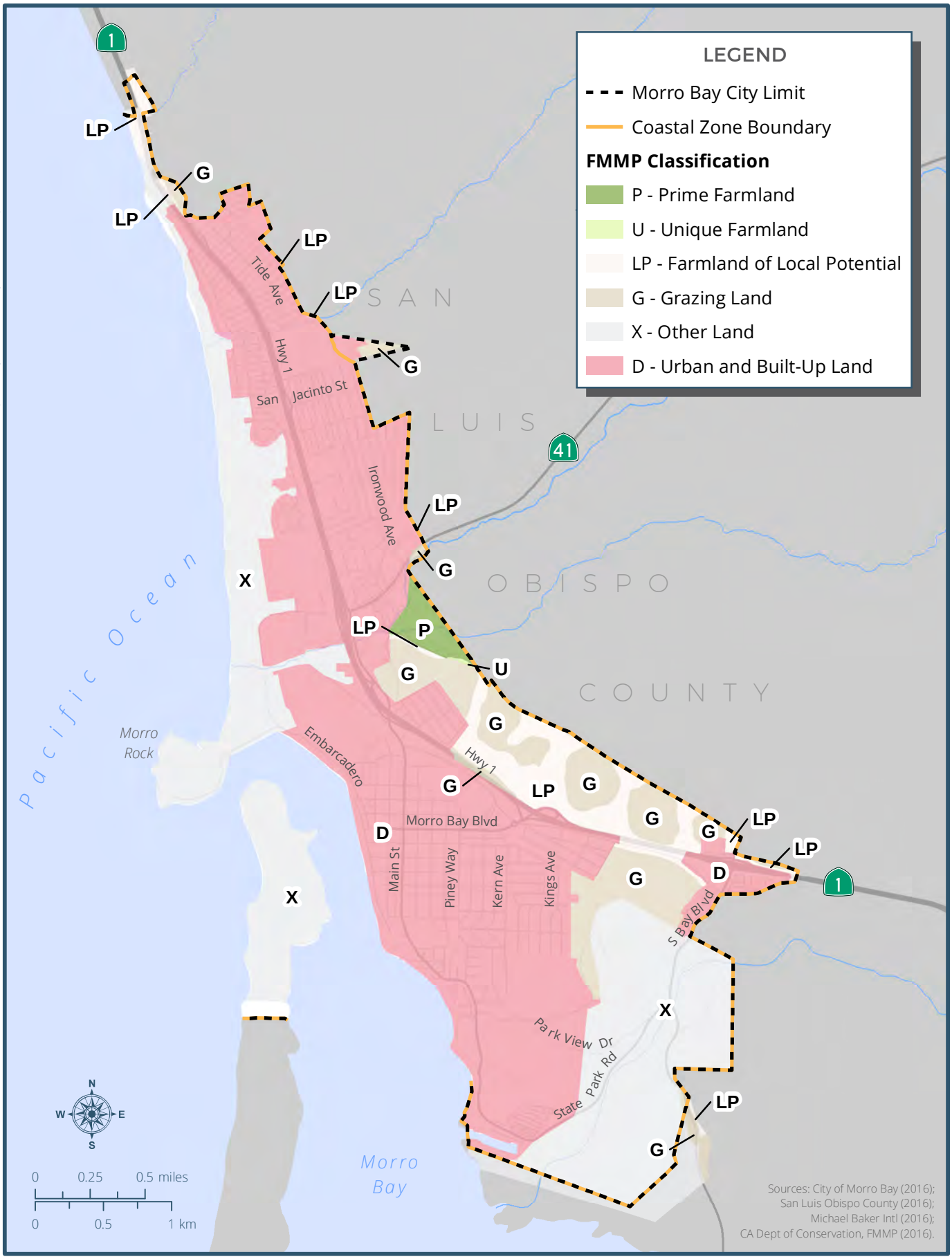

FIGURE 7.8

Important Farmland

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ENERGY-RELATED USES

Energy-related uses are currently limited in Morro Bay. Until 2014, a power plant was operated just north of the Embarcadero, most recently by Dynegy Corporation (Wilson 2014). Dynegy still owns the plant, and the structures and smokestacks still exist on the site.

Decommissioned Dynegy Power Plant

The power plant facility owned by Dynegy is located on approximately 100 acres north of the Embarcadero near the City's water treatment plant. This site also includes the site of the former intake pumps for the power plant. The natural gas-powered plant was built in the 1950s and operated until 2014. Reasons for the closure included cost of compliance with current environmental regulations and fluctuation in the market for electricity (Pemberton 2013).

COMMUNITY CHARACTER

A community's character can be defined by the distinctive or unique physical features, qualities, or attributes (e.g., hilly, small buildings, wide sidewalks), as well as the social characteristics that are influenced by physical characteristics (e.g., pedestrian-friendly, safe, auto-oriented). Various descriptions on the overall character of Morro Bay include small town, eclectic, welcoming, naturally beautiful.

Community character has been an important topic for the Morro Bay community in recent years, particularly related to residential neighborhood character and the compatibility of new residences with existing neighborhoods. This section provides a setting for community character areas as a basis for policy recommendations for the General Plan update.

Scenic and Visual Resources

Scenic and visual resources in Morro Bay include vistas and views, scenic resources, viewsheds, scenic corridors, sources of light and glare, and the visual character of the city and its various districts.

Scenic Resources

Scenic resources are natural or man-made features such as trees, rock formations, historic buildings, and public art. The State Scenic Highway Program protects scenic resources visible from designated scenic highways, and communities may designate features as scenic resources in general and specific plan documents. Such resources in Morro Bay include the following, many of which were identified in the existing General Plan:

- Morro Rock
- Del Mar Park
- Cloisters Park
- Former Dynegy power plant
- Downtown
- Black Mountain
- Morro Bay Sandspit
- State Museum of Natural History
- Morro Bay salt marsh
- Atascadero Beach tract
- Cloisters neighborhood
- The beach
- Coleman Park
- Embarcadero
- Morro Heights
- Morro Bay Golf Course
- State Boat Marina

Scenic Vistas and Views

A scenic vista provides expansive views of an aesthetically valued landscape that benefits the public. This designation may be officially designated or unofficially defined by a set of criteria. While there are no officially designated scenic vistas in the planning area, a number of views serve the purpose of a scenic vista. The views north toward Morro Rock, south toward Morro Bay Estuary and the sandspit, south toward Los Osos and the Irish Hills, and north toward Cayucos both along the coastline and looking northeast toward the hills are all aesthetic views which warrant protection. A map of these selected views, which is not a complete list of all views in the community, is provided in Figure 7.9. The criteria used for assessing views of Morro Bay include such things as:

- The enhancement of the city's character through the use of building materials and scale of the structures.
- The compatibility with surrounding structures.
- The compatibility with the natural features of the area (i.e., topography).
- The preservation of public views.
- The enhancement and definition of the city's image.
- The uniqueness of the city's image.
- Maintenance of scenic highway conditions.
- Any additional view considerations as requested by regulatory agencies.

Although not within the city limits, the views east of Morro Bay along the Highway 41 corridor and surrounding foothills are also an important scenic vista for the community.

San Luis Obispo County's Estero Area Plan also calls for protection of the scenic vista of the Morros, which are located near and in Morro Bay and include Morro Rock, Black Hill, Cerro Cabrillo, Parker Ridge, and Hollister Peak. Aside from Morro Rock and Black Hill, the Morros are visible from only a small portion of the planning area. Figure 7.10 provides a map of scenic views in the planning area.

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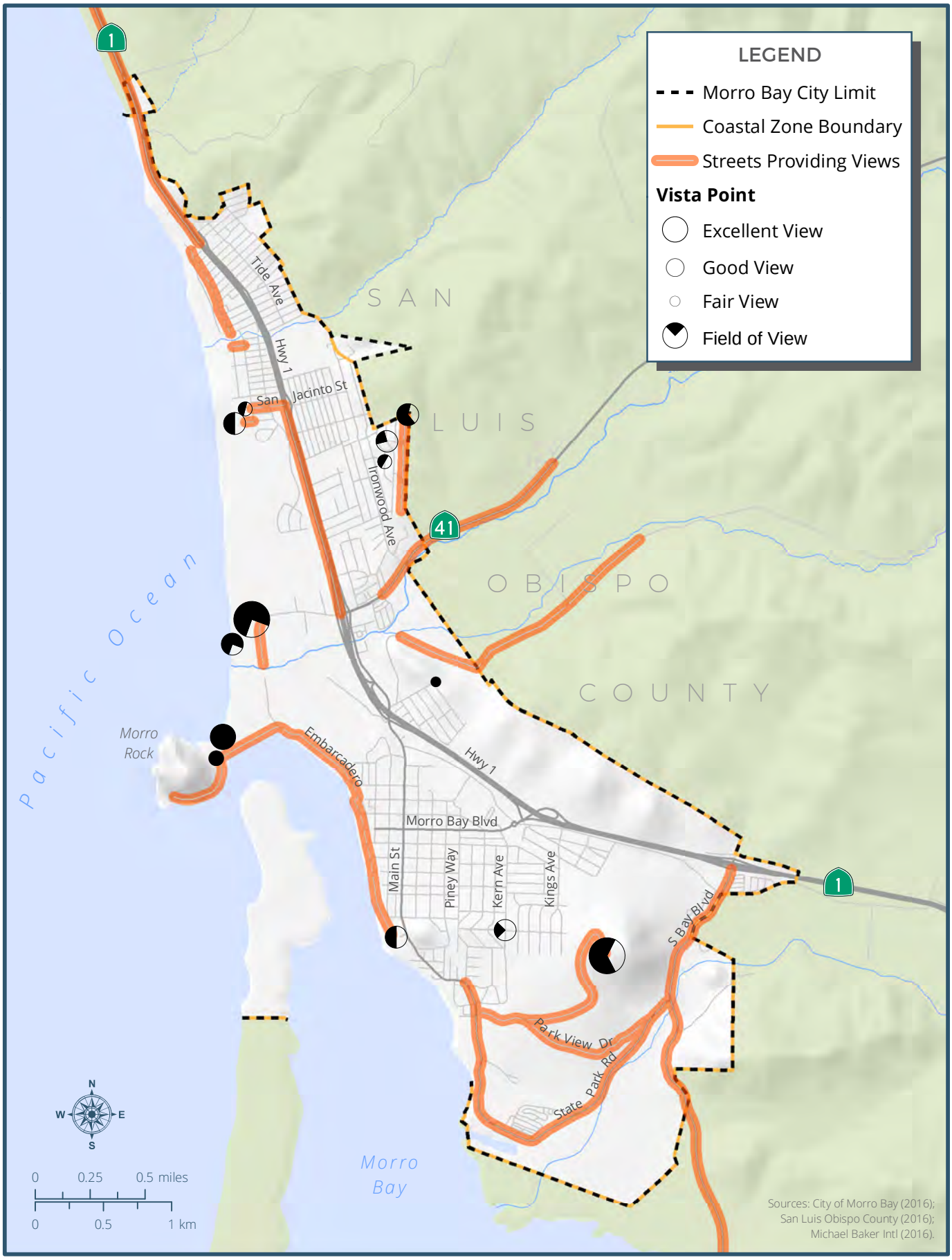

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Plan MORRO BAY

FIGURE 7.9

Viewpoints

Page 2

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Plan MORRO BAY

FIGURE 7.10

Scenic Views

Page 2

Scenic Highways and Viewsheds

A highway is designated as an eligible scenic highway when the California Department of Transportation (Caltrans) determines that it qualifies for official status. The status of an officially designated scenic highway changes when the responsible city or county applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated (Caltrans 2016). Scenic highways must have an approved Corridor Protection Program and remain in compliance to maintain scenic highway status.

Highway 1 is an officially designated scenic highway in the planning area. It is also designated as a scenic corridor by the County in the Estero Area Plan (San Luis Obispo County Board of Supervisors 1998). There may be a need to improve the viewshed conditions in parts of these existing scenic corridors. State Route 41 between Highway 1 and US 101 is eligible for scenic highway designation, but has not been officially designated.

Light and Glare

Light and glare from indoor or outdoor uses can reduce visibility of the night sky, create potential hazards to drivers, and be a nuisance to residential areas. The planning area has typical light conditions found in suburban areas (e.g., roadway lighting, commercial parking lot and building lighting, residential buildings, headlights from motor vehicles). Sources of daytime glare include direct beam sunlight and reflections from windows, architectural coatings, glass, and other shiny reflective surfaces. Nighttime light illumination and associated glare can be divided into stationary and mobile sources. Stationary sources of nighttime light include structure illumination, decorative landscape lighting, lighted signs, and streetlights. The primary source of mobile nighttime light is motor vehicle headlights, particularly from Highway 1 and other high traffic streets. Potential sources of light and glare in residential areas include street lighting along major roads, highways, and in large parking lots. In commercial and industrial areas, large parking lots, lit signage, and strip mall development can cause light pollution. Nighttime lighting at Morro Bay High School in the northern portion of the city can also create light and glare concerns. Nighttime glare issues are particularly important for light sources on elevated ground, as the light can be visible from a greater distance and thus affect a larger section of the community.

Community and Visual Character

This section describes the existing character of the community by neighborhood or corridor (as defined in Figure 7.11). The character-defining features of Morro Bay vary by area of the city and generally include density, building height, building bulk, the location of buildings on a lot, lot size (Figure 7.12), architectural style, exterior colors and materials, similarities and differences between neighboring structures, and the year in which the structure was built. Changes to these characteristics, including the trend of significantly expanding existing homes or demolishing older homes to build larger newer ones (a process known as "mansionization"), can substantially alter the nature of a neighborhood. Quantitative and qualitative descriptions of these features are included in the descriptions of the community character areas in this section.

Morro Bay's distinct culture is cherished by locals and tourists alike. Aspects contributing to the overall community and visual character of the city include housing type, appearance, and age; vegetation; public art; and parks and open spaces. Housing stock in Morro Bay was mostly built prior to 1970, with approximately 20 to 25 percent in need of rehabilitation (City of Morro Bay 2014). Both naturally occurring and landscaped vegetation tends to be native and drought-tolerant, with a significant number of large trees.

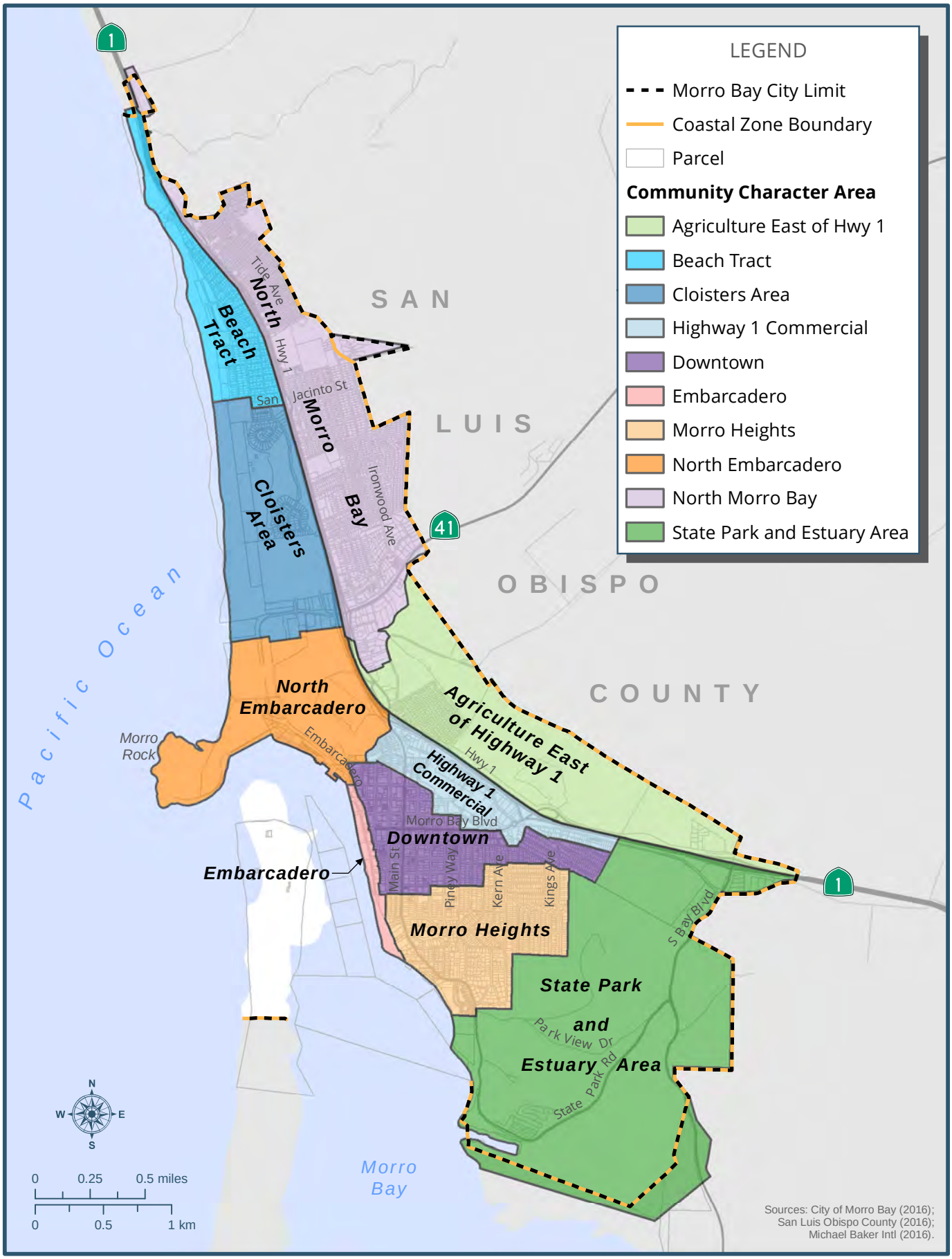

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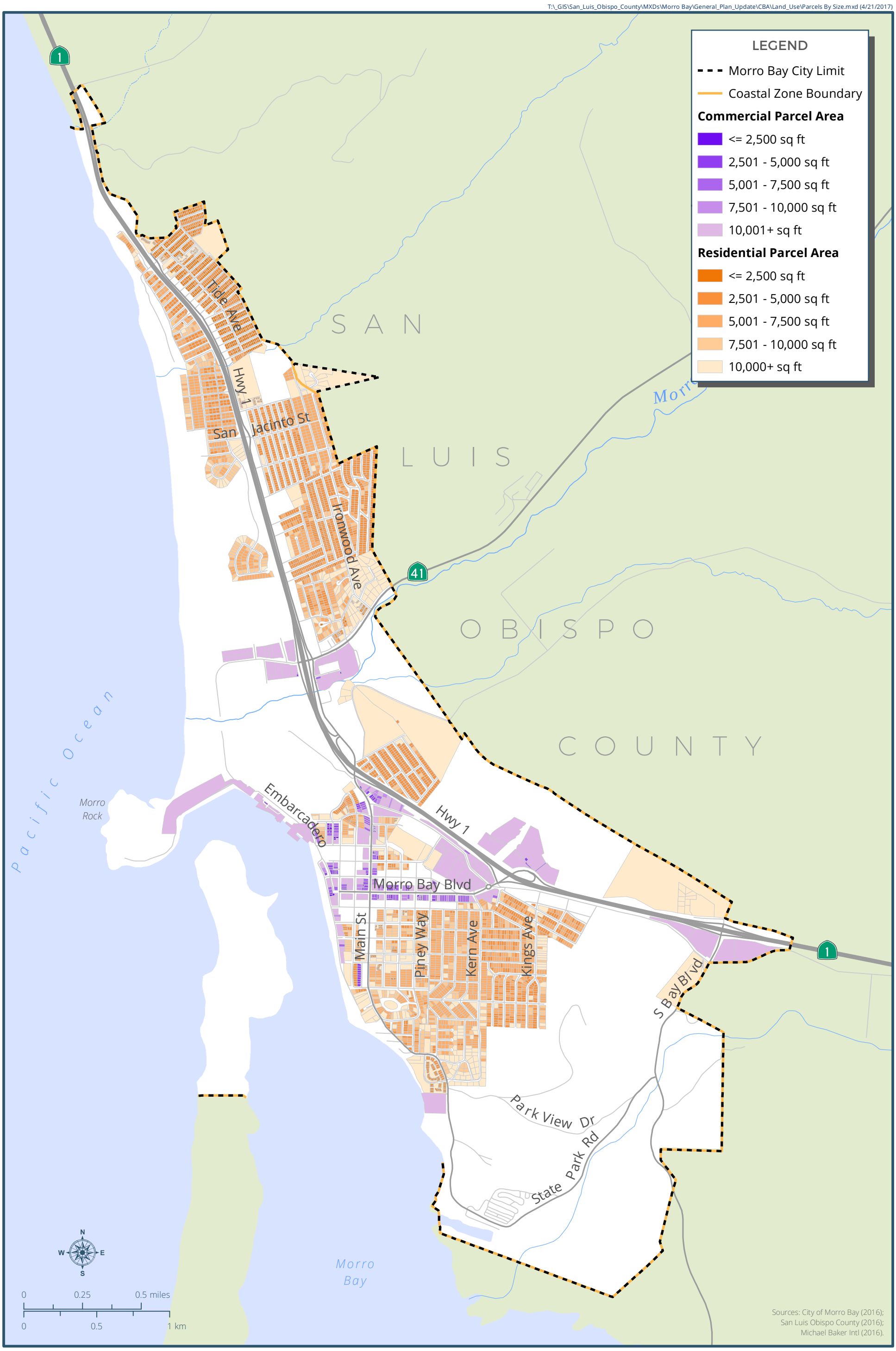
FIGURE 7.11

Community Character Areas

Page 2



Plan MORRO BAY

FIGURE 7.12

Commercial and Residential Parcel Size

Page 2

North Morro Bay

The North Morro Bay character area spans much of the length of the city on the east side of Highway 1. Highway 1 is a two-lane divided highway in this stretch of Morro Bay with a speed limit of 55 miles per hour. Nearly all of North Morro Bay is residential. A commercial strip along Main Street (frontage road on the east side of Highway 1) includes retail uses (restaurants, bars, gas stations, and a supermarket) and office uses.

The area slopes gradually, then more steeply, away from the highway. The homes at the eastern edge of this area are located on relatively steep hills and have views of the ocean and Morro Rock.

The majority of buildings are one- or two-story wood-frame single-family residential homes. Most residential parcels range from less than 2,500 square feet up to 7,500 square feet. North Morro Bay has generally newer homes than Downtown and Morro Heights. In the commercial area, the predominant development trend is strip commercial, and commercial development is located on the block on the east side of Main Street.

Beach Tract

The Beach Tract character area is located on the west side of Highway 1 west of North Morro Bay and north of the Cloisters. Morro Strand campground (State Park) is also located in this area west of the highway along the beach. The area west of the highway is nearly flat with limited vegetation. Some large eucalyptus trees are located near the intersection of Highway 1 and San Jacinto Street. Alva Paul Creek runs east to west through this area and North Point Natural Area is located just north of this neighborhood. The area consists of single-family residential development and offers abundant beach access. This neighborhood is also adjacent to the divided 55-mile-per-hour stretch of Highway 1. Houses are typically one-story, suburban-style single-family homes with landscaped yards. Most residential parcels in the Beach Tract area are between 2,500 square feet and 7,500 square feet in size.

Cloisters

The Cloisters character area is located on the west side of Highway 1 south of the Beach Tract. It is one of the most recently developed areas in the city and consists of mostly single-family residential development, natural habitat, Morro Bay High School, and Cloisters Community Park, which includes trails and a wetland area. The homes in the neighborhood are clustered to protect the sensitive dune habitat in the area. The area is generally flat and offers abundant beach access. This neighborhood is also adjacent to the divided 55-mile-per-hour stretch of Highway 1. Houses are typically one-story, larger suburban-style single-family homes of neutral color with landscaped yards, mostly featuring native and drought-resistant vegetation. Most residential parcels in the Cloisters area are between 5,000 square feet and 7,500 square feet in size.

Morro Bay High School and two RV parks are located south of the Cloisters neighborhood on either side of Atascadero Road. Trees have been planted at the school, giving this area a more wooded feel. Two motels are on the south side of Atascadero Road. South of Atascadero Road/SR 41, Highway 1 becomes a limited-access freeway.

North Embarcadero

The North Embarcadero character area includes the North Embarcadero waterfront as well as adjacent industrial areas that include the former Dynegy power plant site, Lila Keiser Park, the City wastewater treatment plant, the commercial fishermen's dry storage and repair facility, and Morro Rock. Morro Creek and the associated riparian corridor run just north of this area. Most commercial parcels in this area are greater than 10,000 square feet in size. Only a few residentially zoned parcels occur in the North Embarcadero area. The area is mostly paved and has minimal vegetation, except along Morro Creek and at Lila Keiser Park. Three prominent smokestacks at the power plant are the visually dominant feature of this area. North Embarcadero offers a clear view of Morro Rock. The City is in the planning stages to identify a new site for a water reclamation facility. That facility will replace the existing wastewater treatment plant once constructed and the existing water treatment plant in this area will be closed. Future uses for the former Dynegy power plant site and the existing water treatment plant site are currently undetermined. Both sites represent key future economic development opportunities for the community.

This area represents the largest concentration of working waterfront uses in Morro Bay. Piers, docks, commercial fishing offloading facilities, and other related commercial fishing infrastructure are located along the waterfront. There are also restaurants and other supporting retail uses. A large City-owned surface parking lot is adjacent to the waterfront businesses. The topography in this area is flat and the only beaches are located north and south of Morro Rock. Morro Rock is accessed via Coleman Drive or a trail positioned just west of the working waterfront area on a relatively narrow strip of land. The area between the waterfront and Morro Rock is undeveloped and is used for recreation; it includes Coleman Park.

The Embarcadero

The Embarcadero is the most iconic character area in the city. The area has a maritime feel, characterized by low-rise one- to two-story buildings and pedestrian-friendly streets. Some of the sidewalks in this area are quite narrow, and the City is currently preparing a widening plan to address this issue. The Embarcadero combines a working waterfront for commercial and recreational purposes with tourist-serving retail. It is adjacent to the ocean and extends east to a bluff that serves as the dividing line between The Embarcadero and Downtown. The area runs from North Embarcadero to the State Park area at the south end of the city. The bayside of Embarcadero is completely developed and includes both old and poorly maintained buildings and some of the city's newest development. A number of underdeveloped properties are located on the land side of The Embarcadero. Buildings on the bayside of the street are designated for coastal-dependent uses including visitor-serving uses (e.g., restaurants, gift shops, attractions, accommodations), commercial fishing, and recreational boating.

The bayside of the Embarcadero provides numerous coastal access points including formal piers, seating areas, and pathways. Some of the parcels offer lateral access along the bay. However, these lateral access paths are typically developed on an ad hoc basis and do not generally synch up with adjacent properties.

Residential development along The Embarcadero is extremely limited. Commercial parcel sizes vary from less than 2,500 square feet to more than 10,000 square feet. The topography is flat and there are no beaches inside the harbor. Vegetation is limited and includes succulents and coastal plant life, with some plants in planters, giving the area a more urban feel.

Downtown

The Downtown character area is uphill from The Embarcadero between the waterfront and the Highway 1 commercial area. This area includes a variety of uses including residential, retail, office, service commercial, and tourist-serving uses. The greatest number of hotels and motels in Morro Bay are in this area. Restaurants and retail uses are concentrated on Morro Bay Boulevard, particularly near its intersection with Main Street.

The largest concentration of two-story buildings in the city is in this area, along with some mixed-use buildings. Approximately 80 percent of the parcels in Downtown are zoned residential, with the majority ranging from 2,500 square feet to 10,000 square feet in size. Typical commercial parcel sizes also vary widely, from less than 2,500 square feet to larger than 10,000 square feet. This area contains the oldest buildings in the city, but also a significant number of newer buildings. There is great variety in the building styles, and most streets have large, prominent trees. The streets are oriented in a traditional grid pattern. Downtown also includes areas that are purely residential, especially on the perimeter. The topography of this area slopes gently uphill toward Highway 1.

Highway 1 Commercial

Most City government buildings and highway commercial development can be found in this character area situated between Downtown and Highway 1. These include City Hall, the Veterans Hall where the City Council meets, and the Community Center. Highway commercial development in this area is mostly strip commercial and includes a grocery store, gas station, and other service commercial uses. The topography in this area is variable with Morro Bay Boulevard serving as the high point. Triangle-shaped City Park is located near the roundabout on Morro Bay Boulevard.

There is little vegetation in this part of the city. The highway commercial uses stretch along the west side of the highway to South Bay Boulevard. The relatively limited number of residential parcels in this area vary in size from less than 2,500 square feet to larger than 10,000 square feet. Commercial parcel sizes vary as well, with a substantial number of parcels larger than 10,000 square feet.

Agriculture East of Highway 1

The character area east of Highway 1 south of North Morro Bay (at Morro Road) is predominantly used or designated for agriculture. The northern portion of the area is primarily used for crop farming; the southern portion of the area is used for grazing and is covered by annual grasses. One residential neighborhood is located adjacent to the highway in this area. The topography slopes uphill east of Highway 1. Buildings in the residential neighborhood are 1-story single-family residential homes, and typical parcel sizes vary from 2,500 square feet to 5,000 square feet. Most of the agricultural land is in large parcels of tens or hundreds of acres.

Morro Heights

The Morro Heights character area is a residential neighborhood located on a hill overlooking the bay near the south end of the city. The majority of buildings are one- or two-story wood-frame single-family residential homes. There are more irregular lots and home design variations in Morro Heights than in other residential areas in the city. Typical residential parcel sizes are between 5,000 square feet and 7,500 square feet. The south end of this neighborhood is planted with tall eucalyptus and cypress trees and includes a very large rock outcropping.

State Park and Estuary Area

The State Park and estuary character area is located at the southernmost end of the city. Morro Bay State Park covers most of this area and includes a golf course, campground, marina, boat launch, hiking trails, and other uses. The Morro Bay Natural History Museum is situated on a rocky outcropping overlooking the bay. The Inn at Morro Bay is located on the water, and Chorro Creek flows along the southern end of this neighborhood. This is the most wooded residential area of Morro Bay. Black Hill, the next Morro in the volcanic chain inland of Morro Rock, is in Morro Bay State Park. Residential development is extremely limited. The area is characterized by large eucalyptus and cypress trees, native habitat and wildlife, and hilly topography. The terrain along the water is relatively flat and this area is surrounded by Morro Bay Estuary.

7.2 REGULATORY SETTING

FEDERAL

There are no federal regulations relating to land use, community form, or coastal uses in Morro Bay.

STATE

California Planning Law and General Plan Guidelines

California planning law requires cities and counties to prepare and adopt a "comprehensive, long-range general plan" to guide development (Government Code Section 65300). To successfully guide long-range development, general plans require a complex set of analyses, comprehensive public outreach and input, and public policy covering a broad range of topics. State law also specifies the content of general plans. Current law requires preparation of the following seven mandated elements:

- land use
- housing
- open space
- safety
- circulation
- conservation
- noise

A general plan must contain development policies, diagrams, and text that describe objectives, principles, standards, and plan proposals. According to the Governor's Office of Planning and Research (OPR) *General Plan Guidelines* (last updated in 2003, currently undergoing a comprehensive update), topics from different elements may be combined, but all must be addressed within the general plan (OPR 2003).

California Coastal Act and California Coastal Commission

The California Coastal Act of 1976 (Coastal Act; Public Resources Code Section 30000) and the California Coastal Commission, the state's coastal protection and planning agency, were established by voter initiative to plan for and regulate new development, and create strong policies to protect public access to and along the shoreline.

The components of the Coastal Act most relevant to land use and development in the Coastal Zone in the planning area include:

- Chapter 3: Coastal Resources Planning and Management Policies – provides goals and objectives associated with California's coastal resources and associated public access, recreation, marine environment, land resources, development, and industrial development.
- Chapter 6: Implementation – establishes the process and procedure for the development and certification of LCPs in the Coastal Zone.
- Chapter 7: Development Controls – creates general provisions and procedures for development within the Coastal Zone to best achieve the goals and objectives identified in Chapter 3.

Ensuring that coastal-dependent uses are afforded locations and resources to succeed is one of the primary goals of the Coastal Act. Section 30255 requires that the City give priority within the Coastal Zone to uses that must be located near the coast to function. Coastal-dependent uses must be accommodated on or near the coast, and coastal-related uses must be accommodated near related coastal-dependent uses.

In addition to coastal-dependent and coastal-related uses, another priority for locations in the Coastal Zone is for visitor-serving uses such as retail, restaurants, and other attractions (Coastal Act Section 30222), and affordable overnight accommodations (Section 30213). Adequate parking, facilities, and accommodations must also be available and affordable to the general public.

The Coastal Act also places a priority on recreational boating harbors and facilities serving the commercial fishing. The Coastal Act calls for these types of facilities to be

protected and upgraded and, as much as possible, proposed recreational boating facilities shall not interfere with the needs of the commercial fishing industry (Section 30234).

The final Coastal Act requirement concerning priority uses in the Coastal Zone addresses the location and sustainable management of energy facilities. This includes both oil drilling activities (Section 30262) and emerging technologies, such as solar arrays and wave energy converters, to provide renewable energy (Section 30253(d)).

Requirements for Local Coastal Programs

To ensure maximum public access to the coast and public recreation areas, the Coastal Act directs each local government lying within the Coastal Zone to prepare an LCP consistent with Section 30501 of the Coastal Act, in consultation with the Coastal Commission and with public participation.

Until an LCP has been adopted by the local jurisdiction and certified compliant with the Coastal Act, the Coastal Commission retains permitting authority within the portion of a local jurisdiction located in the Coastal Zone. Section 30519(a) of the Coastal Act specifies that once an LCP has been developed for a municipality, development review authority is delegated to that local government.

Requirements for Coastal Development Permits

A coastal development permit is required for development in the Coastal Zone that results in changes to the density or intensity of the use of land, changes in water use, and/or impacts to coastal access. The general provisions for coastal development permits are described in Section 30600 of Chapter 7 of the Coastal Act. This requirement is waived for emergency projects that are deemed necessary to protect life or property (although the project applicant is required to obtain a permanent coastal development permit once emergency conditions have passed).

The development permit review process is described in ordinances developed by local governments, pursuant to Section 30519. Additionally, Section 30519(b) specifies that requirements for coastal permits do not apply to development proposed in certain areas. These areas are outlined in Section 30600(a)(2), which states that a permit shall not be required for development on tidelands, submerged lands, or public trust lands,

or for any development for which local permits are not usually required. Development in these areas is instead subject to review by the Coastal Commission. The requirements also do not apply to development by a port or harbor district if the LCP includes specific development plans for the area.

Industrial Development

Section 30260 states that "coastal-dependent industrial facilities" shall be encouraged as long as they are consistent with the values outlined in the Coastal Act, and there is minimization of any adverse impacts.

Requirements for Coastal Energy Facilities

Section 30413 explains that the Coastal Commission and the California Energy Commission (CEC) participate in decisions that are made regarding certain coastal areas that relate to energy resources. Section 30264 further explains that thermal electric generating power plants are permitted, as long as the specific site is deemed appropriate by the CEC.

REGIONAL AND LOCAL

San Luis Obispo Council of Governments (SLOCOG)

Regional Transportation Plan/Sustainable Communities Strategy

The SLOCOG *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) is the guiding document for the development of the countywide transportation system. The major goals of the RTP/SCS are to enhance quality of life and promote sustainability. The RTP/SCS aims to increase diversity in choices for how residents and visitors travel, as well as accessibility to employment, education, healthcare, and housing in the county. There is an emphasis on livable communities, public transit, and active transportation to promote active and healthy lifestyles. The plan addresses five subregions of the county: North Coast, North County, Central County, South County, and East County. Morro Bay is located in the North Coast subregion.

The RTP/SCS is broken down into chapters that address different aspects of the county's transportation network. These are as follows:

- *Sustainable Communities Strategy (SCS)*, which includes regional greenhouse gas emissions reduction targets, future land use scenarios and outputs, traffic model development, target development areas, and a climate adaptation strategy. SCS strategies relevant to Morro Bay include:
  - Additional transportation facilities to encourage multimodal transportation including bike lanes
  - Safe routes to schools improvements
  - Improvements to Highway 41
  - Maintenance of Highway 1
  - Pavement management
  - Maintenance or relocation of the Morro Bay community transfer center for regional bus service
  - Increasing bus service between Morro Bay and Cayucos and Morro Bay and Los Osos
  - Replacing bus and trolley fleets
  - Increasing transit ridership and hours of operation
  - Extension of the Harborwalk across Morro Creek and other trail improvements
  - Improvements to and added waterfront and harbor facilities
  - Protecting and maintaining safe, multimodal access to Morro Bay Harbor
  - Securing funding for breakwater and pier rehabilitation and maintenance and other access improvements

  - Supporting efforts to ensure that the channel between the Midway Marina and the main channel of Morro Bay remains open, and is maintained in a condition allowing free passage of commercial and recreational boats
  - Supporting efforts to protect and provide additional support facilities for the commercial fishing industry at Morro Bay

- *Maximizing Efficiency*, which outlines transportation challenges, demand management, emerging technologies, and goals, policies, and strategies.
- *Highways, Streets, and Roads*, which outlines regional corridors and their major needs and funding mechanisms.
- *Public Transportation*, which includes goals, policies, and strategies for regional public transit systems.
- *Active Transportation*, which prioritizes bikeway improvements and facility support.
- *Performance Measures*, which outlines goals, objectives, and performance measures for all modes of transit.
- *Financial Element*, which outlines issues, challenges, and strategies for future funding of transportation projects (SLOCOG 2015).

Local Area Formation Commission (LAFCO) Municipal Services Review

Each LAFCO is required to periodically update SOIs for all applicable jurisdictions in the county. LAFCOs use municipal services reviews (MSRs) as the primary tool to make these updates. OPR has prepared guidelines for performing these analyses and organizing the studies. The MSR serves to evaluate public services provided by the City and possible changes to the SOI, and must include written determinations of nine legislative factors in order to update the SOI:

1) Infrastructure needs and deficiencies
2) Growth and population
3) Financing constraints and opportunities

4) Cost avoidance opportunities
5) Opportunities for rate restructuring
6) Opportunities for shared facilities
7) Government structure options
8) Evaluation of management efficiencies
9) Local accountability and governance

The MSR then concludes with final recommendations for changes to the SOI, with a clear description of reasons for the determination.

The City of Morro Bay last updated its SOI in an MSR in October 2007. In the process of preparing the 2007 MSR, the City examined the existing SOI, which was established in 1981. The MSR analyzed the nine legislative factors and examined four study areas, as well as the existing SOI. Some of the major findings were stagnation of population growth and major revenue shortfalls. As a result, the City decided to add only one study area and a very small 6-acre portion of another study area, and decrease the size of its SOI significantly, resulting in a reduction of the SOI from 21,800 acres to approximately 100 acres (SLOLAFCO 2007).

San Luis Obispo County Air Pollution Control District (APD)

Strategic Action Plan

The San Luis Obispo Air Pollution Control District (APCD) Strategic Action Plan 2013-2017 was adopted by the SLOAPCD in 2012. The plan's vision is to ensure that the county retains its high air quality in order to promote healthy living and allow residents and visitors to enjoy the county's many aesthetic features. It includes an assessment of the SLOAPCD's assets and obstacles, future challenges, trends, and resources, and outlines strategic goals and performance measures to achieve these goals. The goals are aimed at achieving and maintaining attainment with national and state standards, as well as upholding local and regional goals for air quality. They include managing air contaminants, addressing public health impacts from land uses that impact air quality,

promoting community awareness and engagement in air quality maintenance, and monitoring and minimizing greenhouse gas emissions and impacts. Each goal includes a statement of its importance and a description of the consequences associated with failing to achieve the goal (SLOAPCD 2012).

City of Morro Bay

EXISTING LAND USE PLANS

The distribution of land use types in the planning area, such as residential, commercial, and open space, is regulated by the City's General Plan, Zoning Ordinance, and LCP.

General Plan

California Government Code Section 65300 describes the scope and authority of local jurisdictions to prepare, adopt, and amend general plans. Communities prepare general plans to guide the long-term physical development of the jurisdiction, and any land within the jurisdiction's SOI. At a minimum, the California Government Code requires general plans to address land use, circulation, housing, noise, conservation, open space, and safety issues.

The existing General Plan was adopted in 1988 and includes the following elements:

- Introduction
- Land Use, Open Space, and Conservation
- Circulation
- Visual Resources and Scenic Highway
- Safety
- Noise
- Housing
- Access and Recreation

The current Land Use, Open Space, and Conservation Elements are combined in the existing General Plan and organized into four major sections. Section A includes the authority and purpose of the Land Use Element. Section B describes existing conditions and issues. Section D (which occurs prior to Section C) describes the land use classifications. The land use map is provided following this section. Section C lists the Land Use Element objectives, policies, and programs, broken down by the categories provided in Section B.

General Plan Land Use Designations

The land use discussion of the general plan is required to describe and identify the general location and extent of uses of land for housing, business, industry, open space, public facilities, and categories for public or private uses of land. Figure 7.2 earlier in this chapter presents the map of the existing General Plan land use designations or allowed land uses. The land use element is also required to establish and define population density and building standards for each district and other territories covered by the plan. Visitor-serving accommodations generally are distributed in many areas of the City but concentrations do occur downtown and along the Embarcadero. The land use designations where accommodations occur include Open Space/Recreation, Medium Density Residential, Medium Density Residential/Neighborhood Commercial, Mixed Use, Visitor-Serving Commercial, Service Commercial, and Commercial, Mixed Uses (Harbor).

The land use portion of the element establishes land use categories to regulate use and density of development. Land uses in the planning area include residential, commercial, industrial, agriculture, environmentally sensitive habitat, harbor/navigational ways, mixed use, open space/recreation, and school. The General Plan also includes overlay designations, which apply along with the designation to further guide development. Overlay designations include Planned Development, Restricted, Park, School, Public/Institutional, and Interim Open Space. In some instances, land use designations may not be consistent with the actual land use of buildings at the site.

Residential

The Morro Bay General Plan includes five residential land use categories based on the following density levels:

- Limited Density: Up to 2 units per acre

- Low Density: Up to 4 units per acre
- Low/Medium Density: 4 to 7 units per acre
- Medium Density: 7 to 15 units per acre
- High Density: 15 to 27 units per acre

The majority of parcels designated for residential use in the General Plan are located in the northern and south-central portions of the planning area.

Commercial

In the General Plan, commercial land use categories are focused along Highway 1 and the Downtown area, and one small additional commercial area is located in the southern coastal area north of Fairbanks Point. Much of the commercial development in Morro Bay is visitor-serving, including hotels and inns, restaurants, and shops. Commercial uses are divided into five categories:

- Neighborhood Commercial: These areas are designated to provide for the daily needs of residents nearby. Uses in this designation include grocery and food stores, laundromats, pharmacies, and household stores.
- District Commercial: District commercial areas serve a regional commercial need such as shopping centers and major goods and services.
- Service Commercial: This designation includes commercial uses that are not compatible with residential neighborhoods, as well as light industrial and manufacturing uses, particularly those related to commercial fishing.
- Visitor Serving: The visitor-serving designation encourages tourist-oriented services and uses at easily accessible and destination locations, particularly along Highway 1.
- Commercial/Recreational Fishing: This category implements Measure D (adopted in June 1981), which protects the tidelands area between Beach Street and Target Rock by limiting development and use permits to fishing activities only.

Industrial

The General Plan provides two industrial categories to differentiate coastal-dependent industry from noncoastal-dependent industry.

- General Industrial: This designation includes light industry uses which are not compatible with residential or most commercial uses.
- Coastal-Dependent Industrial: This designation is specifically for uses which must be located near the coast to function, and are thereby given priority pursuant to the California Coastal Act. Examples include thermal power plants, seawater intake structures, discharge structures, tanker support facilities, and other similar uses.

Mariculture and Marine Research

Areas in this designation are considered suitable for the propagation and rearing of ocean fish and shellfish. Uses allowed in the Mariculture and Marine Research designation are coastal-dependent and include the buildings, tanks, raceways, and pipelines for breeding, hatching, grow-out, and related research and administrative offices and educational facilities.

Golf Course

Uses in the Golf Course designation include golf courses and related facilities such as club houses, pro shops, maintenance buildings, parking areas, and irrigation systems, along with other passive recreational areas.

Harbor/Navigational Ways

Harbor and Navigational Ways refer to areas of the city covered by seawater and include the mouth of the bay to the southern city limits. Uses are restricted to those which must be located on the water in order to function, such as mariculture, boating, fishing, habitat, and visitor-serving uses where public access is enhanced or facilitates coastal-dependent uses.

Open Space/Recreation

The Open Space/Recreation designation includes land which is not defined as environmentally sensitive habitat and is not intended to accommodate intensive recreational activities. Uses in this designation typically include athletic fields, campgrounds, horse stables, and other recreational uses.

Mixed Commercial/Harbor Dependent Uses

A mixture of visitor-serving commercial uses and harbor-dependent land uses are accommodated in this designation. Examples include sport fishing facilities, fish stores, gift shops, and recreational boat docks. Areas along The Embarcadero are designated Commercial/Harbor Dependent, and include restaurants and hotels as major uses.

Environmentally Sensitive Habitat

This designates protection areas which serve as habitat for rare or especially valuable plant or animal life that could be easily disturbed or degraded by human activity. Fishing, clamming, and hiking may be allowed in these areas.

Agriculture

The Agriculture designation provides for the identification and preservation of agricultural land for cultivating crops and raising animals. Lands which fit this designation include those with prime soils, prime agriculture land, land in existing agricultural use, land with agricultural potential, and land under Williamson Act contracts.

Mixed Use Areas

Mixed-use areas apply to certain parts of the city that generally include a mixture of residential, office, commercial, visitor-serving, and recreational lands.

Morro Bay Municipal Code – Title 17 (Zoning)

The City of Morro Bay Municipal Code, and in particular the Zoning Code (Title 17), implements the General Plan, particularly the Land Use Element. While General Plan designations are more generalized in nature, the Zoning Code and zoning districts provide specific controls on land use, density or intensity of development, and development standards to implement the City's General Plan goals and policies. Other parts of the Municipal Code, including Title 15 Harbor and Ocean Regulations, and Title 16 Subdivisions, are also instrumental in carrying out policies and programs in the General Plan.

The City has also prepared supplemental documents including a *Stormwater Management Guidance Manual for Low Impact Development* (LID) (City of Morro Bay 2014), and Green Building Incentive Program guidelines (City of Morro Bay n.d.). These are intended to comply with state water quality requirements, to enhance and protect public welfare and environmental quality, and to ensure that future development is consistent with the City's desire to create a more sustainable community.

Table 7.6 illustrates the relationship between General Plan land use designations and zones as identified in the Municipal Code.

Table 7.6
General Plan Land Use/Zoning Consistency

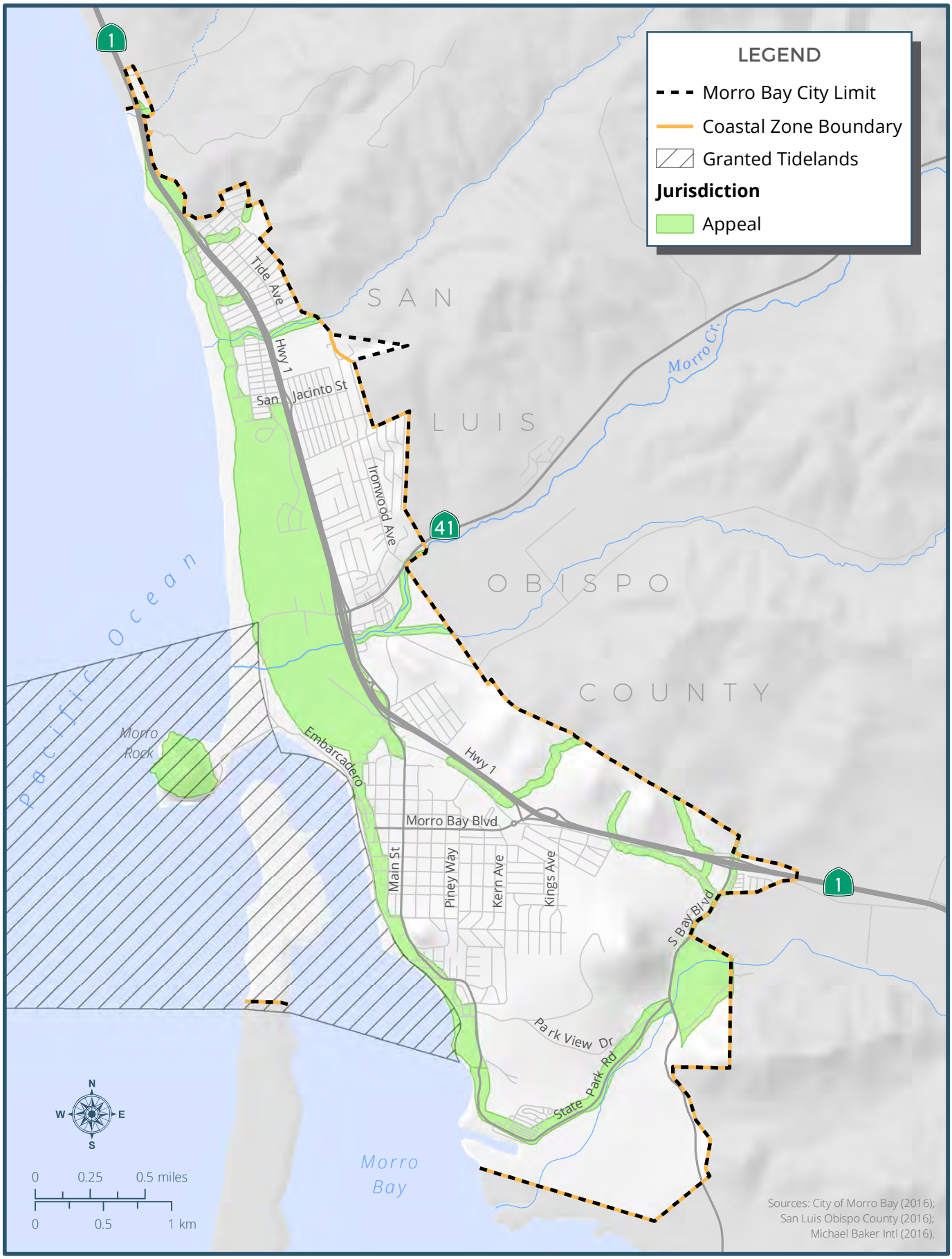
General Plan Designation	Consistent Zone
Residential	
Low Density	R-A, R-1
Low/Medium Density	R-1, R-2
Medium Density	R-1, R-2
High Density	R-3, R-4
Commercial	
Neighborhood	C-2, MCR
District	C-1, C-2
Service	C-2, M-1
Visitor Serving	C-VS
Commercial/Recreational Fishing	CF
Industrial	
General (Light)	M-1
Coastal Development	M-2
Other	
Harbor/Navigational Ways	H
Open Space/Recreation	OA-1, OA-2
Mixed Uses (Harbor)	MCR, H
Mixed Use	MCR
Agriculture	AG
Environmentally Sensitive Habitat	ESH
Limited Density Residential/Golf Course	R-A, GC
Mariculture and Marine Research/Limited Residential/Golf Course	MRR, R-A, GC

Local Coastal Program and Coastal Land Use Plan

The Morro Bay LCP and Coastal Land Use Plan (LUP) was certified on May 20, 1982, and the General Plan was adopted in 1988 (City of Morro Bay 1982; City of Morro Bay 1988). The LCP has since been updated periodically, with a comprehensive update currently occurring in tandem with the General Plan update. These documents govern the coastal zone in the City to implement the California Coastal Act. The major topics addressed in the City of Morro Bay's LUP, pursuant to the Coastal Act, are:

- Shoreline access and recreation
- Archaeology
- Energy (industrial development)
- Commercial fishing
- Environmentally sensitive habitat
- Visual resources and neighborhood character
- Visitor-serving facilities
- Public works
- Agriculture
- Hazards
- Diking, dredging, and filling

Each topics has equal importance in the LUP, and has been considered in the City's development plans.



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Plan MORRO BAY

FIGURE 7.13

Coastal Appeal Jurisdiction and Granted Tidelands

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Within the Coastal Zone, the City is responsible for an area designated "state tidelands trust" (under the jurisdiction of the State Lands Commission). This area is located along The Embarcadero from Fairbanks Point at the south to a pump station at the north, and occurs partially on land and partially in the ocean (Figure 7.13). On land, the designation extends from the shoreline to the centerline of The Embarcadero. These lands are owned by the City and managed by the Harbor Department. The Harbor Department leases these lands to lessees with visitor-serving uses consistent with the Coastal Act (Endersby 2016).

The Coastal Commission has the ability to appeal locally approved development projects in the "coastal appeal jurisdiction." This appeal process ensures that statewide interests in coastal resources are protected and balanced with local interests.

Interim Residential Design Guidelines

In July 2015, the City adopted interim residential design guidelines. The guidelines address the following design issues:

- Scale and mass
- Surface articulation
- Building orientation
- Garage placement and design
- Building materials
- Architectural elements
- Additions to existing homes
- Privacy
- Landscaping

The interim design guidelines were developed to provide objective guidelines for use in reviewing proposed residential projects to achieve consistency with the look and feel of the existing neighborhood (City of Morro Bay 2015a).

Other Applicable City Plans

The City of Morro Bay has adopted several specific and area plans to provide further development guidance for distinctive areas that require more detailed or considerate regulation. Figure 7.14 shows the boundaries of each plan area listed below.

Beach Street Specific Plan

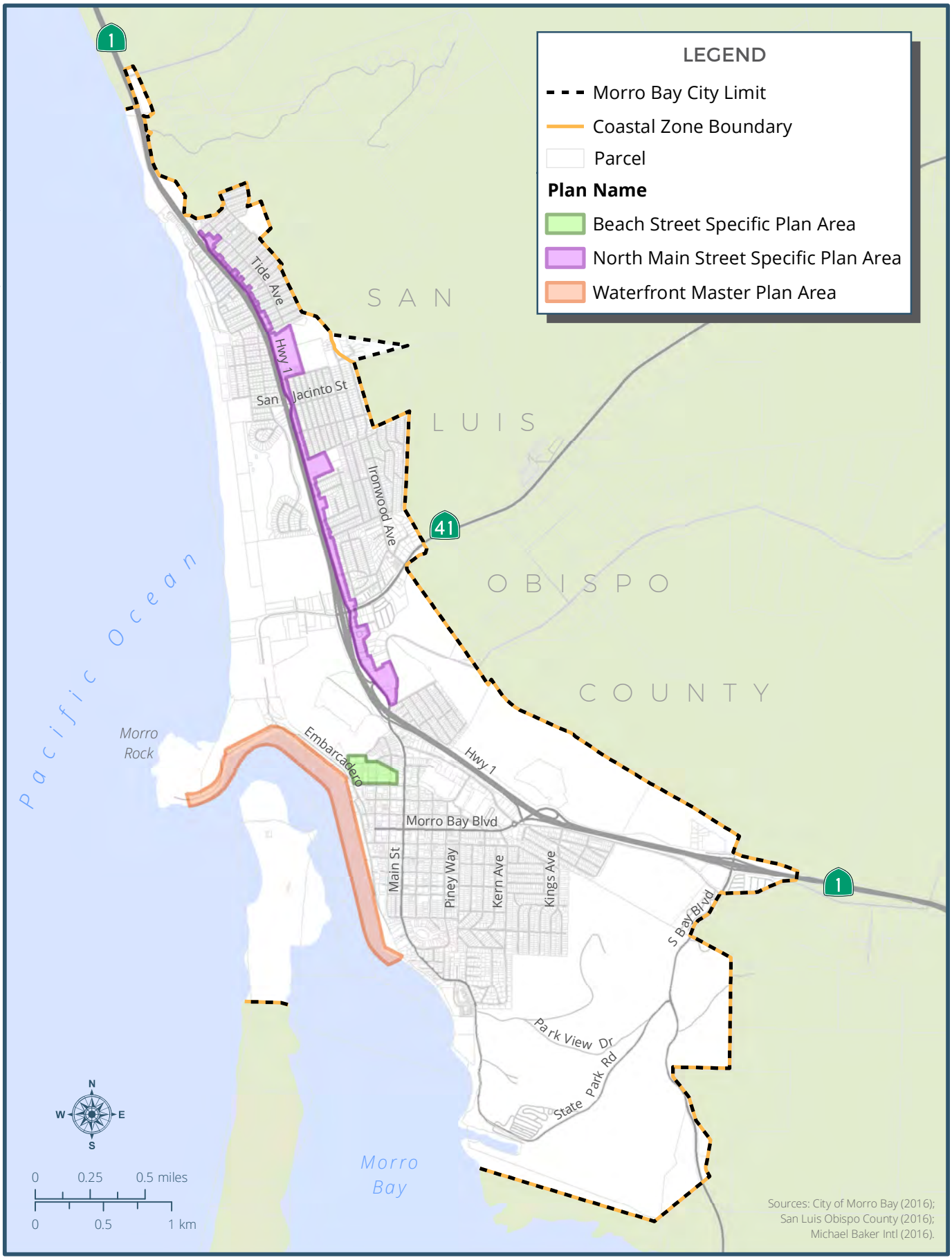
The Beach Street Specific Plan was adopted in 1986. The plan area, which is divided into seven subareas, includes the area north of Beach Street approximately from Front Street to halfway between Morro Street and Main Street. The plan primarily addresses street standards, overlook and bluff top access, and drainage for the area, and includes uses and design standards intended to protect the visual and physical integrity of the bluffs and coast as well as to give priority to visitor-serving and coastal uses. Area F also includes the Cypress Morro Bay RV and Mobile Home Park, which provides for higher densities than are usually permitted in the R-2 zone, subject to pre-existing conditions and a conditional use permit.

North Main Street Management Plan

The North Main Street Management Plan was adopted in 1989. The plan area covers the 2-mile length of properties fronting Main Street in North Morro Bay. It consists of local- and visitor-serving commercial uses at the southern end, and transitions into residential neighborhoods at the northern end. The management plan divides the area into four sections, and allows for a mixed commercial and residential (MCR) zone. It also limits building height, requires landscaped yard setbacks for commercial development, controls negative effects of commercial businesses on neighboring residential areas, and provides street improvements.

Waterfront Master Plan

Morro Bay adopted the Waterfront Master Plan in 1996. It covers four areas: Morro Rock/Coleman Park, T-Piers/Fisherman's Work Area, Embarcadero Visitor Area, and Tidelands Park. This plan addresses the design of The Embarcadero corridor, public transit, harbor facilities, nature observation and information areas, and access to the waterfront.



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Plan MORRO BAY

FIGURE 7.14

Plan Areas

Page 2

Morro Bay Ballot Initiatives

Morro Bay voters can adopt ballot initiatives that result in additional land use controls that impact policies in the General Plan, and therefore affect the future direction of City growth. Changes to these land use controls enacted by ballot measures typically require a vote of the people to amend, modify, or repeal the original action. Voters have approved multiple ballot measures, summarized below, that are relevant to future land use planning.

Measure A, 1972 (Ordinance No. 103)

Measure A prohibits construction in the area located between Morro Bay Power Plant and Morro Rock, as well as in the area between Morro Creek and the bay. Any proposed development in these areas requires approval by a majority vote.

Measure B, 1980 (Ordinance No. 197)

Measure B prohibits annexations of land into the City of Morro Bay, unless approved by a majority vote, or unless the annexed land is dedicated to permanent public use.

Measure D, 1981 (Ordinance No. 207)

Measure D restricts development on state-owned tidelands between Beach Street and Target Rock. Only development serving primarily commercial or recreational fishing is permitted.

Measure F, 1984 (Ordinance No. 266)

Measure F establishes a growth management procedure in Morro Bay, intended to facilitate fair distribution of water resources, protect small town character, and preserve existing open space that surrounds the city. The measure established a Water Management Plan that allocates water resources to development each year, thereby limiting both annual and total growth. The ordinance imposes the following standards:

- Limit the annual allocation of building permits by placing a limit of 12,200 on City population. In order to exceed this number, additional water resources must be

made available, and a majority vote of the people in favor of the growth must occur at a regular or special election.[1]

- Determine the appropriate number of building permits to allocate for multi-unit and single-family residential units by January 15 of each calendar year, starting with a baseline 70-unit ceiling, which was imposed in 1985.
- Each year, commercial and industrial building permits shall not require more than 130 percent of water allocated to residential units that year.
- Impose Coastal Act priorities for water allocation as advised by the Coastal Commission, and review periodically.
- Only award building permits to proposals that meet the definition of infill development. Resolution No. 26-84 defines "infill" as "development of vacant existing lots within existing developed areas of the City. An infill area is to be characterized as having supporting public infrastructure (i.e., utilities and secondary thoroughfares or collector street system)." The resolution provides the following standards for identifying a parcel in a developed area:
    - A vacant lot shall be considered to be in a developed area if it is adjacent to existing developed parcels, on at least two sides for rectangular lots or at least 50 percent of the perimeter for irregularly shaped lots. Any property lines coincident with the City limit shall not be considered in this calculation. Any property line adjacent to a park, recreation area, or school shall be considered adjacent to development.
    - Notwithstanding the standards above, any lot that was legally created prior to 1984 and which is 20,000 square feet or less shall be considered infill.
    - So long as an area is currently served by water and sewer mains, utilities shall be considered present for the purposes of this infill definition.

[1] Per Measure F, if the population is projected to exceed 12,200 in the General Plan population projections, no further residential building will be permitted after a population of 12,200 has been reached unless an increase in allowed residential growth has been approved by a majority vote at a regular or special election.

  - When a water management program is approved and implemented and/or additional water sources are available, the criteria for infill will be reconsidered.
  - No subdivision which would require more than 20 percent of the annual water allotment for residential purposes shall be considered infill.

- Only amend Land Use Element Policies 6.01 through 6.08 (and any zoning regulations that implement those policies) aimed at preserving open space and agricultural land within city limits by majority vote of the people at a regular or special election.
- Exempt nonprofit public facilities supported by public funds from limitations within the ordinance (City of Morro Bay 2016).

Measure A, 1986 (Ordinance No. 297)

Measure A is intended to prevent Morro Bay from becoming a base for offshore oil production, such as an oil port or personnel boat center.

Measure D, 1988 (Ordinance No. 341)

Measure D was intended to facilitate the development of the Downtown Albertson's Shopping Center by rezoning the property on Quintana Road.

Measure H, 1990 (Ordinance No. 389)

Measure H limits the zones and uses at the "Tri-W" property, located at the end of Morro Bay Boulevard at Highway 1. It allows commercial uses on only 13 acres of the 30-acre property in question, establishes the location of the commercial uses to be "generally located adjacent to Highway 1 and Morro Bay Boulevard," and prohibits visitor-serving commercial uses on the property.

Measure I, 1990 (Ordinance No. 390)

Measure I decreases water consumption by eliminating allocations from the pipeline program, and restricting allocations made through the off-site retrofit program.

Measure G, 1991 (Ordinance No. 411)

Measure G mandates the city's participation in constructing and supplying water to the Coastal Branch of the State Water Project. It requires a request for a minimum of 1,313 acre feet per year. Although requests to the State Water Project are rarely met in full, this may create a conflict if community members and civic leaders elect to reduce dependence on water from the State Water Project.

7.3 PRIORITY FINDINGS

BUILDING STOCK

Age and Condition of Buildings

A significant number of buildings in Morro Bay were built before 1970, and are therefore beginning to need maintenance and renovation. In addition, Morro Bay has limited land available for future growth, so ensuring that existing buildings are being maintained and used to their full potential is essential. In order to protect Morro Bay's existing community characteristics, it is important to ensure that maintenance and renovation activities of existing buildings are compatible with their neighborhoods. The City can also encourage retrofits to existing buildings, rather than demolishing them and constructing new ones.

Building Size

Many of the vacant residential lots in the city are smaller than 5,000 square feet, making them hard to develop with existing zoning standards. It is important to build upon programs in the Housing Element to ensure small lots are developable and contribute to achieving desired neighborhood character.

VISUAL CHARACTER AND RESOURCES

As change occurs in Morro Bay, there is potential for conflict between existing visual character and resources and new development. This will need to be carefully considered for both CEQA purposes and the continuing culture of the city.

COMMUNITY CHARACTER

Neighborhood Compatibility

The current General Plan endorses preservation of neighborhood character, but lacks specificity as to what criteria are to be used or how such criteria might be applied to achieve this goal. Additionally, community desires about housing size and type and the kinds of development appropriate for the various community character areas may have changed since adoption of the current plan. Gathering, reviewing, and incorporating input about neighborhood and community character will ensure that the updated plans and regulations reflect the vision that Morro Bay residents have for the future living environment of the city. In some areas of the city, land use patterns have also evolved in a manner that appears to be at odds with those envisioned by the current General Plan and Zoning Ordinance. In these areas, special care will be needed to ensure that *Plan Morro Bay* is consistent with current physical, social, and economic realities and with the community's vision in a manner that will avoid inconsistency in the future.

Views

Many scenic views exist in Morro Bay, including those of the estuary, rock, bay, and hills to the north, south, and east of the city. Continued and expanded protection of these views is important to preserving Morro Bay's natural beauty and community character.

COMMERCIAL FISHING

Commercial fishing in Morro Bay continues to steadily recover from the downturn in the industry. Continuing to support economic viability and infrastructure for the city's commercial fishing industry is critical to its sustainability.

LOW-COST VISITOR-SERVING ACCOMMODATIONS

Morro Bay currently has a good selection of low-cost visitor-serving accommodations. High land costs and other economic barriers could impact this supply in the future. The City may want to continue incentivizing and prioritizing low-cost visitor-serving accommodations in the Coastal Zone.

GROWTH MANAGEMENT

Morro Bay has the option of growing the community's population, through annexing new land for development, increasing density on existing land in the community, or a combination of both strategies. However, any population growth exceeding 12,200 people is subject to Measure F (Ordinance 266), which requires that growth beyond that number be approved by a majority vote of the citizens of Morro Bay and that there be demonstrable available water resources to support the increased population. Additional development potential due to changes in land use designations is one possible outcome of *Plan Morro Bay*. Should the community wish to grow beyond the threshold, the limitations in Ordinance 266 will need to be reconsidered.

8.0 Natural and Environmental Hazards

Plan MORRO BAY

8.0 NATURAL AND ENVIRONMENTAL HAZARDS

This baseline assessment identifies the natural and human-caused hazards that pose a reasonable threat within the planning area, and may affect residents, visitors, and businesses of the community. It summarizes the nature of the hazards and the current level of risk, any past hazard events, and how the risk of hazards may change under future conditions.

8.1 EXISTING CONDITIONS

SEISMIC AND GEOLOGIC HAZARDS

Seismic and geologic hazards include ground shaking, fault rupture, liquefaction, and landslides. Ground shaking and fault rupture are direct consequences of earthquakes, while liquefaction and landslides may be caused either by earthquakes or by other events.

Earthquakes are caused by the movement of large pieces of the Earth's crust, known as tectonic plates. As tectonic plates move against one another they can become stuck together, causing stress to build up between them. Eventually, the stress becomes high enough to overcome the friction between the plates, causing the plates to suddenly slip past each other. The vibrations resulting from this sudden movement is what we perceive as an earthquake.

Earthquakes occur along boundaries called fault lines. Fault lines can be the actual border between two plates, but they may also be borders between two sections of a single plate, created by the repeated process of accumulation and release. California sits on both the Pacific and North American plates. The border between the two is the San Andreas Fault, although other fault lines are present throughout much of the state.

The strength of an earthquake can be measured using either the moment magnitude scale (MMS, denoted as M_w or simply M) or the modified Mercalli intensity scale. The MMS is a replacement for the Richter scale, which is still often referred to but is no longer actively used, as it is not reliable when measuring large earthquakes (USGS 2014a). The

weakest earthquakes measured by the MMS start at 1.0 and the numbers increase with the strength of the earthquake, with the strongest recorded earthquake measuring 9.5 on the MMS (USGS 2015a). The logarithmic nature of the MMS means that the difference in the strength of two earthquakes is much greater than the difference in their measurements would suggest. For example, a 6.0 M_w earthquake is 1,000 times stronger than a 4.0 M_w earthquake, and about 1.4 times as strong as a 5.9 M_w event.

The modified Mercalli intensity scale is not a quantitative measurement; rather, it is based on the damage caused by the earthquake and how it is perceived. The scale ranges from I (instrumental, rarely felt by people) to XII (catastrophic, total damage, distortion of line of sight). Because the Mercalli scale measures earthquakes differently than the MMS, when comparing earthquakes it is possible for one to have a higher M_w, and another to have a higher Mercalli intensity. A general comparison between the two scales is provided in Table 8.1.

Table 8.1
Comparison of Moment Magnitude Scale and Modified Mercalli Intensity Scale

Moment Magnitude Scale	Modified Mercalli Intensity Scale
1.0 to 3.0	I
3.0 to 3.9	II to III
4.0 to 4.9	IV to V
5.0 to 5.9	VI to VII
6.0 to 6.9	VII to IX
7.0 and greater	VIII and greater

Source: USGS 2014b

Ground shaking is generally the most dangerous of seismic and geologic hazards. Shaking can knock over furniture, break windows, and topple trees and utility lines. In stronger earthquakes, the shaking can be strong enough to significantly damage or destroy buildings, sever roadways and pipes, and collapse bridges. Ground shaking is often strongest closest to the site of the earthquake and decreases with distance, although the severity of ground shaking depends in part on local geology, and sites farther from an earthquake may experience more shaking than locations closer to the event.

Fault rupture is the actual movement of the ground surface along a fault line when the plates slip past each other. Depending on the type of fault, the movement may be vertical, horizontal, or both. The damage can be severe, as any building or structure that

straddles the fault is effectively pulled in two directions at once. However, the damage area from fault rupture is generally limited to the area of the fault itself. Some earthquakes can occur without causing fault rupture. Such earthquakes are usually small, but some can be much more substantial, such as the 2003 San Simeon earthquake. These events are known as "blind thrust earthquakes."

Liquefaction occurs when loosely packed sandy or silty soil saturated with water is shaken hard enough for the soil to lose its strength or stiffness, becoming more like a liquid. The soil no longer has the solidness to support buildings and structures and thus anything built on or in the soil (e.g., pipelines) may tilt, collapse, or otherwise be damaged. Soil composition and the height of the groundwater table generally determine liquefaction risk.

Landslides and related events such as rockslides or debris flows occur when the soils comprising a slope become unstable and slide down toward the base. Structures built on or in the moving soil can be damaged, as can any structure in the slide's path. Landslides may occur quickly, or they may unfold over a long period of time. They can be triggered by ground shaking and fault rupture, or by moisture resulting from intense rainfall.

Current Seismic and Geologic Hazard Risks

A number of fault lines capable of causing earthquakes that could potentially have a significant effect on the planning area run near Morro Bay.[1] They are described below and the closest faults (Los Osos, Hosgri, Oceanic-West Huasna, and Rinconada faults) are illustrated in Figure 8.1.

- The Los Osos fault begins about 7 miles offshore from Morro Bay and runs southeast to a point inland from Arroyo Grande. It is a relatively low-risk fault, as scientists estimate that it has a 0.25% to 0.3% chance of causing a 6.7 M_W earthquake or greater within the next 30 years (City of Morro Bay 2006; USGS 2015b).

[1] The probabilities of earthquake events presented here refer only to earthquakes occurring from natural processes. They do not include the possibilities of earthquakes resulting from human activities that involve injecting water or other liquid into the earth, e.g., hydraulic fracturing ("fracking"), which has been linked to earthquake activity (Goebel et al. 2016).

- The Hosgri fault is a lengthy fault that runs mostly offshore from Big Sur south to Point Arguello, although it comes onshore between Ragged Point and San Simeon. It is considered an active fault. Most of the fault has around a 1.15% to 1.3% chance of causing a 6.7 M_w or greater earthquake in the next 30 years, and a 1.0% to 1.2% chance of a 7.0 M_w or greater event over the same time period (City of Morro Bay 2006; USGS 2015b).

- The Oceanic-West Huasna fault begins north of San Simeon and runs southeast along the base of the Santa Lucia Mountains to the Santa Maria River. The risk of this fault causing a 6.7 M_w earthquake or greater in the next 30 years varies from around 0.5% to 0.8% at various points along the fault (USGS 2015b).

- The Rinconada fault runs from west of King City southeast to Santa Margarita Lake. Scientists consider it a potentially active fault, and estimate that it has a 0.35% to 0.4% chance of causing a 6.7 M_w or greater earthquake in the next 30 years (City of Morro Bay 2006; USGS 2015b).

- The East Huasna fault runs from Santa Margarita Lake (at the terminus of the Rinconada Fault) southeast to Zaca Lake in Santa Barbara County. It is considered potentially active and the odds of this fault causing a significant earthquake are quite low, as scientists give it only a 0.06% chance of causing a 6.7 M_w or greater earthquake in the next 30 years (City of Morro Bay 2006; USGS 2015b).

- The La Panza fault runs southeast from Creston to the Santa Maria River. It has a low risk of causing a substantial earthquake, with around a 0.08% to 0.14% chance of resulting in a 6.7 M_w or greater earthquake in the next 30 years, and is considered a potentially active fault (City of Morro Bay 2006; USGS 2015b).

- The San Andreas fault, the most well-known of California's fault lines, runs from Cape Mendocino in Northern California to the Salton Sea southeast of Palm Springs. Part of the fault line runs through eastern San Luis Obispo County in the Carrizo Plain, approximately 40 miles from Morro Bay at its closest point. The size and geologic characteristics of this fault make it one of the highest risk faults in California. The sections in San Luis Obispo County have approximately a 17% to 20% chance of causing a 6.7 M_w or greater earthquake in the next 30 years, and approximately a 6% chance of triggering an 8.0 M_w or greater event in the same time period (USGS 2015b).

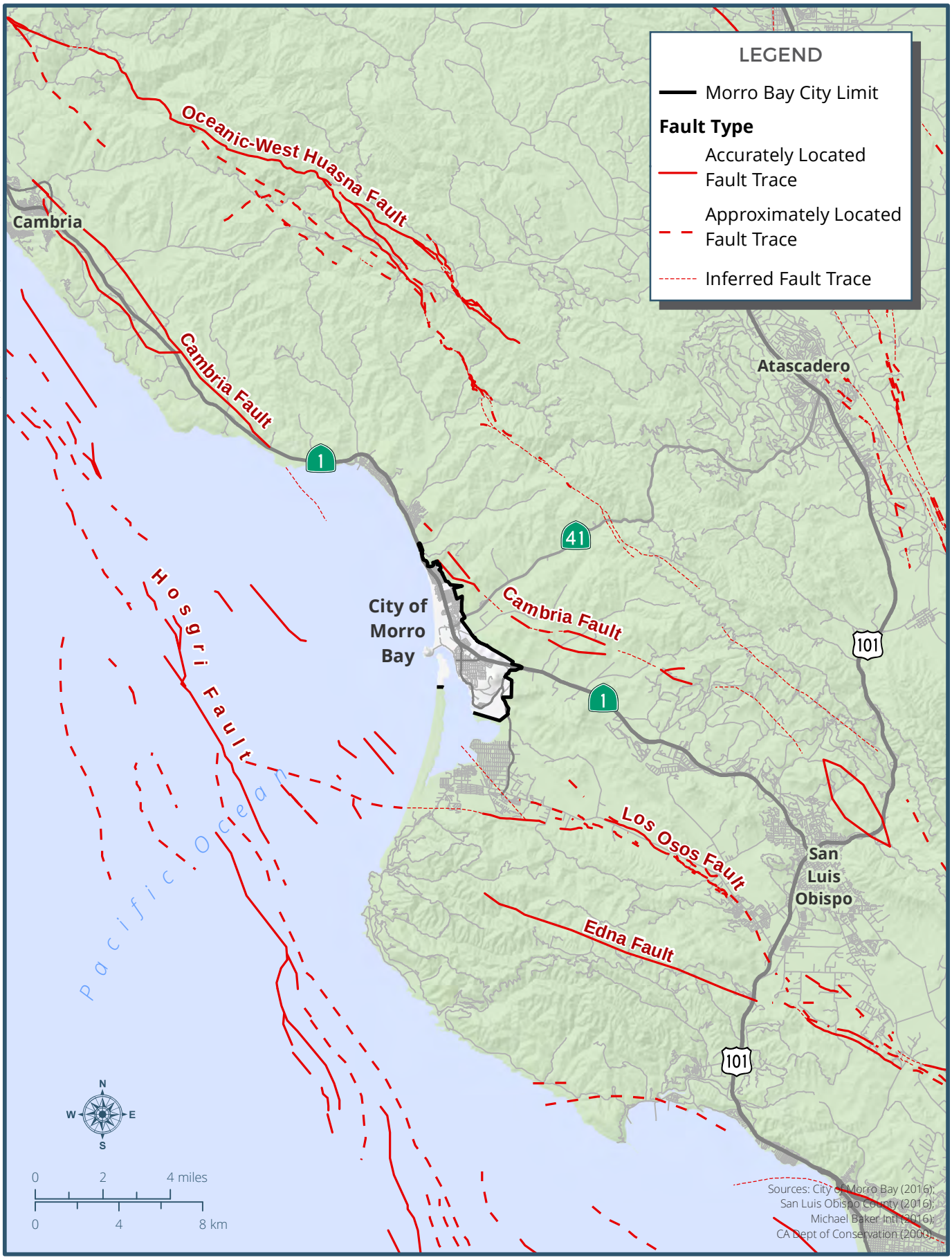

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FIGURE 8.1

Regional Fault Lines

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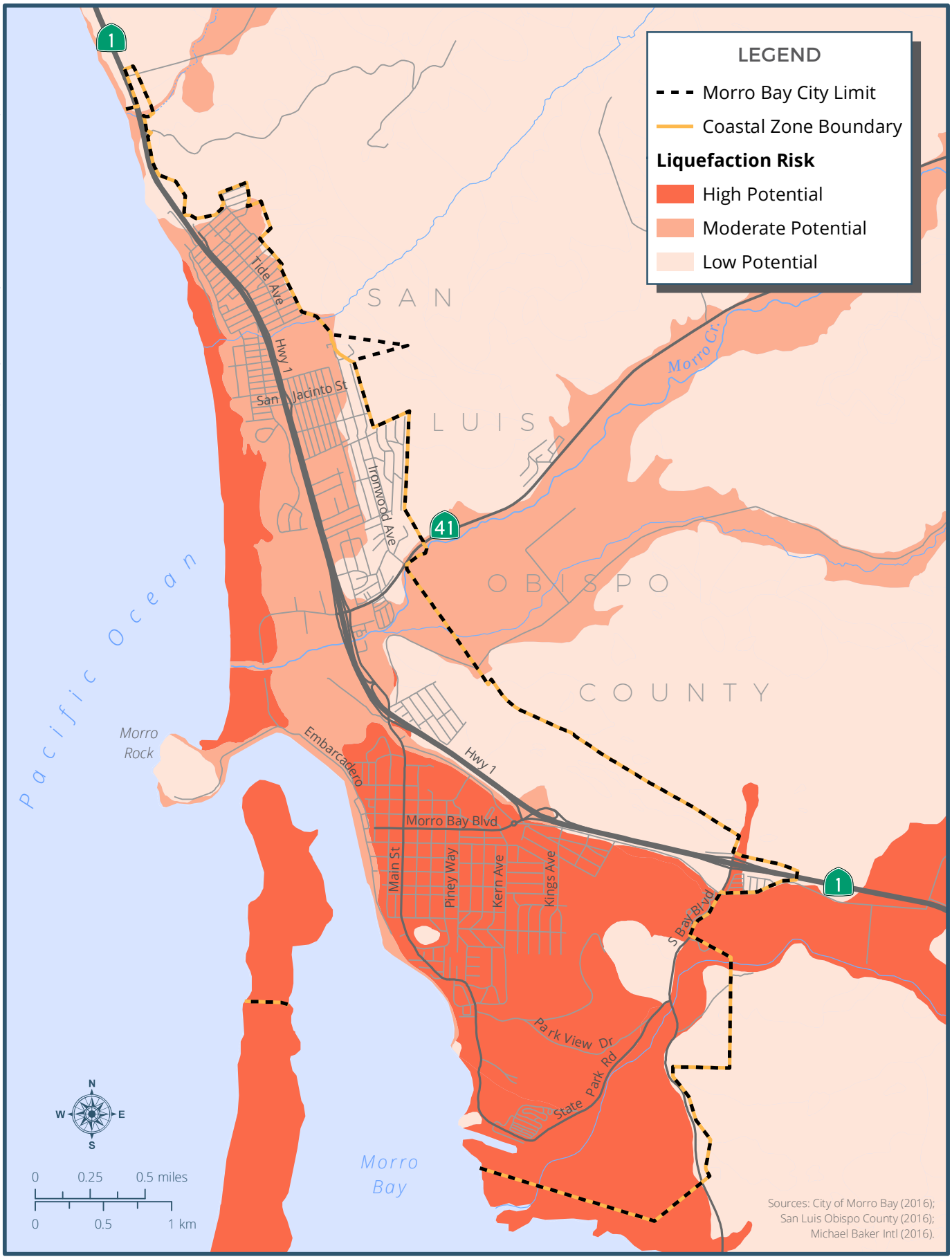

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FIGURE 8.2

Liquefaction Susceptibility

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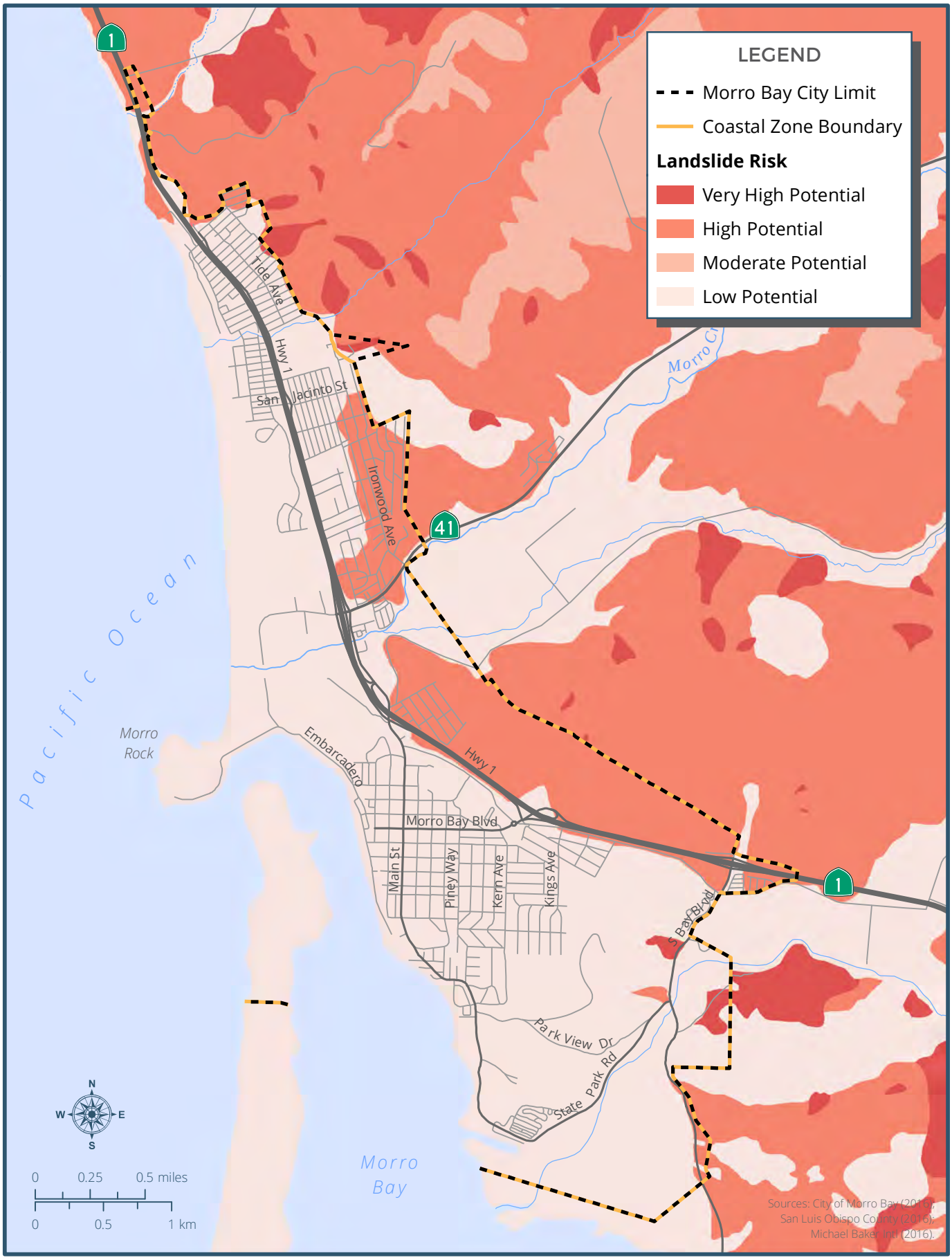

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FIGURE 8.3

Landslide Susceptibility

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The above is not a complete list of all faults present near Morro Bay; some faults may not be well-studied or not deemed important enough to appear on lists of key area faults. For example, the Cambria fault is not considered likely to produce a substantive earthquake and so it is not listed, although it is still capable of generating earthquakes that could cause damage in Morro Bay. Other faults not included in this list, including faults outside of the Morro Bay region, may be capable of causing substantial earthquakes that may affect the community. Additionally, there may be faults in the area that are yet unknown, but could cause significant ground shaking or fault rupture.

Large parts of Morro Bay sit atop sandy soil, originally either from the beach or deposited as sediment from local creeks. These types of soils have an elevated risk of liquefaction due to their relatively loose, granular structure. This includes parts of the community where the bay has been filled in, such as in places along the Embarcadero (City of Morro Bay 2006). Figure 8.2 shows the liquefaction hazard zones in Morro Bay.

While landslides can occur on most slopes, they are more likely on slopes that are already unstable. In Morro Bay, these landslide-prone slopes are generally located east of Highway 1 and north of State Route (SR) 41 and in some cases include existing residential uses. Landslides along these slopes are particularly frequent in areas with Franciscan Complex geology, which contain numerous varieties of rocks that have been folded into complicated patterns by fault activity (City of Morro Bay 2006). Figure 8.3 shows the landslide hazard zones in Morro Bay.

Historic Seismic and Geologic Hazard Events

The most substantial earthquake to occur in the vicinity of Morro Bay was the San Simeon earthquake, which occurred on December 22, 2003. While the event is usually associated with the Oceanic-West Huasna fault, the earthquake's characteristics were not consistent with the expected behavior of that fault (CISN 2003). The epicenter of the earthquake was about 21 miles northwest of Morro Bay, and was felt as far away as San Francisco and Los Angeles. It measured 6.5 M_w on the MMS and had a Mercalli intensity of VIII (Severe). Most of the damage occurred in Paso Robles, where two people were killed when an unreinforced masonry building collapsed. Morro Bay experienced some building damage and small fires as a result of the earthquake (USGS 2012).

San Luis Obispo County experienced two substantial earthquakes in 1952. The Arvin-Tehachapi earthquake, which occurred on July 21 south of Bakersfield, measured 7.3 M_w on the MMS. It killed 12 people and caused an estimated $60 million in damage (USGS 2014c). It was felt throughout San Luis Obispo County, including in Morro Bay (City of Morro Bay 2006) and caused damage as far away as San Diego and Las Vegas (USGS 2014c). Another earthquake, the Bryson earthquake, occurred in northern San Luis Obispo County. It measured 6.2 M_w on the MMS and had a Mercalli intensity of VI (Strong), and was felt in Morro Bay and other parts of the western county. Smaller earthquakes in the region include the 1830 San Luis Obispo earthquake, measuring an estimated 5.1 M_w, and the 1916 5.1 M_w Avila Beach earthquake. Morro Bay also felt the 1906 San Francisco earthquake, although no damage in the area was reported (City of Morro Bay 2006).

The areas east of Highway 1 and north of SR 41, as previously discussed, are highly prone to landslides. Much of this land is designated as having a high potential for landslides, due to the steep slopes (sometimes 50 percent slopes or more) and presence of Franciscan Complex rocks. Some parts of these areas are designated as very high risk, due to the presence of historical landslide deposits. West of Highway 1, the landslide risk is substantially lower, although there are a few areas of elevated landslide risk around Black Hill and Cerro Carrillo (County of San Luis Obispo 1999).

WILDFIRE

Wildfires are a regular feature of the ecosystem in large parts of California and many of the state's native species have evolved to cope with the natural fire cycle, although increasing development into wildfire-prone areas makes wildfires a hazard of concern. Wildfires that burn exclusively in natural areas generally pose little risk to lives or property, although the smoke from such fires may cause respiratory problems for people nearby. Wildland-urban interface (WUI) fires are much more of a hazard, as they threaten areas located near the border between urban and wild lands. Common causes of wildfires include accidents, sparks from power lines, lightning, and arson. Wildfire risk is dependent on the amount and type of vegetation, weather, and local topography, among other factors. In Morro Bay, chaparral vegetation is considered at highest risk for fire. Foothill woodland, juniper/oak woodland, and north coast scrub vegetation are also at an elevated risk (City of Morro Bay 2006).

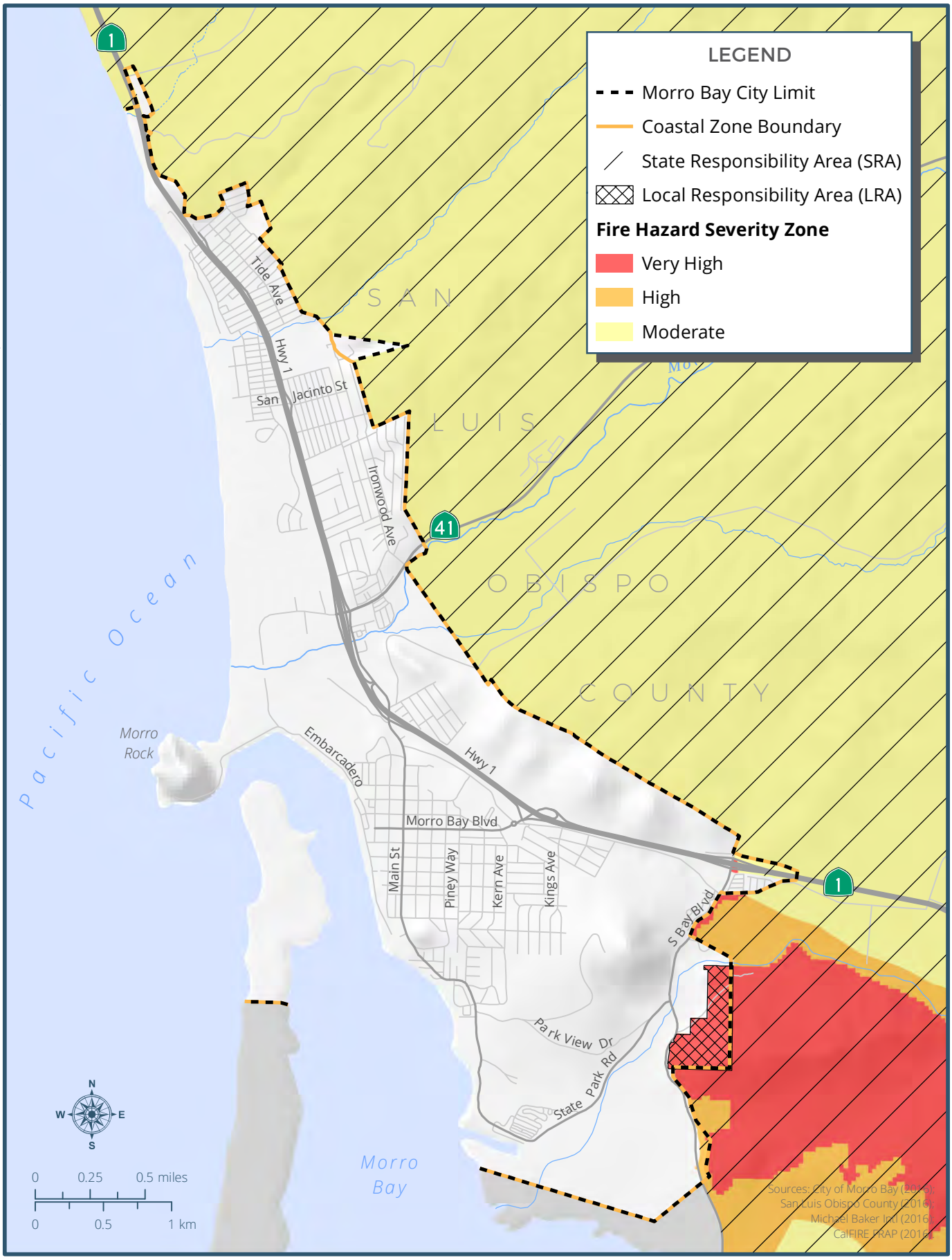

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FIGURE 8.4

Fire Hazard Severity Zones and Responsibility Areas

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The state of California categorizes fire hazard zones (FHZs) as Very High, High, or Moderate. These categories do not necessarily correspond to a specific numeric risk of wildfire frequency or severity, but rather represent a combination of numerous factors. It is possible for significant wildfires to occur in in Moderate FHZs, although such conflagrations are less likely or expected to be somewhat less dangerous.

Current Wildfire Risk

Areas of elevated wildfire risk in Morro Bay lie along the southeastern edge of the community, near Black Hill and Cerro Carrillo. Large parts of this area are designated as a Very High FHZ, and other sections are designated as a High FHZ. All other land in and around Morro Bay is considered a Moderate FHZ, or is not considered at any substantive risk from wildfires. However, areas designated as Moderate FHZ are still susceptible to wildfires to some degree. The proximity of some developments to potential wildfire area and the lack of any wildfire-resistant buffer zone in some areas may increase the wildfire risk in the community. In surrounding areas, there are Very High FHZs along the crest of the Santa Lucia Mountains (approximately 5 miles northeast of Morro Bay) and at Montano de Oro (approximately 6 miles south) (Cal Fire 2007, 2009). Figure 8.4 identifies the FHZs in and adjacent to Morro Bay (note that the State Responsibility Areas identified in Figure 8.4 correspond to areas where the state of California holds primary financial responsibility of preventing and suppressing fires; since Morro Bay is responsible for fire prevention and suppression within its city limits, it is considered a Local Responsibility Area).

Historic Wildfires

Most wildfires in San Luis Obispo County occur in the interior parts of the county, especially the northern and central portions. However, there have been occasional substantial wildfires around Morro Bay. The 1994 Highway 41 fire burned approximately 49,000 acres in the mountains behind Morro Bay, destroying 42 homes and 61 other structures, although Morro Bay itself was not directly threatened (City of Morro Bay 2006).

FLOOD

Floods are events in which normally dry land is partially or completely covered with water. Floods can occur in a number of ways. The water level in a body of water such as a lake or creek can rise higher than the water body's banks, causing it to overflow into nearby areas. Heavy precipitation can also overwhelm the ability of soil to absorb water or storm drains to carry it away, causing water to build up on the surface (ponding). Additionally, flooding may occur as the result of wave run-up. Flooding may also occur from infrastructure failure, such as a burst water tank or pipe. Coastal flooding, which occurs because of exceptionally high tides, storm surges, sea level rise, or some combination of these events, is discussed in the Coastal Hazards section below.

Floods are usually described by their frequency. A 100-year flood is one that has a 1 percent (one in 100) chance of occurring in any given year, while a 500-year flood is one that has a 0.2 percent (one in 500) chance of occurring in an average year. This does not necessarily mean that a 100-year or 500-year flood will only occur once every 100 or 500 years, as it is possible to have multiple such events occur frequently. The severity of flooding that constitutes a 100-year or 500-year flood event may change over time. The area at risk of flooding from these types of events is known as the flood plain.

Current Flood Risk

In Morro Bay, the floods that are of greatest concern occur as a result of heavy precipitation from meteorological phenomena called atmospheric rivers (ARs). These are narrow bands of warm, very moist air that often bring heavy precipitation. ARs are responsible for 30–50 percent of the Pacific coast's precipitation, much of which comes from a relatively small number of events (NOAA 2016a). Flooding can also occur from non-AR storms, although the likelihood of such an event is lower.

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FIGURE 8.5

FEMA Flood Zones

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Flood risk in an area is identified by the Federal Emergency Management Agency (FEMA), which prepares maps identifying the boundaries of flood-prone areas and the severities of potential floods. According to FEMA, the areas of highest flood risk in Morro Bay are coastal areas, a wide swath of land around Morro Creek, and parts of northern Morro Bay around Alva Paul Creek (FEMA 2016). Figure 8.5 shows the flood hazard zones in Morro Bay.

Historic Floods

Multiple past flood events have affected Morro Bay, along with much of the rest of San Luis Obispo County. Intense rainfall in the area usually occurs between December and March; thus, flood events typically occur in this period. A series of storms in January 1969 delivered up to a foot of rain over an eight-day period, and another set of storms in February resulted in another 5 to 10 inches. The Morro Bay sewage treatment plant was inundated, causing a sewage spill that posed a substantial human and environmental health risk. In early 1995, a series of storms driven by a strong El Niño event delivered up to a foot of rain in one 24-hour period. Morro Bay was temporarily isolated when SR 41 was closed by a rockslide, and flooding in San Bernardino and Morro Creek cut off access from the south and north, respectively.

DROUGHT

A drought is a lengthy period of time when precipitation is substantially below normal levels. The lack of water supplies may lead to water use restrictions or increases in water rates, which can be harmful for activities that rely on large volumes of water. Agricultural activities can suffer, particularly crops that rely heavily on irrigation. In developed areas, vegetation such as street trees and property landscaping may become water stressed, increasing the risk of disease or plant death. Drought conditions usually do not create a health or safety risk, although in severe cases communities may not have sufficient water to meet demand.

In addition to creating water shortages, droughts can have secondary impacts. During a drought, soil often hardens and becomes less permeable, which can lead to increased flooding when precipitation returns because the soil cannot absorb water as easily. Drought conditions can increase the amount of dried vegetation in a wildland area, exacerbating the risk of fires.

Unlike many other hazards, droughts are chronic conditions that develop over a long period of time. It typically takes multiple years of lower-than-average precipitation for a drought to be declared, and droughts may last for years. Droughts are considered regional or statewide hazards, and conditions where one or a small number of communities are in drought conditions while their neighbors are not are rare.

Droughts are classified using the US Drought Monitor Classification Scheme, shown in Table 8.2.

Table 8.2
US Drought Monitor Classification Scheme

Category	Description	Possible Impacts
D0	Abnormally dry	Slower growth of crops and pastures compared to normal activities.
D1	Moderate drought	Some damage to crops and pastures. Streams, reservoirs, or wells low. Some water shortages may be developing or imminent.
D2	Severe drought	Likely crop and pasture losses. Water shortages are common, leading to restrictions.
D3	Extreme drought	Major crop and pasture losses. Widespread water shortages.
D4	Exceptional drought	Exceptional and widespread crop and pasture losses. Emergency shortages develop.

Source: US Drought Monitor 2016a

Current Drought Risk

Droughts are an occasional feature of California's climate conditions, and Morro Bay may be affected by them. While many native plant and animal communities have adapted to occasional droughts, nonnative vegetation may suffer during drought conditions. This includes some types of landscaping, lawns, and crop types that require a large amount of water.

Morro Bay receives most of its water from a combination of local groundwater and purchased water from the State Water Project (SWP), with a smaller amount of water coming from the City's desalination plant. Water from desalination is effectively drought-proof, although the desalination plant is used only in a limited capacity due to occasional operational issues (City of Morro Bay 2011). Local groundwater is somewhat resilient to drought conditions, although groundwater supplies may not be fully replenished during drought conditions, and groundwater shortages may occur in extreme situations. Water from the SWP is sourced from the northern Sierra Nevada, which is vulnerable to

drought. In significant drought years, water deliveries from the SWP may be substantially curtailed from normal levels.

Historic Drought Events

Multiple past drought events have affected large swaths of California, including Morro Bay. One drought in 1976 affected most of California and caused approximately $2.7 billion in damage, mostly through agricultural losses. The most severe drought known to have occurred in Morro Bay began in 2012 and has persisted into early 2016. Although rains over the 2015–2016 winter season have somewhat diminished the drought's severity, it continues to have a drastic impact on California. As of June 2016, approximately 21 percent of California, including Morro Bay, was in a state of exceptional drought (the most severe category). Overall, approximately 59 percent of California was in a state of severe drought or higher, and all but 6 percent of California was in some form of drought condition (US Drought Monitor 2016b).

RADIATION AND HAZARDOUS MATERIALS

A hazardous material is defined under the California Health and Safety Code Section 25141 as a substance that causes "an increase in mortality or an increase in serious, irreversible, or incapacitating illness," or poses "a substantial present or potential hazard to human health or the environment … when improperly treated, stored, transported, or disposed of, or otherwise managed." This can include a wide variety of substances, such as flammable or explosive materials, infectious materials such as germs, corrosive substances such as acids, or other dangerous materials such as poisons or radioactive substances. Some materials are always hazardous or potentially hazardous, while others only pose a danger in certain conditions. For example, some flammable materials are inert and relatively harmless unless they are exposed to a heat source or spark.

Hazardous materials are usually contained in specially designed vessels and subject to appropriate protocols regarding how they are handled, stored, transported, used, and disposed of. However, when these materials leak or escape, they can expose people and objects in the vicinity to their harmful effects. Hazardous material releases can occur because of another emergency, such as an earthquake or flood, that breaks the storage container. Releases could happen as a result of human error or an equipment malfunction, or more rarely as a deliberate act. A vehicle transporting hazardous

materials may have an accident, which could cause the material to escape. Pipelines used for hazardous materials, including petroleum or natural gas, may rupture due to an accident, a natural hazard such as an earthquake, or a malfunction, creating an additional risk of hazardous materials release.

Existing Hazardous Material Conditions

The California Department of Toxic Substances Control (DTSC) maintains a list known as the Cortese List, which identifies sites where hazardous materials are present and cleanup activities are necessary. There are no facilities in Morro Bay on the Cortese List (DTSC n.d.), although two facilities are in the vicinity. The Baywood Park Training Area, now partially included in Montana de Oro State Park, is a 9,100-acre former Department of Defense site located about 4 miles south of Downtown Morro Bay. The site contains munitions and unexploded ordnance, and while investigations and removal activities have occurred, some residual risk may always persist (DTSC 2005a). Camp San Luis, located approximately 8.5 miles east of Downtown Morro Bay, was previously used as a National Guard post and an army camp, and may also have leftover munitions and unexploded ordnance (DTSC 2005b).

In Morro Bay, there are four known facilities that are not currently subject to state or federal response activities where hazardous materials are still present or may be present. The closed Dynegy Morro Bay Power Plant has undergone extensive remediation activities to remove hazardous materials. DTSC declared in 2014 that the site poses no significant health or environmental hazard (DTSC 2014). Two additional former military sites (one near the intersection of Panorama Drive and Nevis Street, the other near the intersection of the Embarcadero and Coleman Street) are in need of evaluation to determine the hazardous materials risk, and one additional site (in the foothills near Little Morro Creek Road) has been sufficiently cleaned and no further action is required (DTSC 1997, 2005c, 2005d).

The California State Water Resources Control Board (SWRCB) maintains a separate list of sites with hazardous materials that may contaminate groundwater supplies. There are 21 of these facilities located in Morro Bay, some of which are also listed by DTSC. Of these 21 facilities, 18 have finished all cleanup activities and formal case closure decisions have been issued, although any future development activities on these sites may require remediation activities and special permitting to ensure that people and the

environment are not exposed to any newly unearthed contaminated material. Three facilities are still open: the Dynegy power plant, where cleanup actions have finished and monitoring activities are ongoing to ensure the cleanup was successful; the former Texaco facility near Del Mar Park, which is subject to evaluation activities; and the Chevron Estero Bay Marine Terminal at Highway 1 and Morro Road, where remediation activities are ongoing (SWRCB 2016a). There are also 15 permitted underground storage tanks in Morro Bay, which may store hazardous or potentially hazardous materials (SWRCB 2016b).

One other facility in the vicinity which may pose a hazardous materials risk is the Diablo Canyon Power Plant located about 10 miles south of Morro Bay. Diablo Canyon is the one remaining operational nuclear power plant in California, and is expected to remain in operation until its license expires in 2025 (Baker 2016). The facility is built on a fault line and is located on the coast, raising concerns that it may be vulnerable to both seismic hazards and coastal hazards such as tsunamis, although Diablo Canyon is designed to be highly resilient to these emergency situations (City of Morro Bay 2006). The primary safety concern for Morro Bay is the accidental release of nuclear materials into the environment.

Emergency situations at nuclear power plants are ranked on a four-tier system. Only the most severe situation, designated as a General Emergency, would pose a threat to Morro Bay (County of San Luis Obispo 2016a). In such a situation, Morro Bay residents may be asked to shelter in place or to evacuate. Morro Bay is located just beyond the federally defined 10-mile Emergency Planning Zone that surrounds Diablo Canyon, although the community is within the expanded state-defined Emergency Planning Zone (County of San Luis Obispo 2007, 2016b), identified in Figure 8.6 as Preparation Action Zone 9.

Morro Bay may be subject to hazardous material releases from a transportation accident. Small amounts of hazardous materials may be transported into and through the community on Highway 1 and SR 41. Accidents along these roadways may create a hazardous materials emergency, although the small volumes of hazardous materials involved may limit the risk. Aircraft and watercraft also may transport small amounts of hazardous waste, although accidents involving these vehicles may pose a greater environmental risk (City of Morro Bay 2006).

The risk from pipelines in Morro Bay involves existing in-service natural gas pipelines and abandoned pipelines once used for petroleum and related products. The Southern California Gas Company (SoCalGas), which provides natural gas service to Morro Bay, operates pipelines in the community. A large transmission line intended to transport natural gas across significant distances enters Morro Bay from the east along Highway 1, running alongside Highway 1 until it terminates near where Main Street crosses under Highway 1. Two high-volume (but smaller) distribution lines run north from this point: one continuing along Highway 1 north to Cambria, the other running northeast toward Atascadero (SoCalGas n.d.). The City designates these pipelines as very low risk. There are a number of abandoned pipelines in the community, some of which have been fully decontaminated and decommissioned. The other abandoned pipelines are generally not expected to pose a threat to human health and safety, although they may threaten ecological health (City of Morro Bay 2006).

Historic Hazardous Material Events

The Morro Bay Fire Department responds to several actual or potential hazardous material releases each year. These events often involve small quantities of hazardous materials, and do not usually pose a substantial health or safety risk. However, on occasion larger events may pose more significant risks. One of the highest profile hazardous material releases in Morro Bay occurred in 2001, when a vehicle accident at a fish processing facility ruptured a valve on a refrigeration system, causing an ammonia leak. Approximately 3,000 people were evacuated for nine hours while the leak was fixed (NOAA 2001; City of Morro Bay 2006).

COASTAL HAZARDS

Coastal hazards are related to marine processes and impacts from coastal hazards are generally limited to areas adjacent to the ocean. This category of hazards covers a broad range of hazardous situations, including coastal flooding, sea level rise, tsunamis and seiches, and erosion of coastal environments. While these hazards are presented here for the sake of completeness, these hazards are also discussed in the Coastal Resources & Resiliency and the Shoreline Management & Protection baseline assessments.

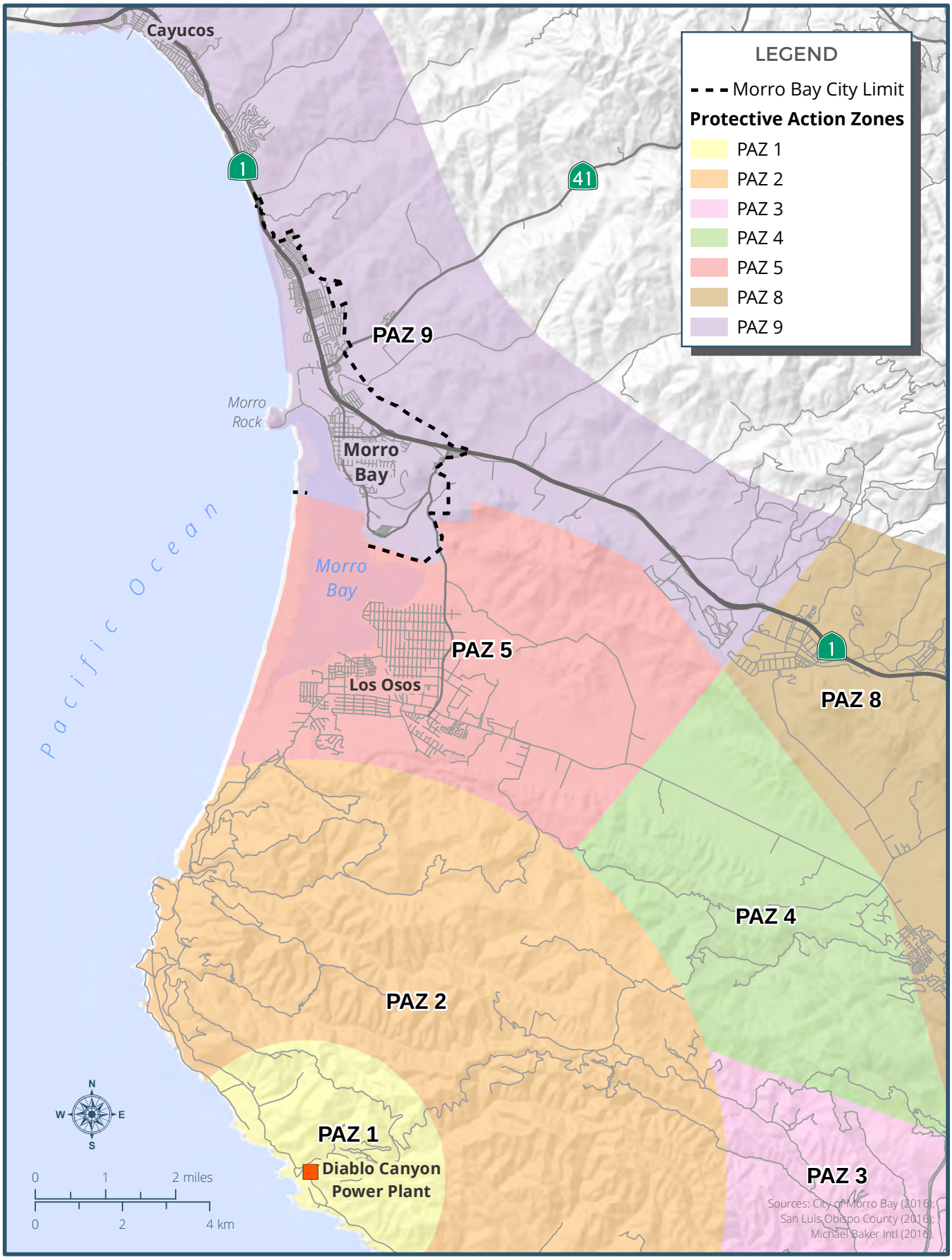

FIGURE 8.6

Nuclear Emergency Planning Zones

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Coastal flooding occurs when ocean water temporarily inundates normally dry land. Extreme high tides, sometimes called king tides or perigean spring tides, typically occur a few times a year. Unlike most other hazards, the severity of extreme high tides and the frequency with which they occur can be accurately predicted, allowing for ample notification if the high tide may pose a safety hazard. Coastal flooding can also occur during strong storms as a result of large waves generated by the storm. The winds of very strong storms can push water ashore in a phenomenon known as a storm surge. This hazard is usually associated with tropical cyclones such as hurricanes, although extratropical cyclones may also cause a storm surge.

While sea level rise is also a naturally occurring process, sea level rise as a potential hazard is driven by climate change as a result of human activities. This human-induced sea level rise is primarily caused by ice on Earth's surface melting due to warmer temperatures. The meltwater runs into the seas, causing ocean levels to increase globally. A smaller portion of sea level rise is also the result of thermal expansion, as water expands when temperatures rise (IPCC 2013). Sea level rise is a slow process, but nevertheless can have significant impacts. Low-level areas near the shore can be permanently inundated, and other areas may be temporarily flooded due to other factors.

A tsunami is a type of wave generated by the sudden displacement of a large amount of water, compared to conventional waves which are driven by winds and tides. Earthquakes, landslides, volcanic eruptions, or similar events occurring underwater or on the shore can cause sudden displacement, triggering a tsunami. Tsunami waves travel extremely quickly, sometimes in excess of 500 miles per hour, but in the open ocean are no more than a few feet tall and often go unnoticed by ships. As the wave approaches the shore, the shallow water forces the wave to compress and grow in height. The tsunami, which now resembles a wall of water or a very rapidly rising tide rather than a conventional wave, washes ashore and can cause significant damage to coastal areas. Tsunami waves can exceed 100 feet tall, and some tsunami events may consist of multiple waves. Tsunamis can travel thousands of miles from the triggering event, although they do lose some energy as they travel (NOAA 2016b). A related hazard, called a seiche, occurs when a sudden displacement event or very strong winds happen within an enclosed or semi-enclosed body of water such as a lake or bay. This causes the water to "slosh" around the water body, creating waves that behave similar to tsunami waves (NOAA 2015).

High tides and waves can cause erosion of beach environments, including sand dunes. Over time, this erosion can degrade coastal access, decrease beach quality, and weaken dunes that help to protect coastal structures. While erosion is driven by natural processes, human activities such as shoreline hardening, dredging, and coastal structures can alter natural processes and exacerbate erosion.

Existing Coastal Hazard Conditions

A large section of Morro Bay is located near the beach and so is vulnerable to coastal hazards. Coastal flooding is included on the flood maps provided by FEMA. All of Morro Bay's beaches lie within the 100-year floodplain, while coastal properties beyond the beach sit within either the 100-year or 500-year floodplain. In some instances, the floodplain barely extends beyond the beach itself, although near creeks and estuaries the water from a coastal flood may extend significantly farther inland, creating a much larger floodplain (FEMA 2016). Sea level rise is generally not severe enough at present to pose a current threat, although as sea level rise continues into the future the threats associated with it become substantially greater.

The tsunami risk is Morro Bay is greater in the northern part of the community. Some neighborhoods in northern Morro Bay near Beachcomber Street lie within the tsunami inundation zone. Between Azure Street and SR 41, the tsunami inundation zone extends to Highway 1; between SR 41 and the power plant, the inundation zone extends out to Little Morro Creek Road. South of the power plant, the tsunami inundation zone is mostly limited to the immediate beach area, although the marina and its surroundings are also located within the tsunami inundation zone (CGS 2009). Figure 8.7 shows the tsunami hazard zone in Morro Bay.

The wide beach and tall sand dunes present in southern Morro Bay largely protect this section of the community from erosion risk, although the beach and dunes themselves may be eroded during severe storms. Northern Morro Bay, which is directly exposed to the ocean and does not enjoy the protection of the bay and sandspit, has a somewhat higher erosion risk. However, northern Morro Bay also has a wide sloping beach and a series of small sand dunes which can buffer homes in this part of the community. The beach and dunes can be eroded by storms, but they are generally replenished during the summer through natural processes (City of Morro Bay 2006).

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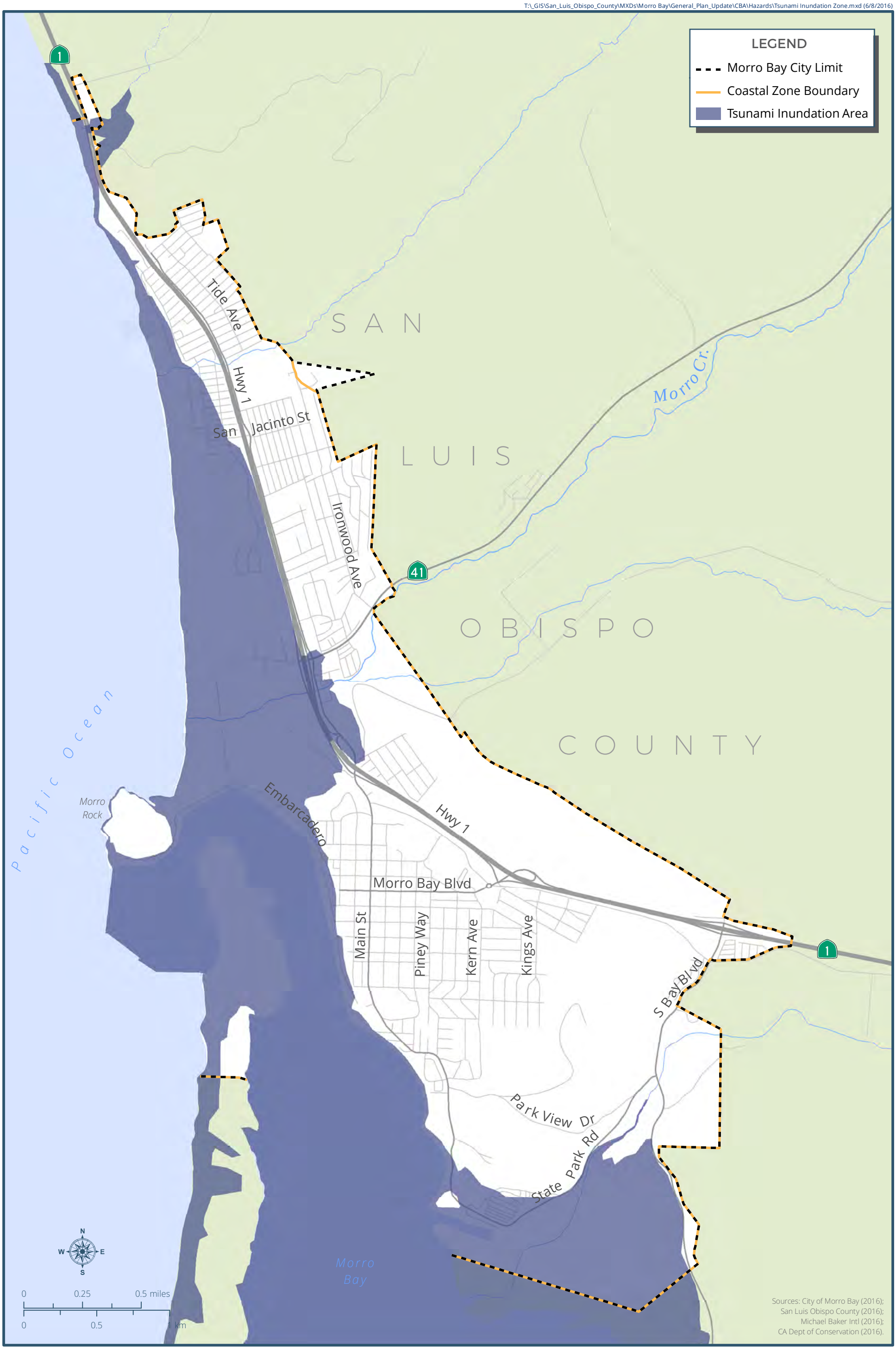

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FIGURE 8.7

Tsunami Inundation Zone

Page 2

Historic Coastal Hazards

There have been numerous historical coastal flooding events in Morro Bay, usually resulting from strong storms and heavy surf. Most of these flood events affected only the immediate beach area, although on occasion there have been more severe coastal flooding events. In 1998, intense storms driven by a strong El Niño produced surf as high as 25 feet along the San Luis Obispo County coast. The Morro Bay breakwater and jetties at the entrance of the harbor were damaged by the waves (City of Morro Bay 2006).

Tsunamis have also affected Morro Bay in the past. On April 1, 1946, an 8.6 M_w earthquake struck the Aleutian Islands in Alaska, triggering a tsunami that affected much of the Pacific. While the tsunami had a much greater effect in Hawaii and the Pacific Northwest (USC n.d.), Morro Bay saw tsunami waves 5 feet in height (City of Morro Bay 2006). On March 27, 1964, a 9.2 M_w earthquake occurred near Anchorage, Alaska, setting off tsunamis that rose to heights of over 5 feet at Morro Bay and caused 12 deaths elsewhere in California (City of Morro Bay 2006; Cal OES 2013). More recently, the 2011 Tōhoku earthquake in Japan caused rapid 8-foot tidal shifts in Morro Bay, although advance warning of the event reduced damage (Koenen 2011).

8.2 POTENTIAL FUTURE HAZARD CONDITIONS

The risks posed by hazards are not constant, and may change as a result of a variety of factors. As populations grow and demographics change, people may become more vulnerable to an existing hazard condition, such as when an aging population may lack financial resources to improve resiliency to disasters, or may have limited mobility that affects evacuation. Population growth can encourage development in areas that may face increased risk of hazards, such as when a community begins to build houses in more rural areas that are prone to wildfires. Additionally, hazards themselves may become more or less frequent and/or severe over time. Climate change is a primary driver of this, causing large shifts in Earth's climate system that affect hazards such as drought, wildfire, and flooding.

PROJECTED SEISMIC AND GEOLOGIC HAZARD RISK

Seismic and geologic hazards will almost certainly continue to occur in Morro Bay, as these events have occurred in the past and no evidence suggests that the factors that drive these hazards are declining. As previously discussed, most of the fault lines in the region have less than a 1.5 percent chance of causing a 6.7 M_w or larger earthquake in the next 30 years. However, these faults are considered active or potentially active, and may have a higher risk of causing an earthquake lower than 6.7 M_w. The San Andreas fault is located farther from Morro Bay, but it is substantially more likely to cause a major earthquake. Impacts in Morro Bay are likely to be buffered by the distance from the fault.

A major earthquake on the San Andreas fault would be a significant event. An earthquake on nearby sections of the San Andreas fault measuring 7.7 M_w to 7.9 M_w would be felt throughout Central and Northern California, causing widespread damage disrupting normal activities. Expected shaking in Morro Bay is expected to measure VI (Strong) on the Mercalli scale, enough to cause potentially significant damage but unlikely to be devastating (USGS 2013a, 2013b, 2013c, 2013d).

The San Andreas fault may not be the source of the most damaging earthquake to Morro Bay. Other less well-known fault lines closer to Morro Bay may cause earthquakes with more significant impacts. An earthquake measuring 7.0 M_w on the Los Osos fault could occur approximately 8.5 miles south of Downtown Morro Bay. Shaking in Morro Bay from such an event could measure VIII (Severe) or potentially higher on the Mercalli intensity scale (USGS 2013e). A 7.3 M_w earthquake on the Hosgri fault, located approximately 33 miles south of Downtown Morro Bay, could cause shaking in Morro Bay measuring VI to VII (Strong to Very Strong) on the Mercalli scale (USGS 2013f).

The most severe modeled scenario, a 7.5 M_w earthquake on the Hosgri fault centered approximately 7.5 miles northwest of Morro Rock, could cause shaking in Morro Bay measuring VIII to IX (Severe to Violent) on the Mercalli scale. Such an event could be very damaging to Morro Bay, destroying underground utilities and causing severe harm to buildings. Moreover, this earthquake's Mercalli intensity would measure at least VII (Very Strong) throughout the western half of San Luis Obispo County and at least VI (Strong) elsewhere in the county, running a significant risk of regional destruction. Long-term

damage to the region could be substantially detrimental to tourism in Morro Bay, harming the local economy (USGS 2009a). Even a smaller version of this earthquake, measuring 7.1 M_w, would likely cause significant damage in Morro Bay (USGS 2009b).

As presented earlier in Current Seismic and Geologic Hazards, the odds of a significant earthquake occurring on most regional faults is low (at most, 1.3 percent in the next 30 years), but not nonexistent. The odds of a major event on the San Andreas fault are substantially higher (up to 20 percent in the next 30 years).

Climate change may affect the risk of landslides not driven by seismic activity. Changes in intense rainfall patterns may lead to an increase in precipitation-related landslides.

PROJECTED WILDFIRE RISK

Wildfires are a regular part of the ecosystem in large sections of California, and they have occurred occasionally in the vicinity of Morro Bay. Given the recurring nature of wildfires in the area, future expectations are that wildfires will continue to occur. Climate change is expected to affect many of the factors that influence wildfires, including temperatures, precipitation levels, and overall drought conditions. By the end of this century, Morro Bay is expected to see mild increases in areas burned by wildfires (up to 15 percent more than current conditions) (CEC 2016).

PROJECTED FLOOD RISK

Flood risks will continue to exist in and around Morro Bay. Floods driven by intense precipitation are expected to continue to occur, as these are a natural part of the local climate. Climate change is expected to cause an overall decrease in precipitation in the wider Central Coast region. Morro Bay currently experiences an average of 17 inches of rainfall a year (WRCC 2015), but this may decline to an average of 13-14 inches by 2100 (CNRA and Cal OES 2012). However, flood risk in the area may increase due to possible changes in the AR storms that deliver most of the intense precipitation to Morro Bay. Some studies suggest that Northern California will experience an increase in the number of AR storms, although the average intensity of a typical storm will remain unchanged. Southern California will experience about the same number of AR storms, but with a 10–20 percent increase in average intensity (Oskin 2014). However, the impacts on the

Central Coast region are unknown, as it is not clear which of the two (or both) forecasted changes in AR storms apply to the region.

Climate change can also increase flood risks by causing more frequent droughts. The drought risk in California is expected to increase as a result of climate change, and droughts typically cause soil to harden and become less permeable. When this happens, precipitation is not absorbed into the soil as quickly or effectively, causing an increased risk of ponding or increased runoff.

PROJECTED DROUGHT RISK

The drought risk in Morro Bay and the wider Central Coast region is expected to become greater in the future. While occasional droughts are a regular feature of California's climate, scientists anticipate that droughts will become more frequent and more severe. The Central Coast region is expected to experience a decline in precipitation of about 2 inches by 2050, and of about 3–4 inches by 2100 (CNRA and Cal OES 2012), translating to precipitation levels of approximately 15 inches in an average year for Morro Bay by 2050, or 13–14 inches by 2100 (WRCC 2015). Due to warmer temperatures, more precipitation in the Sierra Nevada is expected to fall as rain instead of snow, and snow is expected to melt faster (CNRA and Cal OES 2012). On top of overall projected decreases in precipitation, these shifts in the Sierra Nevada may make less SWP water available to Morro Bay. Recent studies suggest that the drought which began in 2012 was exacerbated by climate change and may be a harbinger of future drought conditions (Williams et al. 2015).

PROJECTED RADIATION AND HAZARDOUS MATERIALS RISK

The risk from hazardous materials is expected to persist in Morro Bay, as facilities that use hazardous materials will continue to exist in the community. While containment technology may improve and hazardous materials regulations may become more stringent, some degree of risk will persist. In June 2016, the Pacific Gas and Electric Company, the owner of the Diablo Canyon Power Plant, announced it will close the facility when its operating license expires in 2025 (Baker 2016). Until 2025, Diablo Canyon will continue to receive radioactive material and the risk of exposure to these

materials is likely to remain the same. However, even after Diablo Canyon closes, nuclear material would still be stored on-site (at least temporarily), and so some degree of risk of nuclear materials release would continue, although potentially at lower levels.

PROJECTED COASTAL HAZARD RISK

Coastal hazards in Morro Bay are likely to continue to pose a threat to the community. Coastal flooding will remain a risk, given that coastal flooding has occurred on occasion in the past and strong storms such as AR events may become more frequent and/or more severe in Morro Bay (Oskin 2014). Tsunamis are expected to continue to occur, although the risk of a serious tsunami remains low.

One coastal hazard, sea level rise, is exclusively a future hazard. Although at present sea levels have generally not risen enough to pose a substantial threat to Morro Bay, future sea level rise may be great enough to create hazardous conditions. While projections of future sea level rise vary, some studies indicate that by 2100, ocean levels may have increased by as much as 66 inches, or 5.5 feet (CCC 2015). At 5 feet of sea level rise, projections show that the marina, parts of the Morro Bay Golf Course, and the inlets of Morro and Toro Creeks would be inundated. Additionally, large sections of the beach north of Morro Rock would be underwater. At 6 or more feet of sea level rise, inundation of The Embarcadero may begin (NOAA 2016c). Sea level rise also increases the risk of coastal flooding and erosion by moving the ocean level closer to existing structures, decreasing the required severity of a flood or erosion event before it begins to have an impact on homes, businesses, or infrastructure. Additional discussion of how coastal hazard risks may change in the future can be found in Chapter 3, Coastal Resources & Resiliency and Chapter 12, Shoreline Management & Protection.

8.3 REGULATORY SETTING

This section details the federal, state, and local laws, regulations, agencies, plans, and policies that pertain to natural and environmental hazards in Morro Bay.

FEDERAL REGULATIONS

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a program administered by FEMA to provide subsidized flood insurance for property owners in communities. The NFIP establishes regulations that limit development in flood-prone areas. The boundaries of flood-prone areas are determined by FEMA's Flood Insurance Rate Maps, which provide flood information and identify the flood hazard in the community. In certain high-risk areas, federally regulated or insured lenders require property owners to have flood insurance before issuing a mortgage.

Executive Order 11988

Executive Order (EO) 11988 (1977) addresses floodplain issues related to public safety, conservation, and economics. It requires federal agencies that construct, permit, or fund a project located in a floodplain to avoid development that is generally incompatible with the floodplain or would otherwise have adverse effects on flood risks. Developments to which EO 19988 applies should also be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values. Federal agencies are required to take floodplain management into account when creating or reviewing land use and water plans.

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was passed in 1977 to reduce the threat to life and property from earthquakes by establishing the National Earthquake Hazards Reduction Program (NEHRP). The act was significantly amended in 1990 by the NEHRP Act, which redefined agency responsibilities, program goals, and objectives. The NEHRP

is a coordinated nationwide program that addresses many factors related to earthquake safety, including improved understanding and prediction of earthquake-related hazards and vulnerabilities, improved building codes and land use practices, development of more resilient design and construction techniques, improved mitigation capacity, and accelerated effective implementation of earthquake-related research. The NEHRP is led by FEMA, with support from a number of other agencies and organizations.

Nuclear Regulatory Commission

The Nuclear Regulatory Commission (NRC) was established in 1974 to ensure the safe use of radioactive materials for civilian purposes, and is responsible for licensing and regulating civilian use of radioactive materials. Areas under the NRC's regulatory purview include nuclear reactors for power plants and civilian research, the use and transport of nuclear materials for civilian purposes, and safe disposal of radioactive waste materials. The NRC's role includes licensing the operation of nuclear power plants, and it is responsible for ensuring that these power plants operate safely.

STATE REGULATIONS

California Government Code – Safety Element Requirements

California Government Code Section 65302(g) includes specific requirements for the safety element of local general plans. It specifies that safety elements must address the risk resulting from surface rupture, ground shaking, ground failure, tsunami, seiche, dam failure, mudslides and landslides, subsidence, liquefaction, other known geologic hazards, flooding, and wildland and urban fires, to the extent that these hazards are present in the community. It requires safety elements to include mapping of known seismic and geologic hazards, and to address evacuation routes, military installations if applicable, peak load water requirements, and minimum road widths and clearances around structures. Safety elements must address a number of specific items related to flooding and wildfires as outlined in Government Code Sections 65302(g)(3) and 65302(g)(4).

Senate Bill 379 (2015) amended the California Government Code to require that upon the next update to a city's hazard mitigation plan after 2017, or after 2022 if a city has no hazard mitigation plan, the safety element be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to that city or county. The bill requires the update to include a set of goals, policies, and objectives based on a vulnerability assessment that identifies both the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts, and specified information from federal, state, regional, and local agencies.

Assembly Bill 2140

Assembly Bill (AB) 2140 (Government Code Sections 8685.9 and 65302.6) passed in 2006, allows local communities to adopt a local hazard mitigation plan (LHMP) into the safety element, and specifies certain elements that must be included in the LHMP if a community chooses to prepare one. Typically, when a federal disaster is declared, FEMA will provide disaster relief funds up to 75 percent of the total cost of eligible reconstruction activities. Of the remaining 25 percent not covered by FEMA, the California state government can contribute up to 75 percent (18.75 percent of the total), leaving 25 percent of the remaining costs (6.25 percent of the total) to be covered by the local governments. AB 2140 allows the state to pay for more of the funding not covered by FEMA if the local government has incorporated an LHMP into its safety element, decreasing the amount of disaster relief funds that must be provided by the local government. By including the LHMP in the safety element, communities can also ensure that the two documents are consistent.

Hazardous Waste Control Act

The Hazardous Waste Control Act (Health and Safety Code Sections 25100 et seq.) describes requirements for the proper management of hazardous wastes in California. It establishes a statewide hazardous waste management program similar to the one created by the federal Resource Conservation and Recovery Act, but is more stringent. It covers a number of areas, including identifying and classifying hazardous waste, generation and transportation of hazardous waste, design and permitting of hazardous waste facilities (including recycling, treatment, storage, and disposal facilities), treatment standards, facility operation and staff training, and closure of facilities and liability

requirements. The Hazardous Waste Control Act also lists more than 800 hazardous and potentially hazardous materials and requirements associated with them.

Emergency Services Act

California's Emergency Services Act (California Government Code Sections 8550-8668) includes a number of provisions to protect the health, safety, and property of state residents. Under the Emergency Services Act, California developed an emergency response plan to coordinate services between federal, state, and local agencies. The plan is administered by the California Office of Emergency Services (Cal OES), and involves other groups such as the California Environmental Protection Agency, the California Highway Patrol, regional water and air quality agencies, and local disaster response offices.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621) addresses hazards from surface fault rupture. It requires the California Geologic Survey (CGS) to map areas around active and potentially active faults where fault rupture may prove a hazard. Under the act, no structures intended for human occupancy can be built across an active fault, and structures for human occupancy built within an area of around 200 to 500 feet from an active fault can only be permitted following the completion of a fault location report. Structures within fault rupture hazard zones must incorporate siting and design recommendations into planning and construction to reduce the risk from this hazard.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (Public Resources Code Sections 2690–2699.6] addresses seismic and geologic hazards beyond fault rupture. It directs CGS to prepare maps identifying seismic hazard zones and encourages local governments to include policies that reduce seismic hazards in the safety elements of their general plans. Under the Seismic Hazards Mapping Act, development projects within a seismic hazard zone must prepare a geotechnical report identifying and delineating any applicable seismic

hazards before the project is approved. After local governments approve these reports, they must be submitted to the State Geologist.

California Building Standards Code

The California Building Standards Code (BSC, Title 24 of the California Code of Regulations) contains minimum standards for all new construction and significant remodels of existing structures that address a variety of issues. Parts of the BSC address safety from hazards, particularly around seismic hazards and fires. Requirements of the BSC include minimum standards for structural design, necessary tests and inspections, provisions addressing building foundations, and standards for the use of certain materials.

LOCAL REGULATIONS

Morro Bay Local Hazard Mitigation Plan

The Morro Bay LHMP is a plan to improve resiliency in the community by identifying natural hazards present in Morro Bay, determining the community's vulnerability to each hazard, and identifying development mitigation strategies to reduce vulnerability before emergency situations develop. Morro Bay's LHMP was adopted in 2006 and addresses nine hazards. The LHMP also contains nine goals to improve resiliency. Objectives and mitigation actions are associated with each goal. Morro Bay's LHMP identifies earthquakes (including fault rupture and liquefaction), floods, landslides, and hazardous material releases as the most significant hazards present in the community. As of August 2016, the City is in the process of updating the LHMP, and is currently developing the mitigation strategies.

Morro Bay Multi-Hazard Emergency Response Plan

The Morro Bay Multi-Hazard Emergency Response Plan contains City policies and operational concepts for responding to emergency situations, and is generally only consulted when an emergency occurs. Most of the hazards in the response plan are also contained in the LHMP. The policies and general approach to emergency situations delineated in the plan follow a number of widely adopted emergency response

standards and operations protocols, including the National Incident Management System, the State Emergency Management System, and the Incident Command System.

8.4 PRIORITY FINDINGS

LOCAL EARTHQUAKES

The San Andreas fault is the fault in the region most likely to cause a major earthquake. Sections of the fault in San Luis Obispo County have approximately a 17–20 percent chance of causing an earthquake measuring 6.7 M_w or greater in the next 30 years, with approximately a 6 percent chance of causing an 8.0 M_w or greater event (USGS 2015b). A significant earthquake on the Hosgri fault would likely have a greater effect on Morro Bay than one on the San Andreas fault, due to the proximity of the Hosgri fault. Regardless of where an earthquake occurs, there are many fault lines which could produce shaking of at least VI (Strong) on the Mercalli scale, large enough to cause substantial damage.

While California's current building codes require structures to be resilient to earthquakes, these structures may not be strong enough to withstand an event such as a 7.5 Mw Hosgri earthquake, the reasonably plausible scenario that would likely generate the strongest shaking in Morro Bay. The risk of such an event is low (approximately 0.6 percent chance of occurring in the next 30 years, or a 1-in-167 chance (USGS 2015b)), but the potential damage from this and other local earthquakes still poses a threat to Morro Bay. Moreover, many of Morro Bay's homes and nonresidential buildings were constructed before modern earthquake-resistant building codes were put into place, and so a substantial earthquake has an increased risk of causing widespread damage to existing structures if they are not sufficiently retrofitted. The City must take steps to ensure that the community is prepared and made resilient to such earthquakes.

CLIMATE CHANGE VULNERABILITY

Many of the hazards that pose a risk to Morro Bay may increase as a result of climate change. Intense storms may become more frequent and/or more severe, droughts are likely to become worse, and the risk from coastal flooding is expected to increase due to sea level rise. There are also other potential hazards, such as extreme heat and exposure to disease-carrying pests such as mosquitos, which have not been historically associated with Morro Bay. Greater parts of Morro Bay may be at risk from these hazards, and certain populations, such as elderly residents, may be disproportionately affected.

Climate change means that some current policies and activities to mitigate hazard risks in Morro Bay may be less effective in the future. The City will need new strategies to improve resiliency to climate change-exacerbated hazards, and to ensure that Morro Bay residents and visitors remain safe. This includes monitoring the latest science pertaining to these hazards and appropriately responding to changes in hazard scenarios by updating City plans, policies, and practices.

IMPACTS TO WATER SUPPLY

As previously discussed, Morro Bay's water comes from a variety of sources. Morro Bay has access to approximately 3,680 acre-feet of water, which is substantially more than the community requires. Water from local groundwater basins comprises 47 percent of available supplies; water from the SWP makes up approximately 36 percent of supplies; and the remaining approximately 16 percent of available supplies comes from Morro Bay's local desalination plant (City of Morro Bay 2011). Morro Bay's future water reclamation facility is also expected to supply some water for nondrinkable purposes, such as irrigation.

Despite this diversity, Morro Bay's water supply is vulnerable to shortages. The SWP is highly susceptible to drought as a result of climate change. In 2015, San Luis Obispo County only received 20 percent of its requested allocation from the SWP as a result of drought conditions (DWR 2015). Groundwater supplies are also vulnerable to drought conditions due to a lack of precipitation needed to recharge them, and may also face additional hazards from sea level rise. Morro Bay's water comes from two groundwater basins, Chorro Valley and Morro Valley, both of which border the Pacific Ocean, and

saltwater intrusion is a primary issue of concern for both (County of San Luis Obispo 2014). Saltwater intrusion occurs when salty water from an ocean or other water body moves into groundwater basins as a result of drought conditions when groundwater levels decrease, or as a consequence of sea level rise. Saltwater intrusion can contaminate groundwater supplies for decades, requiring expensive and energy-intensive desalination solutions. As both factors are likely to occur in the future, the risk of saltwater intrusion is elevated.

Morro Bay's water supply will face increasing pressure in the future. Even without increased development, future water supplies may be threatened. Conservation measures established as a result of drought conditions appear to be working. In the second half of 2015, Morro Bay residents successfully reduced water use by over 19 percent compared to 2013, exceeding the reduction target of 12 percent (SWRCB 2016c). The community must continue existing conservation efforts and reduce water use through more extensive strategies, even if drought conditions end.

DIABLO CANYON POWER PLANT

Although the Diablo Canyon Power Plant will not be relicensed to operate after 2025, there will continue to be some risk of nuclear material release from the site. The United States lacks a long-term repository for high-level radioactive waste produced by nuclear power plants; thus, this material is stored on a power plant site, even after the plant has ceased operations. While the Diablo Canyon facility and its on-site storage containers have a number of systems to prevent the release of radioactive material and are built to withstand natural disasters such as earthquakes, a radiation event is nevertheless possible.

Beyond advocating for policies that reduce the amount of nuclear material at the Diablo Canyon site or increase the safety standards that apply to the facility and any storage sites, the City of Morro Bay cannot affect the chances of a release of radioactive material from Diablo Canyon. The City instead must ensure that residents, businesses, and the municipal government are prepared to appropriately respond in the event of a radioactive incident. The odds of such an event are low, but a radioactive incident is a potential hazard of significant concern that the City must effectively address.

INCORPORATION OF THE LHMP IN THE SAFETY ELEMENT

AB 2140 allows local communities to incorporate the LHMP into the safety element, which helps to ensure plan consistency and can reduce the amount of disaster relief funds that must be paid by the local government in the event of a disaster. To ensure that Morro Bay receives these benefits, the Safety Element of the General Plan should incorporate the City's LHMP by reference as through it were fully set forth therein.

9.0 Natural Resources

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9.0 NATURAL RESOURCES

This chapter identifies existing biological resources, habitat, and wildlife corridor conditions in the planning area and discusses how those conditions would reasonably be expected to change given projected population, economic, and environmental conditions. This chapter also summarizes applicable regulations related to these resources. Species and conditions were identified using the California Department of Fish and Wildlife (CDFW) RareFind5 Database, United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC), and California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California database search tools. Chapter 7 contains a discussion of the scenic viewsheds in and around the planning area.

9.1 EXISTING CONDITIONS

VEGETATION COMMUNITIES AND HABITATS

Morro Bay has a wide diversity of tree (hardwood and coniferous forests, oak woodlands), shrub (chaparrals, coastal scrubs), and herbaceous (grasslands) terrestrial habitat types, as well as aquatic habitat types. The vegetation communities and wildlife habitats described as occurring in the city are based on the CDFW's California Wildlife Habitat Relationship (CWHR) classification system (CDFW 2008), and are shown in Figure 9.1. The corresponding alliances in the discussions below are defined as vegetation classification units containing one or more associations (a primary vegetation type), and defined by a characteristic range of species composition, habitat conditions, physical characteristics, and diagnostic species, typically at least one of which is found in the uppermost or dominant layer of the vegetation (Jennings et al. 2009).

WOODLANDS

Conifer and hardwood forests and woodlands in the city are shown in Figure 9.1. These tree-dominated habitats can support diverse wildlife populations. Riparian woodlands are generally the terrestrial areas adjacent to freshwater bodies forming a

vegetated corridor from stream edge to floodplain edge. Riparian woodlands occur in and along creeks and streams in the city. The following are descriptions of types of tree-dominated habitats that occur in the city.

Coastal Oak Woodland. Coastal oak woodlands, such as those identified in Morro Bay, are extremely variable in structure. The overstory consists of deciduous and evergreen hardwoods, sometimes mixed with scattered conifers. In sites with moderate moisture, the trees are dense and form a closed canopy. In drier sites, the trees are widely spaced, forming an open woodland or savannah. The understory is equally variable. In some instances, it is composed of shrubs from adjacent chaparral or coastal scrub which forms a dense, almost impenetrable understory. More commonly, shrubs are scattered under and between trees. Where trees form a closed canopy, the understory varies from a lush cover of shade-tolerant shrubs, ferns, and herbs to sparse cover with a thick carpet of litter. When trees are scattered and form an open woodland, the understory is grassland, sometimes with scattered shrubs. Slope, soil, precipitation, moisture availability, and air temperature cause the variations in structure of coastal oak woodlands. These factors vary along the latitudinal, longitudinal, and elevational gradients over which coastal oak woodlands are found.

Composition of both the overstory and understory of coastal oak woodland varies and reflects the environmental diversity over which this habitat occurs. In Morro Bay, the coastal oak woodlands are typically dominated by coast live oak (*Quercus agrifolia*).

Montane Hardwood Forest. A typical montane hardwood habitat is composed of a pronounced hardwood tree layer, with an infrequent and poorly developed shrub layer, and a sparse herbaceous layer. In the Coast Range, canyon live oak (*Quercus chrysolepis*) often forms pure stands on steep canyon slopes and rocky ridge tops. At low elevations, such as in the City of Morro Bay, knobcone pine (*Pinus attenuata*), foothill pine (*Pinus sabiniana*), and coast live oak are abundant. Understory vegetation is mostly scattered woody shrubs and a few forbs. Elevations range from 300 feet near the Pacific Ocean up to 9,000 feet. Montane hardwood typically corresponds to the Canyon Live Oak Forest Alliance (Sawyer, Keeler-Wolf, and Evens 2009).

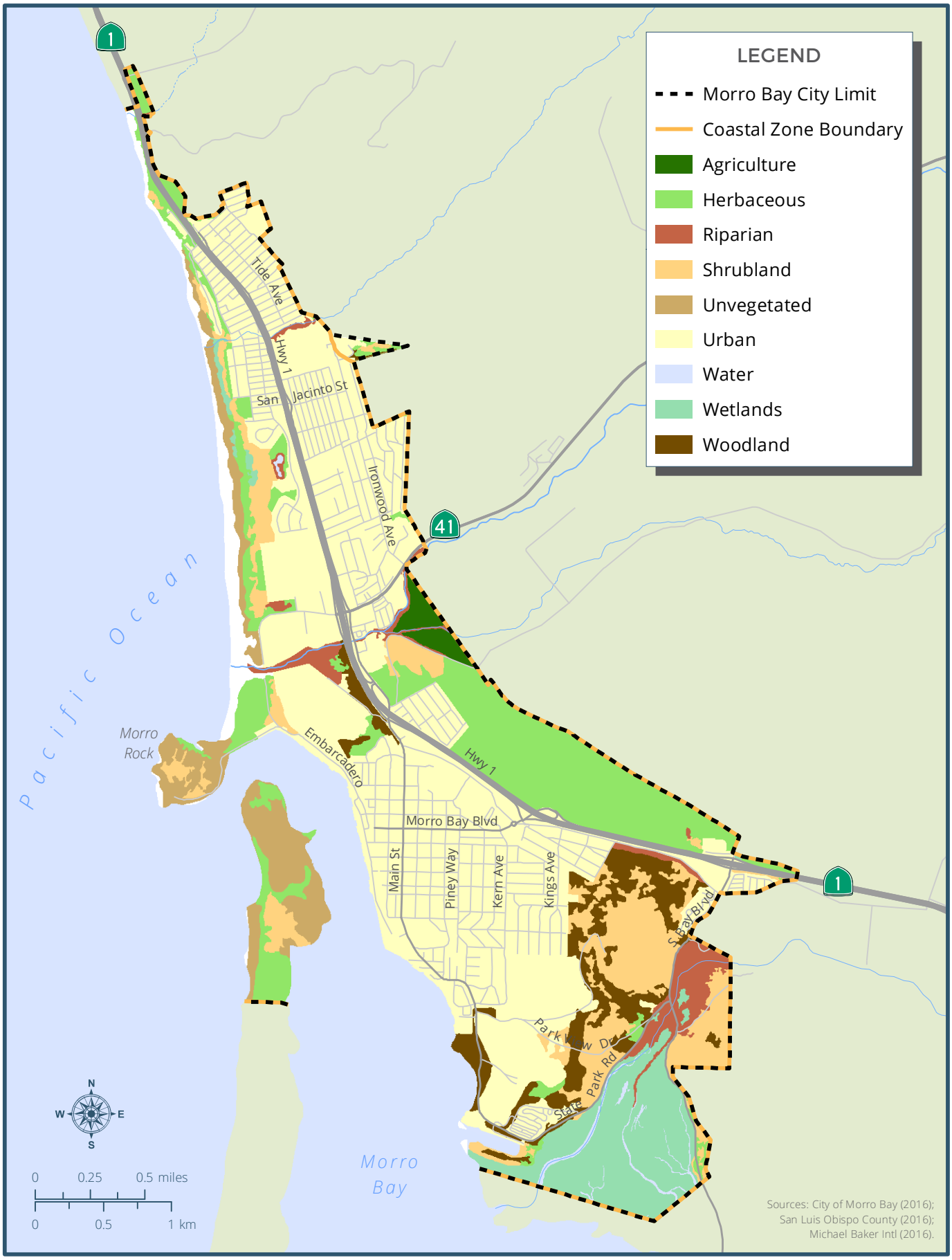

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FIGURE 9.1

Citywide Habitat Map

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Montane Hardwood-Coniferous Forest. Typical montane hardwood-coniferous forests include both conifers and hardwoods, often as a closed forest. To be considered montane hardwood-coniferous forest, at least one-third of the trees must be conifer, and at least one-third must be broad-leaved. Species composition varies by geographic region. In the Central Coast region of California, including the City of Morro Bay, common tree species include coast live oak, big leaf maple (*Acer macrophyllum*), Pacific madrone (*Arbutus menziesii*), tanoak (*Lithocarpus densiflorus*), canyon live oak, and Coulter pine (*Pinus coulteri*).. Most of the broad-leaved trees are evergreen, but winter deciduous species also occur. Relatively little understory occurs under the dense, bilayered canopy. However, considerable ground and shrub cover can occur in transition areas between vegetation communities or following disturbance. Montane hardwood-coniferous forest can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances can include, but are not limited to, Pacific Madrone Forest Alliance, Coulter Pine Forest Alliance, Tanoak Forest Alliance, Canyon Live Oak Forest Alliance, and Coastal Redwood Forest Alliance.

Montane Riparian Forest. The vegetation of montane riparian forest habitats is variable and often structurally diverse. Usually, these riparian areas occur as a narrow, often dense grove of broad-leaved, winter deciduous trees with a sparse understory. In the Coast Range, including the City of Morro Bay, big leaf maple and California bay laurel (*Umbellularia californica*) are typical dominants of montane riparian habitat.

Valley Foothill Riparian Forest. This habitat type is associated with drainages in Morro Bay, particularly those with low velocity flows, floodplains, and gentle topography. This habitat is generally composed of a subcanopy tree layer dominated by cottonwoods (*Populus sp.*), sycamore (*Platanus racemosa*), and/or valley oak and an understory shrub layer typically consisting of willows (*Salix spp.*) and/or mulefat (*Baccharis salicifolia*). Valley foothill riparian can correspond to multiple alliances (Sawyer, Keeler-Wolf, and Evens 2009) depending upon the species composition. These alliances can include, but are not limited to, Sycamore Woodland Alliance, and the various cottonwood alliances, depending upon dominant species present.

Eucalyptus Forest. This habitat type typically ranges from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. In most cases, eucalyptus forms a dense stand with a closed canopy. Blue gum eucalyptus (*Eucalyptus globulus*) and red gum eucalyptus (*E.*

camaldulensis) are the most common eucalyptus species found in these stands. The understory of these areas tends to have extensive patches of leaf litter but may include species such as poison oak. Trees within this habitat type are typically planted in rows for use as a wind break.

SHRUB-DOMINATED HABITATS

Shrub-dominated habitats in the City of Morro Bay are shown in Figure 9.1. The following are descriptions of types of shrub-dominated habitats that occur in the city.

Chamise-Redshank Chaparral. This habitat type typically ranges from nearly pure stands of chamise (*Adenostoma fasciculatum*) or redshank (*A. sparsifolium*) to a mixture of both. Mature chamise-redshank chaparral is single-layered, generally lacking well-developed herbaceous ground cover and overstory trees. Shrub canopies frequently overlap, producing a dense canopy of interwoven branches. Redshank stands tend to be slightly taller and more open than chamise-dominated stands. Fire occurs regularly in chamise-redshank chaparral and influences habitat structure. In Morro Bay, occurrences of chamise-redshank chaparral typically correspond to the Chamise Shrubland Alliance (Sawyer, Keeler-Wolf, and Evens 2009).

Coastal Scrub. The coastal scrub habitat type is most similar to central coastal scrub, as described by Holland (1986), and includes areas consistent with the California sagebrush (*Artemisia californica*) scrub community (California Sagebrush Alliance) and the black sage (*Salvia mellifera*) scrub community (Black Sage Alliance) (Sawyer, Keeler-Wolf, and Evens 2009). These coastal scrub communities consist of a dense canopy of shrubs adapted to drier south-facing slopes and terraces along the coastal zone of California and northern Baja California. Vegetation in the coastal scrub type is composed primarily of soft-leaved deciduous shrubs 3 to 6 feet tall that form a dense canopy over rocky, nutrient-poor soils. Evergreen shrubs are often present within this habitat type. In Central California, from Monterey to Point Conception, coastal scrub occurs primarily below 2,000 feet on the ocean side of the coastal ranges.

Mixed Chaparral. Mixed chaparral habitat is a structurally uniform brushland type dominated by shrubs with thick, stiff evergreen leaves. Shrub height and crown cover vary with age since last burn, precipitation, aspect, and soil type. At maturity, cismontane mixed chaparral typically is a dense, nearly impenetrable thicket. On sites

with serpentine soils or steep slopes, shrub cover may be reduced and shrubs may be shorter. Leaf litter and standing dead material may accumulate in stands that have not burned for several decades. Mixed chaparral can correspond to multiple alliances (Sawyer, Keeler-Wolf, and Evens 2009) depending upon the species composition. These alliances can include, but are not limited to, Buckbrush (*Ceanothus cuneatus*) Shrubland Alliance and the Bigberry Manzanita (*Arctostaphylos glauca*) Shrubland Alliance.

HERBACEOUS-DOMINATED HABITATS

Herbaceous-dominated habitats in the City of Morro Bay are shown in Figure 9.1. These habitats are generally composed of areas dominated by grasses and other nonwoody species. The following are descriptions of types of herbaceous-dominated habitats that occur.

Coastal Salt Marsh. Coastal salt marshes occur in bays and other areas protected from the open ocean, where there is a mixing of freshwater from streams and springs with salt water from the ocean. They often intergrade with estuarine communities, and are subject to periodic inundation (Holland and Keil 1995). Coastal salt marshes occur throughout fringes of the Morro Bay Estuary and throughout southern and central western Morro Bay State Park. Species diversity in the coastal salt marsh tends to be relatively lower than other communities because few species can tolerate the high fluctuations of salinity. Plants are mostly herbaceous perennials that are adapted to growing in saline environments, and generally short-statured with smaller-sized leaves. Many species also have tissues with many air cavities, which allow them to respire in environments with low oxygen, and salt glands that allow excess salts to be excreted. Other species have cells that contain high concentrations of dissolved solutes, allowing them to absorb water without osmotic imbalances (Holland and Keil 1995). Common native plants of coastal salt marsh in Morro Bay include California saltbrush (*Atriplex californica*), spearscale (*A. triangularis*), slough sedge (*Carex obnupta*), saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), fleshy jaumea (*Jaumea carnosa*), giant rush (*Juncus acutus*), creeping rush (*J. lesueurii*), sea lavender (*Limonium californicum*), coastal silverleaf (*Potenilla anserine*), pickleweed (*Salicornia virginica*), American three-square (*Scirpus americanus*), common three-square (*S. pungens*), and arrowgrass (*Triglochin concinna*) (Sims 2010).

Coastal Dune Scrub. Coastal dune scrub communities are older dune communities with stable and fertile soils, with high organic matter content, high water holding capacity, and low salt content. These communities also have reduced reflectivity and temperature fluctuation of the soil compared to other dune communities, due to more shade and vegetation litter (Holland and Keil 1995). These characteristics result in higher species diversity in these communities when compared to other dune types. Coastal dune scrub communities in Morro Bay make up the dominant habitat type of the Morro Dunes Complex, which runs north to south from Cayucos to Montana de Oro State Park. Coastal dune scrub communities are largely dominated by shrubby vegetation. Common subshrub and shrub species of coastal dune scrub in Morro Bay area include California sagebrush, coyote brush (*Baccharis pilularis*), mock heather (*Ericameria ericoides*), coastal buckwheat (*Eriogonum parvifolium*), coastal golden yarrow (*Eriophyllum staechadifolium*), golden brush (*Isocoma menziesii*), California aster (*Lessingia filaginifolia*), deerweed (*Lotus scoparius*), tree lupine (*Lupinus arboreus*), coastal silver lupine *(L. chamissonis*), and black sage. In addition to these shrubs and subshrubs, many native herbaceous species present in this habitat type include California goosefoot (*Chenopodium californicum*), Blochman's leafy daisy (*Erigeron blochminae*), wallflower (*Erysimum insulare suffrutescens*), California poppy (*Eschscholzia californica*), rush-rose (*Helianthemum scoparium*), horkelia (*Horkelia cuneata*), wild cucumber (*Marah fabaceus*), and Blochman's groundsel (*Senecio blochmaniae*) (Sims 2010).

Mudflats. Mudflat habitats along coastlines occur where the shore is protected from waves. In Morro Bay, mudflats are present in the area of the estuary. The gentle movement of salt water inland and freshwater to these areas brings fine sediments which settle out as mud. At low tide, the intertidal mud is exposed as a mudflat, leaving water only in permanent channels. At high tide, the mudflat is covered with water. The back bay at Morro Bay is a large area of mudflat and coastal salt marsh habitat. If mud has built up above the high tide line, it may be covered with salt marsh habitat. Therefore, herbaceous species common to the coastal salt marsh habitat in Morro Bay are also likely to occur in the mudflat habitats.

Annual Grasslands. This habitat type is composed primarily of nonnative annual herbs and forbs and typically lacks shrub or tree cover. The physical characteristics and species composition of annual grasslands are variable. Common grass species in Morro Bay include wild oats (*Avena* sp.), soft chess brome (*Bromus hordeaceous*), ripgut

brome (*Bromus diandrus*), and red brome (*Bromus madritensis*). Common forb species can include species of filaree (*Erodium* sp.), and bur clover (*Medicago* sp.). California poppy can also be quite common in this habitat type. Annual grassland can correspond to multiple alliances (Sawyer, Keeler-Wolf, and Evens 2009) depending upon the species composition. These alliances can include, but are not limited to, wild oat semi-natural stands and brome (ripgut, red)–purple false brome (*Brachypodium distachyon*) semi-natural stands.

Perennial Grassland. Perennial grassland habitats typically occur in two forms in California: coastal prairie, found in areas of Northern California under maritime influence, and relics in habitats now dominated by annual grasses and forbs. In Morro Bay, perennial grassland habitats are dominated by perennial grass species such as California oatgrass (*Danthonia californica*), purple needlegrass (*Stipa pulchra*), meadow barley (*Hordeum* brachyantherum), and sweet vernalgrass (*Anthoxanthum odoratum*). Perennial grassland habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. It is found below 3,280 feet in elevation and generally less than 62 miles from the coast. Perennial grassland can correspond to multiple alliances (Sawyer, Keeler-Wolf, and Evens 2009) depending upon the species composition. These alliances can include, but are not limited to, the California Oatgrass Herbaceous Alliance and Purple Needlegrass Herbaceous Alliance.

Pasture. Pasture vegetation is typically a mix of perennial grasses and legumes with complete canopy closure. Structurally this habitat type resembles annual grassland habitats. Vegetation height varies, according to season and livestock stocking levels. Old or poorly drained pastures may have patches of weeds in excess of 2 feet in height. The mix of grasses and legumes varies according to management practices such as seed mixture, fertilization, soil type, irrigation, weed control, and the type of livestock on the pasture.

DEVELOPED AND SPARSELY/NONVEGETATED HABITATS

Developed and sparsely/nonvegetated habitats are abundant in Morro Bay. Developed habitats are usually sparsely or nonvegetated, associated with urban and agricultural

areas, and highly disturbed. Species that occur in these areas are typically adapted to human-caused disturbance and/or composed of ornamental species. Sparsely vegetated habitats also tend to be associated with rock outcrops and cliffs. The following are descriptions of developed and sparsely/nonvegetated habitats that occur within Morro Bay (refer to Figure 9.1).

Agricultural Areas. Vegetation in this habitat includes a variety of sizes, shapes, and growing patterns. Most irrigated row and field crops are grown in rows. Some crops may form 100 percent canopy while others may have significant bare areas between rows. Most crops are annuals, while others, such as asparagus and strawberries, are perennial. Annuals are usually planted in spring and harvested in summer or fall. However, they may be planted in rotation with other irrigated crops. Winter wheat or barley may sometimes be planted after the harvest of a previous crop in the fall, dry farmed (during the wet winter and early spring months), and then harvested in the late spring. Agricultural lands in Morro Bay consist primarily of corn, beans, avocados, and dry farming crops. Hillsides around the city are also utilized for livestock grazing.

Urban. This habitat type is a predominantly man-made habitat comprising residential, commercial, and industrial developed areas, with large developed areas lacking vegetation. Plant species within urban habitats are typically ornamental and other nonnative invasive plant species.

Barren. This habitat type is defined by the absence of vegetation. Any habitat with less than 2 percent total vegetation cover and less than 10 percent cover by tree or shrub species is defined as barren. Structure and composition of barren habitats are largely determined by the region of the state as well as surrounding environment. Examples of barren habitats include areas of exposed parent rock (rock outcrops) and rocky slopes. Due to the inadequacies in nutrient and water content throughout thin layers of soil and the presence of solid or densely packed rock that forms an impenetrable layer for plant roots to grow, rock outcrops often lack much vegetation. In Morro Bay, rock outcrops often coincide with serpentine soils, which further limit certain plant species growth (Sims 2010).

ENVIRONMENTALLY SENSITIVE HABITATS

Section 30107.5 of the Coastal Act defines an environmentally sensitive area or environmentally sensitive habitat area (ESHA) as any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

Section 30121 of the Coastal Act defines a wetland as land within the Coastal Zone that may be covered periodically or permanently with shallow water, which can include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. Additionally, Section 13577(b) of the California Code of Regulations [14 CCR Section 13577(b)] defines wetlands as lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity, or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats.

In the existing City of Morro Bay Coastal Land Use Plan, the following criteria are used in determining which areas warrant specific protection under the Coastal Act as ESHAs:

1) Unique, rare or fragile communities which should be preserved to ensure their survival in the future;

2) Rare and endangered species habitats that are also protected by state and federal laws;

3) Specialized wildlife habitats which are vital to species survival;

4) Outstanding representative natural communities which have an unusual variety or diversity of plant and animal species;

5) Areas with outstanding educational values that should be protected for scientific research and education uses now and in the future.

Those resources that met one or more of the criteria above have been designated as an ESHA. In the City of Morro Bay, ESHAs have been identified within three primary habitat types: coastal wetlands, coastal streams/ riparian habitats, and rare or unusual native plant communities. Coastal wetlands and coastal streams/riparian habitats are described as follows:

Coastal wetlands:

a. Wetland refers to lands in the coastal zone which may be covered periodically or permanently with shallow water. They include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

b. An estuary is a coastal water body usually semi-enclosed by land with open, partially obstructed, or intermittent exchange with the ocean whereas ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above the open ocean by evaporation. In general, the boundary between a wetland and an estuary is the line of extreme low water.

c. Open coastal water or coastal waters refer to the open ocean overlying the continental shelf and its associated coastline. Salinities exceed 30 parts per thousand with little or no dilution except at opposite mouths of estuaries.

Coastal streams/riparian habitats:

a. A stream or river is a natural watercourse as designated on the most recently published United States Geological Survey maps, or any well-defined channel with distinguishable bed and bank that shows evidence of having contained flowing water, indicated by scour or deposit of rock, sand, gravel, soil, or debris.

b. A riparian habitat is an area of riparian vegetation. This vegetation is an association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other bodies of freshwater.

Rare or unusual native plant communities:

a. Rare or unusual native plant communities are the areas in Morro Bay which contain rare and endangered or unique plant communities and provide for

passive and active recreational activities (e.g., hiking, bird watching). These areas are protected and improved as part of the Local Coastal Program process.

The following describes the identified ESHAs in Morro Bay.

Wetlands – Morro Bay and Morro Bay Estuary. The bay consists of a shallow lagoon with two freshwater creeks (Chorro Creek and Los Osos Creek) draining into it. Tidal waters also fill the bay by flowing through the bay entrance and southward. At high tide, the bay contains approximately 2,000 acres of water surface and, at low tide, approximately 500 acres of water surface. The intertidal area is a salt marsh and mudflat. The coastal wetlands, tidal marshes, mudflats, freshwater marshes, and related bodies of water are an important link between the local oceanic and terrestrial ecosystems. The balance between the tidal flushing of the bay and the nutrient-rich freshwater runoff maintains the productivity of these systems. The bay supports several biotic communities, including coastal salt marsh, tidal mudflats, and coastal scrub, which serve as an important link between oceanic and terrestrial ecosystems.

The bay and the estuary serve as a stop on the Pacific Flyway for many migratory birds, including rare and endangered species. The bay also supports a variety of fish species, clams, and oysters, which have become essential to sport and commercial fisheries in Morro Bay. Marine and marsh plants serve as the basic food producers within this ESHA.

Streams. Morro, Chorro, and Los Osos Creeks and various small tributaries serve as important coastal resources in the city. These creeks and tributaries provide habitat for fish and other aquatic organisms, as well as food and shelter for migratory birds and terrestrial organisms. Chorro and Los Osos Creeks drain into the Morro Bay Estuary from the upland areas of a larger watershed, providing substantial habitat in the bay. The freshwater discharged from these creeks into the estuary transport nutrients that serve as an important food source for the entire bay complex. Additionally, the freshwater prevents the bay's salinity from exceeding the tolerance level of many species. The Morro, Chorro, and Los Osos Creeks also provide habitat for steelhead trout and other important commercial and recreational species.

Rare and Endangered Wildlife Habitats – Morro Rock, Fairbanks Point, and Black Hill Natural Area. Morro Rock is located at the mouth of the bay and is the northernmost visible volcanic plug in a chain of plugs extending from Islay Hill in San Luis Obispo. The

ecological preserve on Morro Rock serves as a nesting site for peregrine falcons. The rock is one of the last remaining sites for the falcons and is one of the few nesting sites on the California coast north of the Channel Islands. A grove of eucalyptus trees located at Fairbanks Point, in Morro Bay State Park, serves as a major nesting site for herons. Additionally, the Black Hill natural area, upland from Morro Bay State Park, contains various rare and/or endangered species that are an essential component of the city habitats.

For regulatory purposes, the City maintains a GIS ESHA layer showing the ESHAs identified in the city. However, the layer is considered out of date and site-specific ESHA assessments are typically required for most coastal development permits. In August 2016, the California Coastal Commission approved a request for grant funding for the City to conduct a comprehensive update to its understanding of ESHA boundaries, and to reflect these boundaries in the City's spatial data records. This update process is expected to be completed by December 2016, and will be incorporated into *Plan Morro* Bay.

WETLANDS AND WATER FEATURES

Wetlands and water features include freshwater sloughs, marshes, vernal pools, wet meadows, springs and seeps, portions of lakes, ponds, rivers and streams, and all other areas that are periodically or permanently covered by shallow water, are dominated by hydrophilic vegetation, or have soils that are predominantly hydric in nature. The CWHR system maps three aquatic habitats in Morro Bay: lacustrine, estuarine, and riverine; and two wetland habitats: fresh emergent wetland and saline emergent wetland. Wetlands and water features mapped by the National Wetlands Inventory include estuarine and marine deepwater, estuarine and marine wetland, freshwater emergent wetland, freshwater forested/shrub wetland, freshwater pond, other, and riverine (USFWS 2016b). Wetlands and water features mapped by the CWHR system and the National Wetlands Inventory are described in detail below and shown on Figure 9.2.

Riverine. Riverine systems typically include all wetlands and deep water habitats in natural or artificial channels that contain periodically or continuously flowing water. This system may also form a connecting link between two bodies of standing water. Substrates generally consist of rock, cobble, gravel, or sand. This category also includes

ephemeral and intermittent streams and dry washes, which are common in the Coast Range. Morro Bay supports numerous creeks, drainages, and canals. Drainages that contain water year-round or experience periodic filling and draining provide foraging habitat, breeding habitat, and movement habitat for a variety of aquatic animals and a number of special-status species.

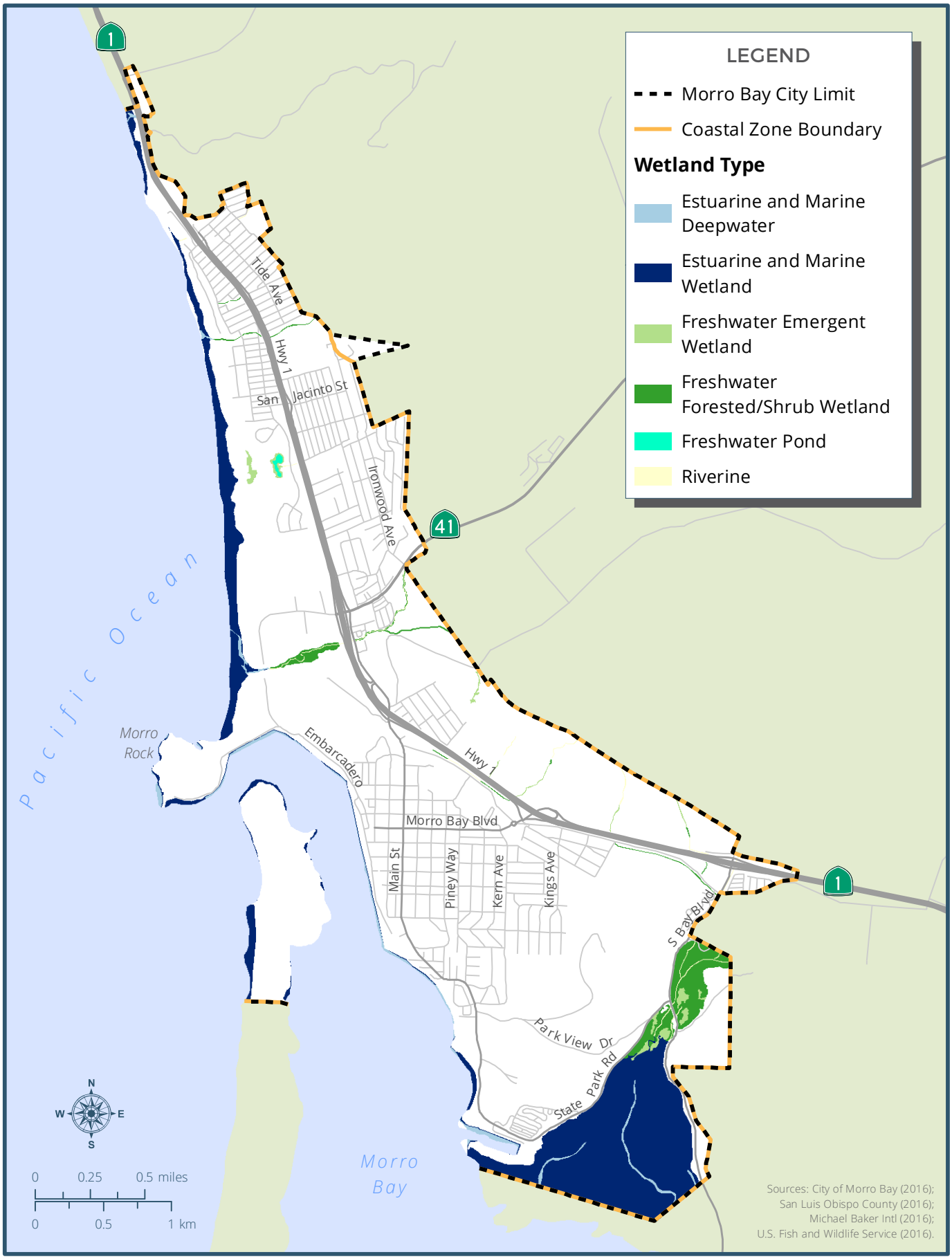
Lacustrine. Lacustrine habitats are inland depressions or dammed riverine channels containing standing water. They may vary from small ponds less than 1 hectare to large areas covering several square kilometers. Depth can vary from a few centimeters to hundreds of meters. Typical lacustrine habitats in Morro Bay include ponds so shallow that rooted plants can grow over the bottom. Most permanent lacustrine systems support fish life while intermittent lacustrine systems usually do not.

Estuarine. Estuarine habitats typically occur on periodically and permanently flooded substrates and open water portions of semi-enclosed coastal waters where tidal seawater is diluted by flowing freshwater. This mix of fresh and ocean waters usually forms a horizontal salinity gradient that varies by area and location with seasonal variations in freshwater inflow and tidal action. The estuarine habitat identified in Morro Bay is typical of the estuarine habitats in California, which include coastal lagoons containing waters of more uniform salinity than true estuaries, or waters with vertical rather than horizontal salinity gradients. Estuarine habitat covers the entirety of the Morro Bay Estuary, from near the Morro Bay State Park Museum of Natural History to the southern border of the estuary. The estuarine habitats in Morro Bay intergrade with coastal salt marsh communities and occur in coastal portions of Chorro and Los Osos Creeks as well as various streams and tributaries between them.

Saline Emergent Wetlands. Saline emergent wetlands are typically characterized as salt or brackish marshes consisting mostly of perennial grasses and herbs, including succulents, ranging in height from 0.2 meter to 2 meters (0.7–6.6 feet) or more, along with algal mats on moist soils and at the base of vascular plant stems. The component plants occur sometimes in zones but more often in patches or as a sequence of overlapping species along an elevational gradient. Vegetation coverage is complete or nearly so, except where creeks and ponds are present or following disturbance. Vertical stratification occurs in all but the lower, outer zone.

Estuarine and Marine Deepwater. Deepwater wetlands are typically composed of estuarine or marine systems. Estuarine systems are composed of tidal habitats and

adjacent tidal wetlands that are influenced by water runoff from, and often semi-enclosed by, land. They are located along low-energy coastlines and have variable salinity. Marine systems of this type are generally open ocean and occur along high energy coastlines with salinities exceeding 30 parts per thousand with little or no dilution except outside the mouths of estuaries.



Plan MORRO BAY

FIGURE 9.2

Wetlands and Drainages in Morro Bay

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Estuarine and Marine Wetlands. Estuarine and marine wetlands are composed of estuarine and marine systems as described above; however, they are not deepwater, as described in the preceding paragraph. These areas can be subtidal or intertidal with a variety of vegetated and nonvegetated bottoms. Beaches, bars, and flats are also included in this category.

Freshwater Emergent Wetlands. Freshwater emergent wetlands typically include all nontidal waters dominated by emergent herbaceous plant species, mosses, and/or lichens.

Freshwater Forested/Shrub Wetlands. Freshwater forested/shrub wetlands typically include nontidal waters that are dominated by trees and shrubs, with emergent herbaceous plants, mosses, and/or lichens. Wetlands that lack vegetation can be included in this class if they also exhibit the same criteria as described for freshwater emergent wetlands. The vegetation found in freshwater forested/shrub wetlands is generally dominated by woody vegetation such as shrubs and trees.

Freshwater Ponds. Freshwater ponds typically include nontidal waters with vegetative cover along their edges, such as trees, shrubs, emergent herbaceous plants, mosses, and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. These wetlands and deepwater habitats are dominated by plants that grow on or below the surface of the water. Freshwater ponds provide important breeding habitat for special-status species such as California red-legged frog (*Rana draytonii*) and western pond turtle (*Emys marmorata*).

Other. Other wetland systems identified in Morro Bay are generally categorized as palustrine systems contained within the wetland categories described above. Palustrine systems include all nontidal wetlands dominated by trees, shrubs, emergent, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand.

MARINE RESOURCES

Morro Bay and the Morro Bay Estuary contain a variety of biotic communities which support migratory birds, fish, and oysters, which are essential to maintaining oceanic and terrestrial ecosystems as well as local sport and commercial fisheries. Morro Bay and the Morro Bay Estuary are important to the health of the city's aesthetic and recreational value as well as the commercial fishing and sport fishing industries, mariculture and marine research activities, and harbor and navigational ways.

SPECIAL-STATUS SPECIES

Special-status species include those species that are listed as rare, threatened, or endangered by the CDFW or the USFWS, or are candidates for either state or federal listing, or have been designated as "fully protected" or "species of special concern" by USFWS and CDFW, or are other species that are tracked by the CNPS or the California Natural Diversity Database (CNDDB), but do not fall into any of the categories cited above.

Woodlands, shrub, and herbaceous dominated habitats, wetlands, and aquatic habitats are home to most of the city's special-status plant and animal species. These habitat types have the highest conservation value for preservation of rare species. Most listed and special-status species have specific habitat and microhabitat conditions, and would not generally be expected to occur outside of areas that meet those specific habitat criteria; however, a number of listed and otherwise protected species have the potential to occur in a wide range of habitats, including disturbed and developed areas. A number of bird species protected under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code can nest in highly disturbed areas and in ornamental trees adjacent to developed areas.

Table 9.1 through 9.4 present a comprehensive list of special-status species known to occur, or with potential to occur, in Morro Bay. These species are also mapped on Figure 9.3. The information is based on queries of several relevant databases that contain information about occurrences of sensitive biological resources for the city. These include the CNDDB (CDFW 2016b); the Biogeographic Information and Observation System (BIOS; CDFW 2016a); USFWS Critical Habitat Portal (2016c); IPaC (USFWS 2016a); and the CNPS Online Inventory of Rare and Endangered Plants of California (CNPS 2016).

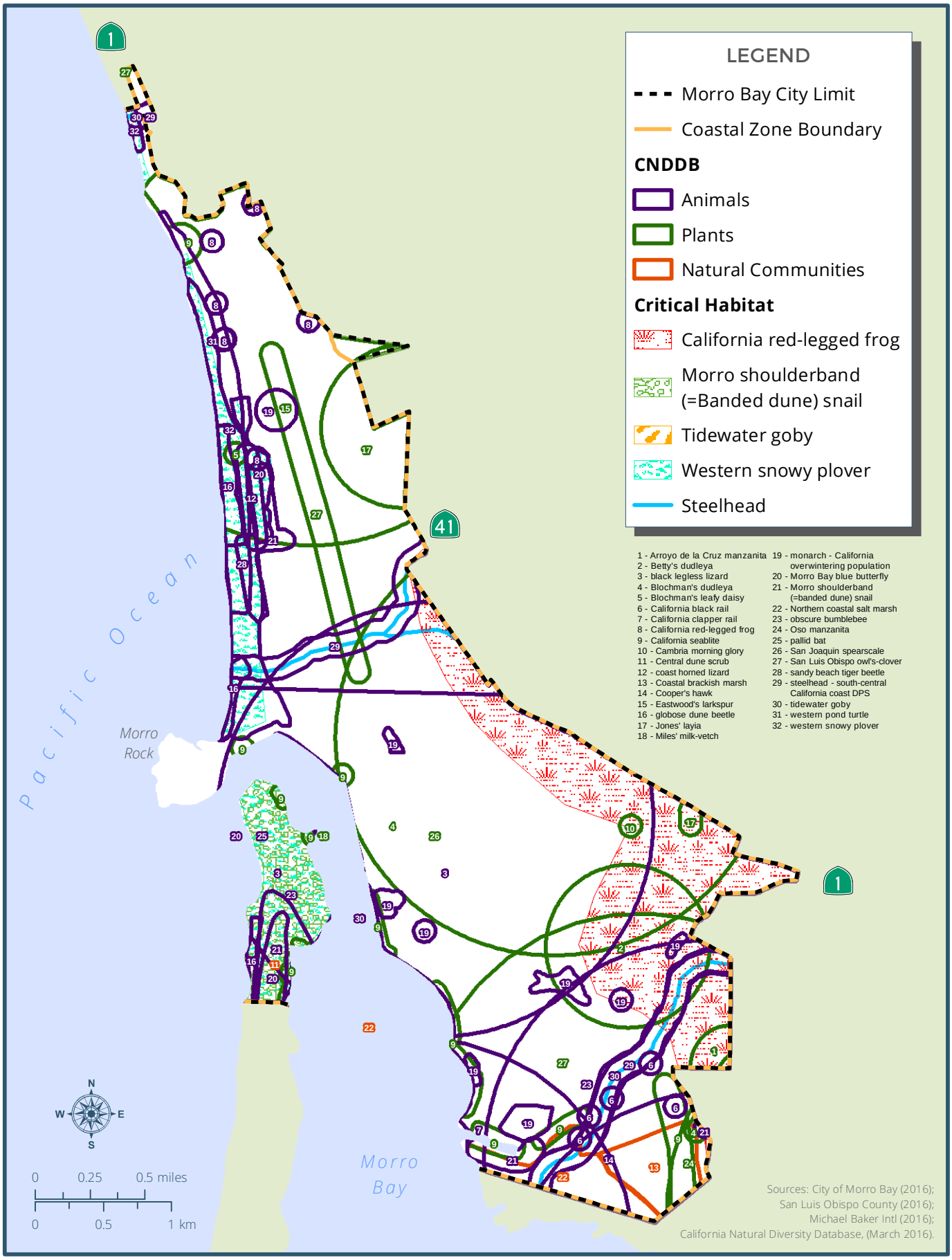

FIGURE 9.3

Species Occurrences and Critical Habitat Identified by the CNDDB

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Table 9.1
Federal- and/or State-Listed Special-Status Plant Species Documented in or with the Potential to Occur in Morro Bay

Common Name	Scientific Name	Federal/State Status	CA Rare Plant Rank
San Luis Obispo fountain thistle	*Cirsium fontinale var. obispoense*	FE/SE	1B.2
California seablite	*Suaeda californica*	FE	1B.1
Morro manzanita	*Arctostaphylos morroensis*	FT	1B.1
marsh sandwort	*Arenaria paludicola*	FE/SE	1B.1
salt marsh bird's-beak	*Chloropyron maritimum ssp. maritimum*	FE/SE	1B.2
Surf thistle	*Cirsium rhothophilum*	ST	1B.2
beach spectaclepod	*Dithyrea maritima*	ST	1B.1
Indian Knob mountainbalm	*Eriodictyon altissimum*	FE/SE	1B.1
adobe sanicle	*Sanicula maritima*	SR	1B.1
California jewelflower	*Caulanthus californicus*	FE	1B.1
Spreading navarretia	*Navarretia fossalis*	FT	1B.1

FT: Federally threatened

FE: Federally endangered

ST: State threatened

SE: State endangered

SR: State rare

Table 9.2
NonListed Special-Status Plant Species Documented in or with the Potential to Occur in Morro Bay

Common Name	Scientific Name	CA Rare Plant Rank
Miles' milk-vetch	*Astragalus didymocarpus var. milesianus*	1B.2
San Luis Obispo owl's-clover	*Castilleja densiflora var. obispoensis*	1B.2
Brewer's spineflower	*Chorizanthe breweri*	1B.3
Eastwood's larkspur	*Delphinium parryi ssp. eastwoodiae*	1B.2
umbrella larkspur	*Delphinium umbraculorum*	1B.3
Betty's dudleya	*Dudleya abramsii ssp. bettinae*	1B.2
Blochman's dudleya	*Dudleya blochmaniae ssp. blochmaniae*	1B.1
Blochman's leafy daisy	*Erigeron blochmaniae*	1B.2
Ojai fritillary	*Fritillaria ojaiensis*	1B.2
San Benito fritillary	*Fritillaria viridea*	1B.2
Jones' layia	*Layia jonesii*	1B.2
Santa Lucia bush-mallow	*Malacothamnus palmeri var. palmeri*	1B.2
Arroyo de la Cruz manzanita	*Arctostaphylos cruzensis*	1B.2
Santa Lucia manzanita	*Arctostaphylos Luciana*	1B.2

Common Name	Scientific Name	CA Rare Plant Rank
Oso manzanita	*Arctostaphylos osoensis*	1B.2
Pecho manzanita	*Arctostaphylos pechoensis*	1B.2
dacite manzanita	*Arctostaphylos tomentosa ssp. daciticola*	1B.1
twisted horsehair lichen	*Bryoria spiralifera*	1B.1
San Luis mariposa lily	*Calochortus obispoensis*	1B.2
Hardham's evening-primrose	*Camissoniopsis hardhamiae*	1B.2
San Luis Obispo sedge	*Carex obispoensis*	1B.2
coastal goosefoot	*Chenopodium littoreum*	1B.2
dwarf soaproot	*Chlorogalum pomeridianum var. minus*	1B.2
popcorn lichen	*Cladonia firma*	2B.1
mouse-gray dudleya	*Dudleya abramsii ssp. murina*	1B.3
Hoover's button-celery	*Eryngium aristulatum var. hooveri*	1B.1
San Joaquin spearscale	*Extriplex joaquinana*	1B.2
mesa horkelia	*Horkelia cuneata var. puberula*	1B.1
Kellogg's horkelia	*Horkelia cuneata var. sericea*	1B.1
Coulter's goldfields	*Lasthenia glabrata ssp. coulteri*	1B.1
Palmer's monardella	*Monardella palmeri*	1B.2
southern curly-leaved monardella	*Monardella sinuata ssp. sinuate*	1B.2
San Luis Obispo monardella	*Monardella undulata ssp. undulata*	1B.2
coast woolly-heads	*Nemacaulis denudata var. denudate*	1B.2
Diablo Canyon blue grass	*Poa diabolic*	1B.2
most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	1B.2
splitting yarn lichen	*Sulcaria isidiifera*	1B.1

Table 9.3
Federal- or State-Listed Animal Species Documented in or with the Potential to Occur in Morro Bay

Common Name	Scientific Name	Federal/State Status
California clapper rail	*Rallus longirostris obsoletus*	FE/SE/FP
steelhead - south-central California coast DPS	*Oncorhynchus mykiss irideus*	FT
Morro shoulderband (=banded dune) snail	*Helminthoglypta walkeriana*	FE
tidewater goby	*Eucyclogobius newberryi*	FE
western snowy plover	*Charadrius alexandrinus nivosus*	FT
California black rail	*Laterallus jamaicensis coturniculus*	ST/FP
California red-legged frog	*Rana draytonii*	FT
California condor	*Gymnogyps californianus*	FE/FP
California least tern	*Sterna antillarum browni*	FE/FP
Least bell's vireo	*Vireo bellii pusillus*	FE
Marbled murrelet	*Brachyramphus marmoratus*	FT
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT
Morro Bay kangaroo rat	*Dipodomys heermanni morroensis*	FE
Southern sea otter	*Enhydra lutris nereis*	FT/FP

FT: Federally threatened

FE: Federally endangered

FP: Fully protected

SE: State endangered

ST: State threatened

Table 9.4
Nonlisted Special-Status Animal Species Documented in or with the Potential to Occur in Morro Bay

Common Name	Scientific Name	Federal/State Status
black legless lizard	*Anniella pulchra nigra*	SSC
pallid bat	*Antrozous pallidus*	SSC
Cooper's hawk	*Accipiter cooperii*	WL
Blainville's horned lizard horned lizard	*Phrynosoma blainvillii*	SSC
Southern western pond turtle	*Actinemys (=Emys) pallida*	SSC

SSC: State species of special concern

WL: State watch list

SENSITIVE PLANT COMMUNITIES

The CNDDB lists three sensitive natural communities in Morro Bay (refer to Table 9.5). The Sensitive Natural Communities list in the CNDDB is not currently maintained, and no new information has been added. Therefore, vegetation types on-site were also compared with the List of Vegetation Alliances and Associations (CDFW 2010). According to the CDFW's Vegetation Program, Alliances with State ranks of S1-S3 are considered to be imperiled, and thus, potentially of special concern.

Table 9.5
Sensitive Natural Communities identified by the CNDDB

Natural Community	G-Rank/S-Rank
Northern coastal salt marsh	G3/S3.2
Central dune scrub	G2/S2.2
Coastal brackish marsh	G2/S2.1

G-Rank/S-Rank = Global Rank and State Rank as per CDFW's CNDDB RareFind5

CRITICAL HABITAT

Critical habitat is a term used in the federal Endangered Species Act (ESA) and defined as a specific geographic area (or areas) that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. An area is designated as "critical habitat" after the USFWS publishes a proposed federal regulation in the Federal Register and then receives and considers public comments on the proposal. The final boundaries of the critical habitat area, once identified, are published in the Federal Register.

The City of Morro Bay provides designated critical habitat for Western snowy plover, steelhead, Morro shoulderband (=Banded dune) snail, tidewater goby, and California red-legged frog. These critical habitats are shown on Figure 9.3.

WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats within a linkage are not necessarily the same as the habitats being linked. Rather, the linkage need only contain sufficient cover and forage to allow temporary use by a species during periods of movement between or among larger areas of suitable habitat. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending on the species, a linkage may require specific minimum physical characteristics (e.g., rock outcroppings, vernal pools, specific vegetation cover) to function as an effective wildlife corridor, and allow those species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a relatively short period of time.

The California Essential Habitat Connectivity Project: A Strategy for Conserving Connected California (Spencer et al. 2010) and Penrod et al. (2010) have all evaluated critical wildlife movement corridors throughout California that have been identified as priority areas for conservation. Essential Connectivity Areas (ECAs) represent the most critical wildlife movement areas for long-term conservation of California's sensitive wildlife species; however, it should be noted that ECAs do not represent an exhaustive list of movement corridors in the state. ECAs are large, continuous areas, and individual ECAs may overlap one another without clearly defined boundaries. A single ECA covers the majority of the city and is shown in Figure 9.4. Additionally, the creeks and riparian areas mapped on Figure 9.2 may serve as small-scale wildlife corridors in the city.

9.2 REGULATORY SETTING

FEDERAL

Federal Endangered Species Act. The USFWS and the National Marine Fisheries Service (NMFS) administer the ESA. The ESA requires each agency to maintain lists of imperiled native species and affords substantial protections to these listed species. The jurisdiction of the NMFS under the ESA is limited to the protection of marine mammals, marine fishes, and anadromous fish. All other species are subject to USFWS jurisdiction.

The USFWS and NMFS may list a species if it is endangered (at risk of extinction in all or a significant portion of its range) or threatened (likely to become endangered in the foreseeable future). Section 9 of the ESA prohibits the take of any wildlife species listed as endangered and most species listed as threatened. Take, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

The ESA includes exceptions that allow an action to be carried out, despite the fact that the action may result in the take of a listed species, where conservation measures are included for the species. Section 7 of the ESA provides an exception for actions authorized (e.g., under a Section 404 permit), funded, or carried out by a federal agency, and Section 10 provides an exception for actions that do not involve a federal agency.

Clean Water Act, Section 404 – Programmatic General Permit for Wetland Fill. The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's waters, including wetlands, lakes, rivers, and coastal areas. Section 404 of the CWA regulates the discharge of dredged or fill material into the waters of the United States, including wetlands. The CWA holds that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; issuance of such permits constitutes its principal regulatory tool.

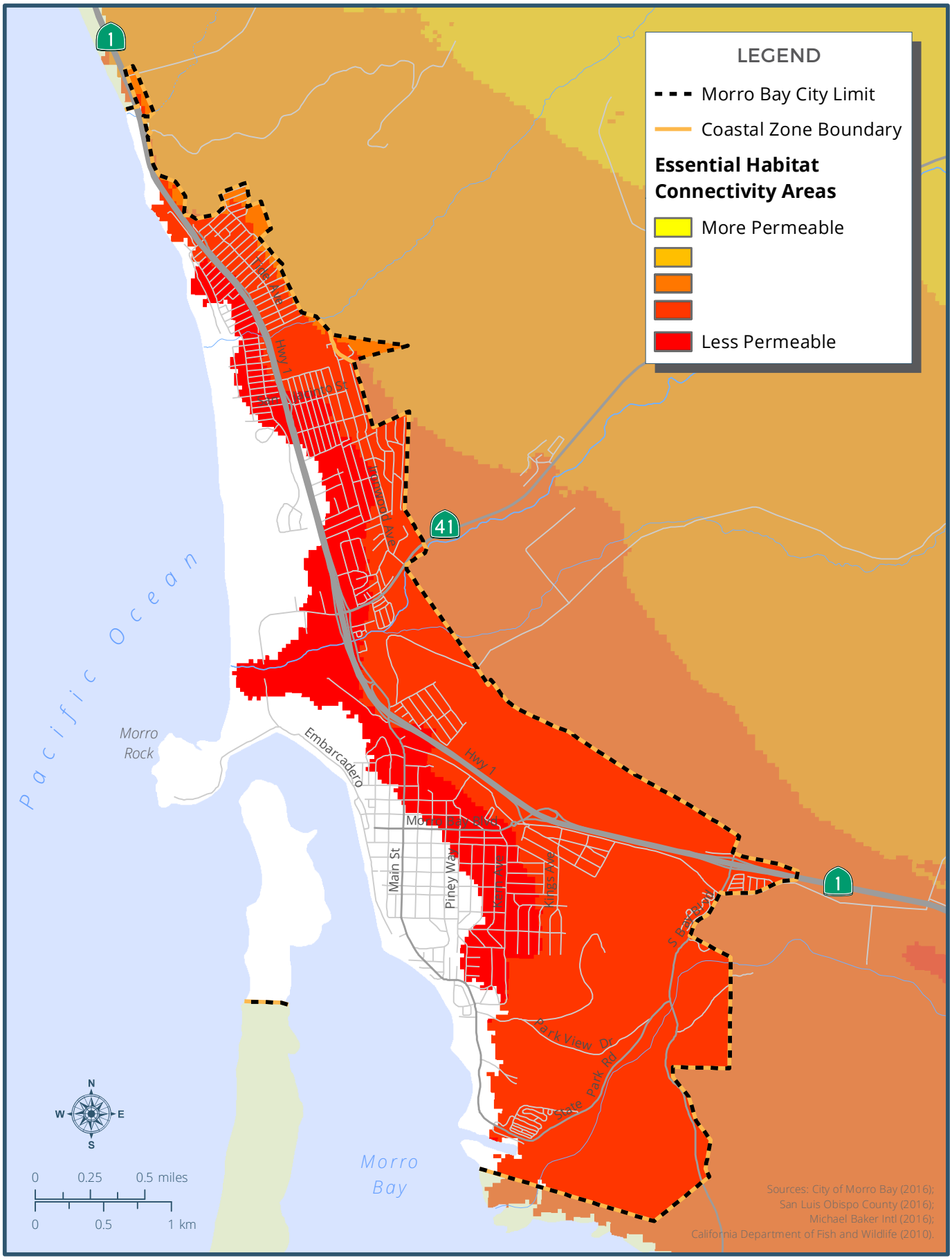

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FIGURE 9.4

Essential Connectivity Areas in Morro Bay

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The US Army Corps of Engineers (USACE) is authorized to issue Section 404 permits, which allow the placement of dredged or fill materials into jurisdictional waters of the United States under certain circumstances. The USACE issues two types of permits under Section 404: general permits (either nationwide permits or regional permits) and standard permits (either letters of permission or individual permits). General permits are issued by the USACE to streamline the Section 404 permitting process for statewide or regional activities that have minimal direct or cumulative environmental impacts on the aquatic environment. Standard permits are issued for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact).

Clean Water Act, Section 401 – Programmatic Water Quality Certification. Under the CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401 and the state's Porter-Cologne Water Quality Control Act. In California, Section 401 certification is handled by the Regional Water Quality Control Boards (RWQCBs). Morro Bay is under the jurisdiction of the Central Coast RWQCB, which is responsible for implementation of state and federal water quality protection guidelines. The Central Coast RWQCB implements the Water Quality Control Plan for the Central Coast Basin, a master policy document for managing water quality issues in the region.

Migratory Bird Treaty Act. The MBTA (1918), as amended, implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful, as is taking of any parts, nests, or eggs of such birds (16 U.S. Government Code 703). Take is defined more narrowly under the MBTA than under ESA and includes only the death or injury of individuals of a migratory bird species or their eggs. As such, take under the MBTA does not include the concepts of harm and harassment as defined under ESA.

Marine Protection, Research and Sanctuaries Act. On October 23, 1972, Congress passed the Marine Protection, Research and Sanctuaries Act, establishing marine sanctuaries in the United States under the National Marine Sanctuaries Program (NMSP). The

NMSP, a division of the National Oceanic and Atmospheric Administration, currently administers 13 national marine sanctuaries. Under the NMSP, a National Marine Sanctuary is a federally designated area within United States waters that protects areas of the marine environment with special conservation, recreational, ecological, historical, cultural, archeological, scientific, educational, and/or aesthetic qualities. A proposal has been submitted to officially designate the California Central Coast Chumash Heritage National Marine Sanctuary. The proposed sanctuary would be located along the south Central California coastline, from Gaviota Creek in Santa Barbara to Santa Rosa Creek in Cambria. The western boundary of the sanctuary would be west of the submerged Santa Lucia Bank along the Santa Lucia Escarpment. The eastern boundary would be the mean high tide line. These coastal waters included in the proposal are between the designated Channel Islands and the Monterey Bay National Marine Sanctuaries. The Morro Bay Estuary and Morro Rock state landmark would be located along the coast of the proposed sanctuary.

STATE

California Endangered Species Act. Administered by the CDFW, the California Endangered Species Act (CESA) prohibits the take of listed species and species formally under consideration for listing ("candidate" species) in California. CESA defines take as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code Section 86). Under this definition, and in contrast to ESA, CESA does not prohibit harm to a listed species. Furthermore, take under CESA does not include "the taking of habitat alone or the impacts of the taking." However, the killing of a listed species that is incidental to an otherwise lawful activity and not the primary purpose of the activity constitutes a take under CESA. CESA does not protect insects, but with certain exceptions prohibits the take of plants on private land.

California Fish and Game Code, Section 1600-1616 – Master Streambed Alteration Agreement for Streambed Modifications. The CDFW has jurisdictional authority over streams, lakes, and wetland resources associated with these aquatic systems under California Fish and Game Code Section 1600 et seq. The CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or

lake" (Fish and Game Code Section 1602). An entity that proposes to carry out such an activity must first inform the CDFW, and where the CDFW concludes that the activity will "substantially adversely affect an existing fish or wildlife resource," the entity proposing the activity must negotiate an agreement with the CDFW that specifies terms under which the activity may be carried out in a way that protects the affected wildlife resource.

California Fish and Game Code 3503 (Bird Nests). Section 3503 of the California Fish and Game Code makes it "unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." The CDFW may issue permits authorizing take.

California Fish and Game Code 3503.5 (Birds of Prey). Section 3503.5 of the California Fish and Game Code prohibits the take, possession, or destruction of any birds of prey or their nests or eggs "except as otherwise provided by this code or any regulation adopted pursuant thereto." The CDFW may issue permits authorizing take of birds of prey or their nests or eggs pursuant to CESA or the Natural Community Conservation Planning Act.

California Coastal Act. The Coastal Act outlines standards for development within the Coastal Zone and includes specific policies (see Division 20 of the Public Resources Code) that address issues such as terrestrial and marine habitat protection, commercial fisheries, and water quality. The Coastal Zone encompasses 1.5 million acres of land, and stretches from 3 miles at sea to an inland boundary that varies from several blocks in urban areas to as much as 5 miles in less developed areas. The City of Morro Bay is entirely within the Coastal Zone. The Coastal Zone extends into federal waters under the federal Coastal Zone Management Act.

Chapter 3 of the Coastal Act contains the standards used by the California Coastal Commission in the review of coastal development permits and local coastal plans (LCP). The chapter's seven articles govern all development along the coast, and mandate protection of public access, recreational opportunities, and marine and land resources. Chapter 3, Article 4 addresses protection of the marine environment including water quality issues, wetlands protections, and coastal armoring. Chapter 3, Article 5 includes protections for environmentally sensitive habitat, agriculture, and archeological resources.

California Marine Life Protection Act. The Marine Life Protection Act (1999) aims to protect California's marine natural heritage through establishing a statewide network of marine protected areas. Title 14 CCR Section 632 provides the regulatory requirements for marine protected areas (MPAs), marine managed areas (MMAs), and special closures and states that "public use of marine protected areas, marine managed areas, or special closures shall be compatible with the primary purposes of such areas. MPAs, MMAs, and special closures are subject to general rules and regulations in addition to existing Fish and Game Code statutes and regulations of the commission, except as otherwise provided for in subsection 632(b), areas and special regulations for use."

The City of Morro Bay contains a State Marine Reserve marine protected area and a State Marine Recreational Management Area marine protected area, both of which are subject to the special regulations for use included in Title 14 CCR Sections 632(b)(91) and 632(b)(92) (CDFW 2016c).

LOCAL

City of Morro Bay General Plan/Local Coastal Plan. The existing Morro Bay General Plan was adopted in 1988. Volume I of the General Plan includes all of the policies and programs in the Land Use Plan as well as pertinent and current policies from the 10 original General Plan elements. Volume II of the General Plan consists of the entire LCP in its certified form. If any inadvertent discrepancies in Volume I of the General Plan are discovered, the corresponding LCP language of Volume II will automatically prevail in intent and meaning. The General Plan and LCP include a number of policies aimed at protecting the resources in the city. Policies LU-50 through LU-62, as well as policies LU-64 through LU-77, include measures to protect the environmental resources and guide actions which affect those resources in the city. Additionally, policies 11.01-11.23 of the LCP specify measures to protect and manage ESHAs identified in the city (City of Morro Bay 1988).

Morro Bay National Estuary Program. The Morro Bay National Estuary Program is a nonregulatory, nonprofit organization which works with local residents, governments, nonprofits, agencies, and landowners to protect and restore the Morro Bay Estuary. Morro Bay was designated a state estuary in 1994 and an "estuary of national significance" in 1995. The Morro Bay National Estuary Program is one of 28 National

Estuary Programs around the country working to protect and improve the health of the nation's most important coastal waters. The Morro Bay National Estuary Program is locally managed, but is recognized by the United States Environmental Protection Agency, which provides some financial and technical support to each National Estuary Program.

9.3 PRIORITY FINDINGS

ENVIRONMENTALLY SENSITIVE HABITAT AREAS

ESHAs have been identified in three primary habitat types in the City of Morro Bay: coastal wetlands, coastal streams/riparian habitats, and rare or unusual native plant communities. The ESHAs identified in the city include Morro Bay and Morro Bay Estuary, various creeks and small tributaries, and Morro Rock, Fairbanks Point, and Black Hill Natural Area. However, the City's GIS layer showing the ESHAs identified in the city is out of date. As part of the process to update the General Plan and Local Coastal Plan, the City's ESHA GIS layer should be updated to include the habitats that currently exist in the City of Morro Bay.

MARINE RESERVES

The City of Morro Bay contains both a State Marine Reserve marine protected area and a State Marine Recreational Management Area marine protected area (CDFW 2016c).

MORRO BAY AND MORRO BAY ESTUARY

Morro Bay and the Morro Bay Estuary comprise the main wetlands area of the City of Morro Bay. At high tide, the bay contains approximately 2,000 acres of water surface and, at low tide, approximately 500 acres of water surface. The bay supports several biotic communities, including coastal salt marsh, tidal mudflats, and coastal scrub, which serve as an important link between oceanic and terrestrial ecosystems. The bay and the estuary also support many migratory birds, as well as a variety of fish species, clams, and oysters.

SPECIAL-STATUS SPECIES

The CNDDB, CNPS, and the USFWS databases document 48 special-status plant species and 20 special-status animal species with records in the City of Morro Bay. Eleven of the documented 48 special-status plants are included on state and/or federal threatened or endangered species lists. Fifteen of the 20 special-status animal species are state and/or federally listed as threatened or endangered. While all special-status plants and animals are protected under the California Environmental Quality Act, state and federally listed species have greater legal protection and often require special permitting to ensure impacts to these species are not significant.

CRITICAL HABITAT

Morro Bay contains designated critical habitat areas for Western snowy plover, steelhead, Morro shoulderband (=Banded dune) snail, tidewater goby, and California red-legged frog.

Morro Bay includes several habitat areas of importance, including oak woodlands, riparian woodlands, chaparral, grassland, and aquatic habitats, which are home to the majority of the special-status plant and animal species that occur in the city. Some of these communities are considered sensitive by the CDFW and are protected as such.

WATERWAYS AND WETLANDS

Numerous waterways and wetland areas in Morro Bay provide habitat for special-status species, and are considered waters of the United States or waters of the state. These fall under the jurisdiction of the USACE, CDFW, and/or the RWQCB. Features that fall under the jurisdiction of the above-listed agencies include various creeks, freshwater and saline emergent wetlands, and estuarine and marine deepwaters and wetlands.

HABITAT CONNECTIVITY

The majority of Morro Bay falls within a single ECA, as documented by the California Essential Habitat Connectivity Project (Spencer et al. 2010). Additionally, many other

natural areas in the county, such as riparian corridors, could function as important local wildlife movement corridors.

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10.0 Noise

Plan MORRO BAY

10.0 NOISE

This chapter identifies existing noise conditions in the planning area. This chapter also summarizes applicable regulations for noise and vibration.

10.1 EXISTING CONDITIONS

FUNDAMENTALS OF NOISE

To understand how noise and vibration occur in the planning area, it is important to first understand how noise and vibration are measured. This section provides an overview of the units used to measure noise and vibration.

Noise

Decibels (dBA)

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dBA level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1 to 2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while arterial streets are in the 50 to 60+ dBA range. Normal conversational levels are in the 60 to 65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically drop off at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. Standard new residential construction typically provides a reduction of exterior-to-interior noise levels of 25 dBA or more with windows closed (FTA 2006).

Equivalent Noise Level (Leq)

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level).

Other Noise Measurement Units

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than noise that occurs during the day. Community noise is usually measured using day-night average level (Ldn), which is the 24-hour average noise level with a 10 dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dBA.

Vibration

Vibration Decibels (VdB)

Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the United States.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA 2006). In terms of groundborne vibration impacts on structures, the Federal Transit Administration (FTA) states that groundborne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings. Most perceptible indoor vibration is caused by sources within buildings such as the operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible.

The general human response to different levels of groundborne vibration velocity levels is described in Table 10.1.

Table 10.1
Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find vibration at this level annoying.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: FTA 2006

NOISE CONDITIONS IN MORRO BAY

In general, the City of Morro Bay is a relatively quiet environment. Roadway traffic from Highway 1, Highway 41, Morro Bay Boulevard, Main Street, Embarcadero, and South Bay Boulevard is the most pervasive source of noise in the city. Other sources of noise include pedestrians, commercial activities (e.g., buildings with HVAC units and automotive repair shop operations), school functions (e.g., high school sporting events), and sounds associated with the coastal setting (e.g., ocean waves and faunal activity).

To determine existing noise levels in the city, 15-minute sound level measurements were taken on a weekday near major roadways and typical land uses in the city, as shown on Figure 10.1. The measurements were collected on April 6, 2016, using an ANSI Type II integrating sound level meter. These sound level measurements provide existing ambient sound levels throughout the city. Table 10.2 identifies the measured noise levels.

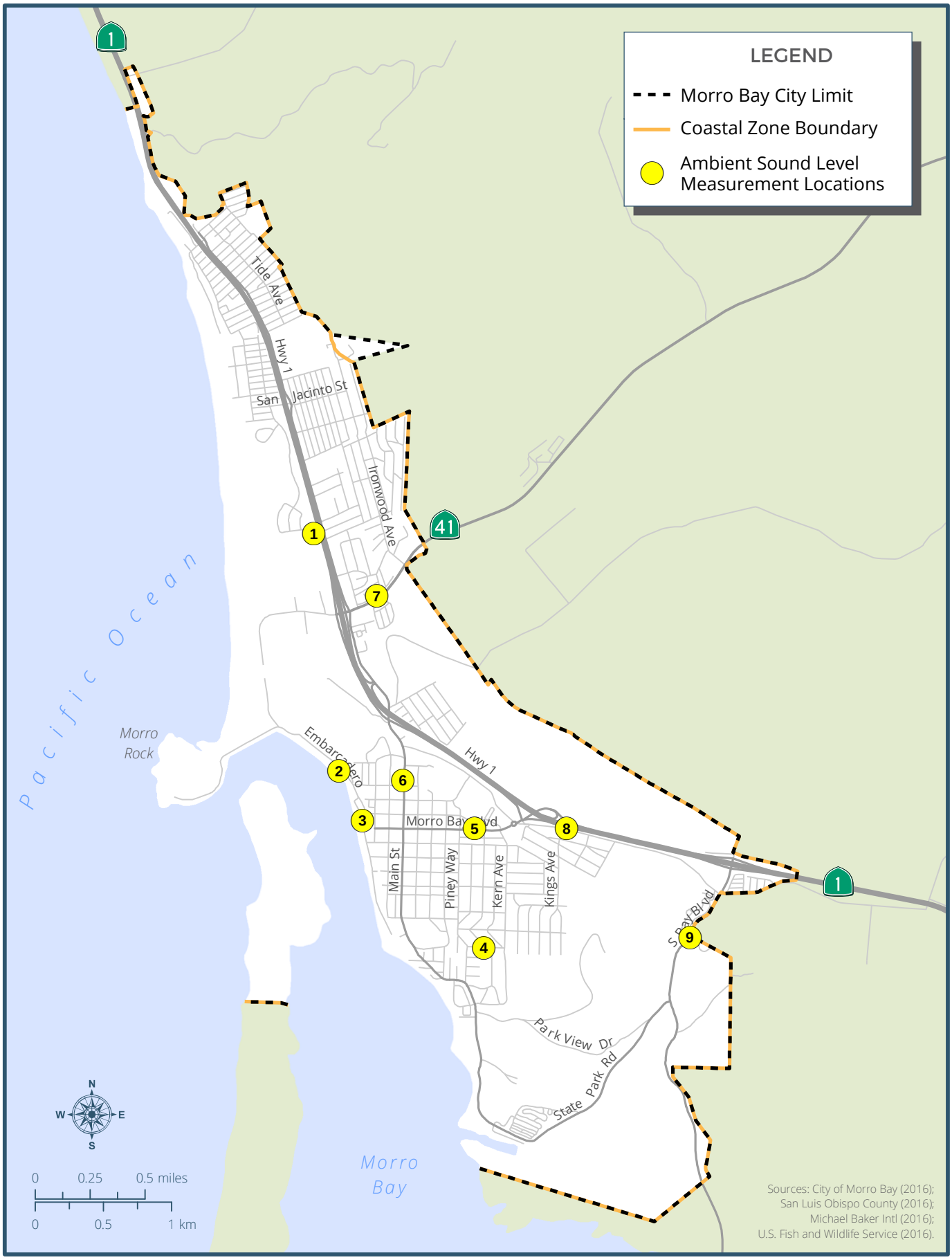

FIGURE 10.1

Ambient Sound Level Measurement Locations

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Table 10.2
Ambient Sound Level measurements in the City

Measurement Number	Location and Time	Noise Source	Distance from Primary Noise Source (feet)	Leq[15] (dBA)
1	Highway 1, west side of highway, approximately 80 feet north of Morro Bay High School, 12:54 p.m.	*Primary* – roadway traffic *Secondary* – aircraft flyover, bicycle and pedestrian path activity	150	60.4
2	Morro Bay Harbor, south end of parking lot across from boat docking area, 1:20 p.m.	*Primary* – harbor and commercial operations *Secondary* – Embarcadero roadway, parking lot noise	100	55.4
3	Embarcadero commercial area, 140 feet south of Harbor Street intersection, 1:46 p.m.	*Primary* – pedestrian and commercial activity *Secondary* – Embarcadero roadway	50	54.3
4	Corner of Luisita Street and Bernardo Avenue, 2:17 p.m.	*Primary* – residential commercial activity, Luisita Street traffic	15	50.7
5	Morro Bay Boulevard, at Morro Bay Park, 2:45 p.m.	*Primary* – roadway traffic *Secondary* – fire engine sirens, pedestrian activity	30	63.2
6	Main Street, 130 feet north of Beach Street intersection, 3:09 p.m.	*Primary* – roadway traffic *Secondary* – Beach Street traffic	35	67.6
7	Highway 41, 145 feet west of Hill Street intersection, 3:34 p.m.	*Primary* – roadway traffic	40	67.6
8	Highway 1, along Quintana Road 110 feet east of Kings Avenue, 3:59 p.m.	*Primary* – roadway traffic *Secondary* – Quintana Road traffic	75	71.1
9	South Bay Boulevard, 0.25 mile south of Quintana Road intersection, 4:22 p.m.	*Primary* – roadway traffic	20	72.0

Note: Field visit on April 6, 2016, using ANSI Type II integrating sound level meter.

See Figure 10.1 for noise measurement locations.

See Appendix C for noise monitoring data sheets.

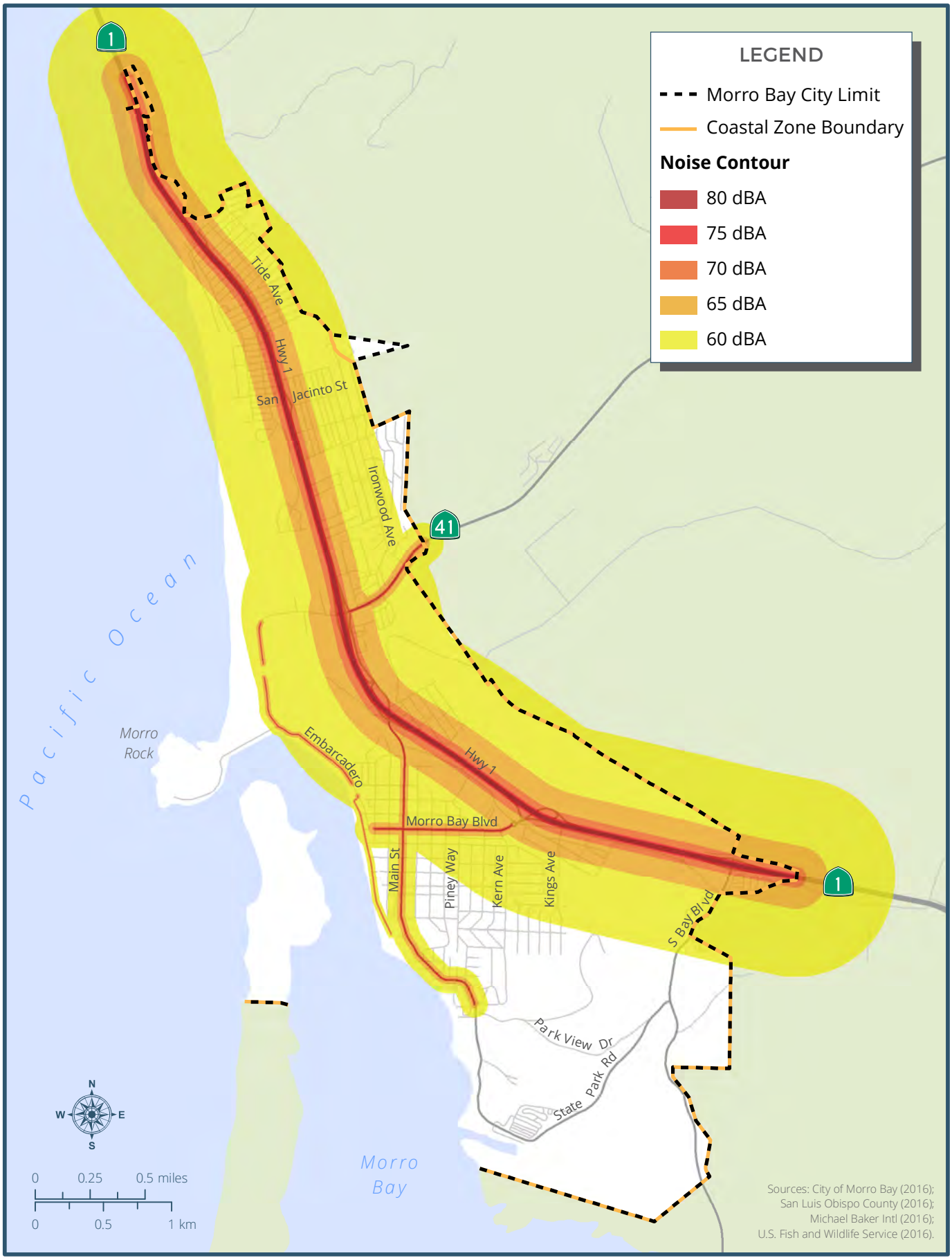
As shown in Table 10.2, the ambient sound levels at major roadways and land uses in the City of Morro Bay range from approximately 51 to 72 dBA. Measurement locations 8 and 9 had the highest ambient sound levels due to high levels of roadway traffic during the afternoon peak period, during which these measurements were recorded. The lowest ambient sound levels were recorded in the commercial and residential areas of the city.

Using the 2016 average daily traffic volumes from the project traffic study, prepared by Central Coast Transportation Consulting, noise levels along area roadways were also estimated using the US Department of Housing and Urban Development (HUD) Day/Night Noise Level (DNL) Calculator. The HUD DNL calculator is an online assessment tool that calculates the Ldn, or 24-hour average noise level, from roadway traffic. The HUD DNL calculator only estimates noise levels generated from traffic and does not account for other factors that may affect ambient noise levels, such as intervening structures and topography, which attenuate noise. Accordingly, the HUD DNL calculator often overestimates ambient noise in comparison to measured ambient noise levels. The HUD DNL calculator results are shown in Table 10.3 and existing noise contours along the major roadways in the city are shown on Figure 10.2.

Table 10.3
Modeled Noise Levels Along Major Roadways in the City

Roadway Segment	Modeled Noise Level at 50 feet (dBA Ldn)
Embarcadero - North of Beach Street	66.2
Embarcadero - North of Pacific Street	63.2
Embarcadero - South of Pacific Street	62.5
Morro Bay Boulevard - West of Quintana Road	69.7
Main Street - South of Radcliff Drive	68.1
Highway 41 - East of Main Street	69.9
Highway 1 - South of State Route 41	76.7
Highway 1 - North of State Route 41	75.7

Source: HUD DNL Calculator, 2016, included in Appendix C



Plan MORRO BAY

FIGURE 10.2

Existing Noise Contours

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As shown in Table 10.3, the estimated noise levels at 50 feet from major roadways within the City of Morro Bay range from approximately 63 to 77 dBA. Estimated noise levels are highest along Highway 1 due to relatively high volumes of traffic as compared to other roadways in the city. The lowest estimated noise levels were modeled along roadway segments which run along the bay and commercial areas in the city.

Noise-sensitive areas and land uses

Due to the known effects of noise, which may include speech interference, sleep interference, physiological responses and annoyance, and hearing loss, the City has established criteria to help protect the public health and safety, and prevent disruption of certain human activities. The existing City of Morro Bay General Plan Noise Element, adopted on August 29, 1993, provides a policy framework for addressing potential noise impacts in the city during project review and long-range planning.

Noise exposure goals for each land use type reflect the varying noise sensitivities associated with each of those land uses. The following land uses have been identified in the City General Plan Noise Element (1993) as being noise-sensitive:

- Residential development
- Schools
- Hospitals and nursing homes
- Churches
- Meeting halls, auditoriums, music halls, theaters, and libraries
- Transient lodging – motels and hotels
- Playgrounds/parks
- Offices

The City of Morro Bay has not received any recent noise complaint filings due to disturbance at noise-sensitive receptors in the city (City of Morro Bay 2016).

10.2 REGULATORY SETTING

FEDERAL

Federal Highway Administration

The Federal Highway Administration (FHWA) has established noise abatement criteria that must be considered for the design of federal or federally funded highway projects. Federal regulations also set noise limits for medium and heavy trucks (over 4.5 gross tons). The federal standard for truck pass-by noise at 15 meters (50 feet) is 80 dBA. These standards are implemented through federal regulatory controls on truck manufacturers. Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) provides procedures for conducting highway project noise studies and implementing noise abatement measures to help protect the public health and welfare, supply noise abatement criteria, and establish requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered for a Type I project if the project is predicted to result in a traffic noise impact. A traffic noise impact is considered to occur when the project results in a substantial noise increase or when the predicted noise levels approach or exceed the noise abatement criteria specified in the regulation. 23 CFR 772 does not specifically define what constitutes a substantial increase or the term approach; rather, it leaves interpretation of these terms to the states.

Federal Transportation Administration Vibration Impact Criteria

The FTA has published guidance relative to vibration impacts. The FTA establishes noise standards for federally funded transit projects. The FTA has identified the human annoyance response to vibration levels as 80 VdB.

US Department of Housing and Urban Development

HUD seeks to create quality affordable housing for all Americans and uses its platform to improve the quality of life. To achieve its goals and fulfill its mission, HUD has established its own exterior noise criteria for evaluating projects located in high noise areas (e.g., near an airport, road, or railroad). HUD's exterior noise criterion states that 65 dBA DNL noise levels or less are satisfactory for residential land uses. HUD's criterion does not include standards for interior noise levels.

STATE

California Code of Regulations (Title 24)

Known as the California Building Code, the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources. The standards state that "interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room." The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences (e.g., apartments). The code also states: "Residential structures to be located where the annual Ldn or CNEL exceeds 60 dB shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level."

California Department of Transportation Construction Vibration

The California Department of Transportation (Caltrans) has adopted guidance for construction vibrations. Caltrans uses a vibration limit of 12.7 mm/sec (0.5 inches/sec) peak particle velocity (PPV) for buildings that are structurally sound and designed to modern engineering standards. A conservative vibration limit of 5 mm/sec (0.2 inches/sec) PPV has been used for buildings that are found to be structurally sound, but where structural damage is a major concern. For historic buildings or buildings that are documented to be structurally weakened, a conservative limit of 2 mm/sec (0.08 inches/sec) PPV is often used to provide the highest level of protection. All of these

limits have been used successfully and compliance with these limits has not been known to result in appreciable structural damage. All vibration limits included in the Caltrans guidance for construction vibration apply at the ground level and take into account the response of structural elements (i.e., walls and floors) to groundborne excitation.

California Government Code Section 65302(f)

California Government Code Section 65302(f) requires all general plans to include a noise element that addresses noise-related impacts in the community. The California Office of Planning and Research (OPR) has prepared guidelines for the content of the noise element, which includes the development of current and future noise level contour maps. These maps must include contours for the following sources:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight on-line railroad operations and ground rapid transit systems
- Commercial, general aviation, heliport, and military airport operations, aircraft flyovers, jet engine tests stands, and all other ground facilities and maintenance functions related to airport operation
- Local industrial plants, including but not limited to railroad classification yards
- Other stationary ground noise sources identified by local agencies as contributing to the community noise environment

LOCAL

City of Morro Bay General Plan Noise Element

The City of Morro Bay General Plan Noise Element (1993) contains goals, policies, and implementation measures describing the compatibility of sensitive land uses with noise. The purpose of these goals, policies, and implementation measures is to reduce

the various potential effects of noise on people. Table 10.4 summarizes the ranges of noise exposure which are considered to be acceptable, conditionally acceptable, or unacceptable for various noise-sensitive land uses in the city. These ranges are derived from those provided by OPR in the General Plan Guidelines. Table 10.5 summarizes the maximum transportation noise exposure levels for noise-sensitive land uses.

Table 10.4
Community Noise Exposure Levels

Land Use Category	Community Noise Exposure (CNEL,dBA)		
	Acceptable[1]	**Conditionally Acceptable[2]**	**Unacceptable[3]**
Residential, Theatres, Auditoriums, Music Halls	<60	60-70	>70
Transient Lodging – Motels, Hotels	<60	60-75	>75
Schools, Libraries, Museums, Hospitals, Nursing Homes, Meeting Halls, Churches	<60	60-75	>75
Playgrounds, Parks	<70	70-75	>75
Offices	<60	60-75	>75

Source: City of Morro Bay 1993

[1] Specified land use is satisfactory. No noise mitigation measures are required.

[2] Use should be permitted only after careful study and inclusion of protective measures as needed to satisfy the policies of the Noise Element.

[3] Development is usually not permitted.

The maximum allowable exterior noise exposure from transportation noise sources in outdoor activity areas for most sensitive land uses is 70 dBA CNEL. The maximum allowable interior noise exposure from transportation noise sources is 45 dBA CNEL.

Table 10.6 summarizes the maximum noise exposure levels for noise-sensitive uses due to stationary noise sources. New development of noise-sensitive land uses may be permitted only where location and design allow the development to meet the daytime and nighttime standards listed therein.

Table 10.5
Maximum Allowable Noise Exposure – Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] CNEL,dBA	Interior Spaces	
		CNEL,dBA	Leq,dBA[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Office Buildings	60[3]	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Source: City of Morro Bay 1993

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2] As determined for a typical worst-case hour during periods of use.

[3] Where it is not possible to reduce noise in outdoor activity areas to 60 CNEL, dBA or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 CNEL, dBA may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Table 10.6
Maximum Allowable Noise Exposure – Stationary Noise Sources[1]

	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly Leq, dBA[2]	50	45
Maximum Level (LAFmax), dBA[2]	70	65
Maximum Level, Impulse Noise (LASmax), dBA[3]	65	60

Source: City of Morro Bay 1993

[1] As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barrier or other property line noise mitigation measures.

[2] Sound level measurements shall be made with slow meter response.

[3] Sound level measurements shall be made with fast meter response.

The maximum allowable exterior noise exposure from stationary noise sources during daytime hours is 70 dBA. The maximum allowable exterior noise exposure from stationary sources during nighttime hours is 65 dBA. The Noise Element (1993) defines outdoor activity areas as "patios, decks, balconies, outdoor eating areas, swimming pool areas, yards of dwelling units and other areas which have been designated for outdoor activities and recreation." Although outdoor recreation areas, such as playgrounds and parks, are considered noise-sensitive, the recommended exterior

noise limit for this land use is 70 dBA CNEL. In mixed-use development, residential noise standards are applied to the residential portion of such projects.

Pursuant to the existing Noise Element, the City shall consider implementing mitigation measures where existing noise levels produce significant noise impacts to noise-sensitive land uses or where new development may result in cumulative increases of noise upon noise-sensitive land uses.

City of Morro Bay Municipal Code

Section 17.52.030 of the City of Morro Bay Municipal Code established noise requirements for the city. In general, the code prohibits any business operation with sustained or intermittent noise levels exceeding 70 dBA CNEL within 100 feet of residential uses, hospitals, and other noise-sensitive uses unless noise levels are mitigated in compliance with the Municipal Code. Additionally, all commercial and industrial deliveries and loud commercial activities within 100 feet of a residential use shall be limited to the hours between 7:00 a.m. and 10:00 p.m. The City is also required to review new public and private development proposals to determine conformance with the policies of the Noise Element. Where the development of a project may result in land uses being exposed to existing or projected future noise levels exceeding the levels specified by the Noise Element, the City shall require an acoustical analysis early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of a building permit.

10.3 PRIORITY FINDINGS

MORRO BAY IS A RELATIVELY QUIET ENVIRONMENT

In general, the City of Morro Bay is a relatively quiet environment. The main source of noise in the city is roadway traffic and the City of Morro Bay has not received any recent noise complaint filings due to disturbance at noise-sensitive receptors.

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11.0 Parks, Recreation, and Open Space

Plan MORRO BAY

11.0 PARKS, RECREATION, AND OPEN SPACE

This chapter identifies existing park, recreation, and access conditions in the planning area. This chapter also summarizes applicable regulations for parks and recreation.

11.1 EXISTING CONDITIONS

Morro Bay's parks and open spaces are a key part of the community's identity, connecting residents, businesses, and visitors to the outdoors. The city has established itself as a gathering place for nature and recreation enthusiasts, from surfers to birdwatchers. The community and local government seek to continually enhance and protect open spaces and access to recreational opportunities.

The existing resources and service levels are described in three topic areas: recreation services provided by the City, parks and open space in Morro Bay, and access to resources in the Coastal Zone.

RECREATION SERVICES

Existing Recreational Programs and Services

The City of Morro Bay Recreation Services Division coordinates multiple programs and services for residents. Programs are developed to serve all residents, from young children to senior citizens. Current services can generally be divided into three categories: youth programming (Table 11.1), adult programming (Table 11.2), and community events (Table 11.3).

Table 11.1
Morro Bay Youth Recreational Programming (2016)

Program Name	Program Description
Junior Lifeguards	The Morro Bay Junior Lifeguards teaches youth ocean safety, first aid, environmental awareness, and rescue techniques.
Morro Bay Kids Club and Camp	After-school and summer alternatives for children and youth are provided by the City's Youth Services Division for students from elementary to high school. Kindergarten through 5th grade students at Del Mar Elementary are eligible for child care at the Kid's Club Children's Center.
Teen Center and Skate Park	After-school recreational activities for middle and high school students.
Coast Girls Softball League	Coast Girls Softball is an ASA-affiliated fast-pitch league open to girls living in Morro Bay, Los Osos, Cayucos, and Cambria. Four divisions are offered: • 8 and under • 10 and under • 12 and under • 14 and under
Estero Bay Youth Basketball	This program is open to boys and girls in 3rd through 8th grades from Morro Bay, Cayucos, and Los Osos. Games are played one to two times weekly, from December to March.
Estero Bay Youth Futsal	Futsal is a fun, noncompetitive indoor soccer program offered during the spring (April to June). The game is fast-paced and is played on a basketball court, and is open to boys and girls ages 5 to 18.
Estero Bay Youth Soccer	Estero Bay Youth Soccer is a division of CYSA (California Youth Soccer Association, South) and plays games with soccer leagues from Los Osos, Cambria, Templeton, and Atascadero. The league offers eight divisions: • 6 and under (coed) • 8 and under (coed) • 10 and under (boys) • 10 and under (girls) • 12 and under (boys) • 12 and under (girls) • 14 and under (boys) • 14 and under (girls) Games typically run from September to March.
T-Ball/Coach Pitch	This league is an introduction to baseball and is open to boys and girls ages 4 to 7. The season begins with T-ball and progresses to Coach Pitch. Registration typically opens in February and the season runs from April to June.

Table 11.2
Morro Bay Adult Recreational Programming (2016)

Program Name	Program Description
Adult Softball	The adult softball league typically consists of the following four divisions: Coed, Men's C2, Men's D1, and Masters (over 50). All divisions typically play a 10-game season ending with a tournament. All team members must be at least 16 years old (except in the Masters Division, where the minimum age is 50).
Adult Soccer	An adult coed soccer league is offered through the Recreational Sports Division during the winter season. The league consists of eight games played at Lila Keiser Park in the evenings once weekly.
Aikido Self Defense	Aikido is a martial art that consists of self-defense techniques to redirect and neutralize an attack. This training is hosted at the Morro Bay Community Center for residents ages 12 to 60.

Table 11.3
Morro Bay Community Recreational Events (2016)

Program Name	Program Description
Rock to Pier Fun Run & Half Marathon	The Rock to Pier Run is a 6-mile all-beach run starting at Morro Rock, heading north to Cayucos Pier. Every July, participants of all ages and abilities compete in this run with well over 1,000 runners from all over the world.
Project Surf Camp	The City partners with Project Surf Camp, a nonprofit organization which uses surfing and the ocean to build self-confidence, self-esteem, and self-efficacy in individuals with special needs.
Tennis Play Day	City-coordinated meeting of Morro Bay tennis players for casual doubles play. Hosted twice weekly at Monte Young and Del Mar Park tennis courts.
Pickleball Play Day	City-coordinated meeting of pickleball players of all ages and skill levels. Hosted five days a week at Del Mar Park roller hockey rink. The Morro Bay Pickleball Club is sponsored by Morro Bay Senior Citizens, Inc.

Facility Rentals

The City owns a number of community facilities that serve as important gathering places and help support a social and healthy community. These facilities are listed in Table 11.4. These facilities, as well as some parks in Morro Bay, can be rented by the public for meetings and events.

Table 11.4
Community-Based Facilities in Morro Bay (2016)

Facility Name	Facility Address	Facility Amenities
Community Center	1001 Kennedy Way	• Auditorium • Multipurpose room • Lobby • Full kitchen • Parking
Veteran's Memorial Building	209 Surf Street	• Assembly hall • Full kitchen • Large fenced patio • Picnic benches and barbeque pit • Parking
Morro Bay Teen Center and Skate Park	231 Atascadero Road	• Skate park • Kitchen • Multipurpose room • Parking

In addition to the City-owned buildings available for community use detailed in Table 11.4, the following parks and open space areas are available for rent:

Open Areas

- Anchor Memorial Park open area
- Bayshore Bluffs Park open area
- Centennial Parkway open area
- City Park open area
- Cloisters Park open area
- Monte Young Park open area
- Morro Rock Beach open area
- Tidelands Park open area

Park Facilities

- City Park basketball courts
- Coleman Park
- Coleman basketball courts
- Del Mar Park hillside or meadow
- Del Mar Park basketball courts
- Del Mar roller hockey rink (being converted to pickleball courts)
- Del Mar tennis courts
- Lila Keiser Park barbecue
- Lila Keiser Park baseball fields
- Monte Young tennis courts
- North Point Overlook
- Giant chessboard

In addition to City recreational and community facilities, the San Luis Obispo County Parks and Recreation Department operates the Morro Bay Golf Course, a public course on the city's southern border owned by the California Department of Parks and Recreation. The 18-hole course has a range of rental and course options for visitors. It is located in the city's Open Area 2 zone, which allows for a broader range of recreational uses. Reservation of campsites and picnic areas at Morro Bay State Park and at Morro Strand State Beach are managed by the California Department of Parks and Recreation, through the Reserve America website. Two group camping spots, 28 RV/trailer-only spots, 87 standard (tent or trailer), and 5 tent-only sites are available at the Morro Bay campgrounds. While not owned by the City, the Estero Bay Community Garden, at San Jacinto and Ironwood, allows community members to rent 15-foot by 15-foot organic plots, supporting community health and connectivity.

PARKS

Morro Bay parks range from small memorials to large open spaces, representing the city's confluence of urban development and coastal wilderness. This diversity of park types captures the needs of a community that is a bustling tourist destination while preserving a small-town character.

The following description of existing parks is split into three sections: community-based parks, resource-based parks, and state parks. Community-based parks are improved areas located close to residential neighborhoods and include playgrounds, picnic areas, shelters, playing fields and courts, and other man-made structures. Resource-based

parks are generally unimproved areas that provide trails, benches, and stairways, but otherwise preserve natural features such as open spaces, coastlines, and wetlands. Two state parks and a preservation area are located in the city; these areas are owned and operated by the California Department of Parks and Recreation.

Community-Based Parks

A number of Morro Bay parks are located in neighborhoods and commercial areas. These community-based parks and facilities create opportunities for residents and visitors to gather, play, and relax. Community-based parks in Morro Bay are shown in Table 11.5 and within the larger context of citywide recreation in Figure 11.1. Over half of the parks in the city are under 5 acres, providing primarily small play areas, benches, and barbecues. Some larger parks, such as Del Mar Park, provide a broader range of recreation activities, including sports courts, a dog park, and an amphitheater. Many parks provide access to the coast and Embarcadero, including Anchor Memorial Park, Centennial Parkway, Cloisters Park, Coleman Park, Mariner Memorial Park, and Tidelands Park.

Morro Bay has explored the use of parklets to create additional community-based park space along the downtown section of Main Street. A demonstration parklet was installed in early 2015, but was removed after seven months. At the time of the decision to deconstruct the parklet, multiple council members indicated that they would still like to explore the concept of parklets in different locations in the city in the future (City of Morro Bay 2015a).

Table 11.5
Community-Based Parks in Morro Bay

Park Name	Park Address	Park Amenities	Acres	Ownership
Anchor Memorial Park	931 Embarcadero	• Public observation dock • Benches • Drinking fountains • Oval picnic tables	.06	City of Morro Bay

Park Name	Park Address	Park Amenities	Acres	Ownership
Centennial Parkway	1041 Front Street	• Stairway access between Market Ave and Front Street • Giant chessboard • Chess tables • Benches • Restrooms	1.0	City of Morro Bay
City Park	750 Harbor Street	• Basketball courts • Benches • Drinking fountains • Picnic tables • Play area • WW II Monument • Restrooms	2.0	City of Morro Bay
Cloisters Park	2500-24000 Coral Avenue	• Wetlands area and walking path • Benches • Restrooms • Picnic tables • Play area • Barbeques	8.0	City of Morro Bay
Coleman Park	101 Coleman Drive	• Harbor walk pedestrian path • Benches • Restrooms • Picnic tables • Basketball court • Swing set	1.1	City of Morro Bay
Del Mar Park	3099 Ironwood Avenue	• Natural creek • Basketball court • Play area • Roller hockey rink • Amphitheater • Horseshoe pits • Barbeques • Sports fields • Dog park • Tennis courts • Restrooms	9.0	City of Morro Bay

Park Name	Park Address	Park Amenities	Acres	Ownership
Lila Keiser Park	1 J Street	• 2 Baseball/softball fields • Soccer field • Covered picnic area • Barbeque • Play area • Horseshoe pits • Restrooms	10.0	Dynegy
Mariner Memorial Park	500 Embarcadero	• Public observation dock • Benches • Drinking fountains	1.0	City of Morro Bay
Monte Young Park	24 South Street	• Tennis courts • Play area • Public restroom • Picnic areas	1.0	City of Morro Bay
Morro Bay Bike Park	301 Little Morro Creek Road	• Bike terrain, including jumps, pump track, and other mountain bike features	4.0	Privately owned
Rockies Teen Center and Skate Park	231 Atascadero Road	• Upgraded skating equipment • Teen Center with after-school programs and activities with Youth Service Leaders • Teen Center • Bike days every Wednesday and Sundays • Reservations available for large parties	1.4	City of Morro Bay
Tidelands Park	300 Embarcadero	• Play area • Barbecues • Picnic area • Restrooms • Stairs to bay shore	2.0	City of Morro Bay
		Total City-owned	26.56	
		Total	40.56	

Resource-Based Parks and Open Space

In addition to the 11 community-based parks across Morro Bay, the City manages three resource-based parks that preserve and protect natural resources while providing scenic and passive uses for residents and visitors. Maintained trails, benches, and

stairways provide usability, beach access, and views of some of Morro Bay's most prized visual assets, such as Morro Rock. (For more information on trails, see Chapter 13, Transportation and Mobility). Details about Morro Bay's resource-based parks are detailed in Table 11.6, and are shown in Figure 11.1.

Table 11.6
Resource-Based Parks in Morro Bay

Park Name	Park Address	Park Type	Acreage	Owner
Bayshore Bluffs Park	170 Bayshore Drive	• Preserved meadow • Connected by Morro Bay bike path • Bay and wildlife observation deck • Kayak launch • Parking lot	3.0	City of Morro Bay
Morro Rock Beach	Coleman Drive	• Sandy beach access • Surf access • Pedestrian trail across Morro Creek • Parking lot	1.0	City of Morro Bay
North Point Park	3480 Toro Lane	• Beach access stairway • Preserved meadow • Parking lot	1.0	City of Morro Bay
		Total	5.0	

In addition to the parks owned and operated by Morro Bay that are managed natural places, a number of open spaces in the city are zoned to sustain preservation (see Figure 11.2). These areas provide important habitat for threatened and endangered species, and maintain the city's connection to nature. Morro Bay is also surrounded by marshland, grazing land, habitat conservation areas, and cropland. These areas provide an unofficial greenbelt around the city, although much of the land is private property and does not provide recreational benefit to community members or visitors.

State Parks

The city is home to two state parks and a state marine recreational management area, together totaling over 5,000 acres of recreation and open space area. The parks are managed, owned, and operated by the California Department of Parks and Recreation. From July 2014 to June 2015, Morro Bay State Park welcomed 1,147,363 day use and camping visitors, and Morro Strand State Beach welcomed 273,995 visitors (California Department of Parks and Recreation 2015). These parks play an important role in the

local economy, and benefit residents by providing and preserving recreational resources. Both Morro Strand State Beach and Morro Bay State Park provide essential coastal access; diverse recreational opportunities including surfing, sport fishing, and kayaking; and preservation of important estuarine habitats. The state parks are detailed below in Table 11.7, and identified alongside other parks in Figure 11.1.

Table 11.7
State Parks in Morro Bay (2016)

Park Name	Park Address	Acreage
Morro Strand State Beach	305 Yerba Buena St	184
State Marine Recreational Management Area	N/A	2,100 (including aquatic resources)
Morro Bay State Park	60 State Park Road	2,800
	Total	5,084

CURRENT PARK SERVICE LEVELS

Morro Bay owns and operates approximately 31.56 acres of accessible open space and parkland for its approximately 10,640 residents, providing a park service level of 2.97 acres per 1,000 people. This is slightly below the 3 acres per 1,000 residents established by the Quimby Act, and does not include the over 3,000 acres of state-owned parks and beaches in the city, which provide additional benefit to residents and visitors.

The natural amenities in Morro Bay attract visitors throughout the year, including both seasonal residents and short-term guests. Using estimates developed using transit occupancy taxes, Morro Bay hosted between 1.5 and 2.2 million visitors from July 2014 to June 2015 (City of Morro Bay 2015b). A majority of the transit tax was collected between July and October, and again in May and June, indicating higher summertime visitors. Including these annual visitors in the assessment of park service levels drops the service to 0.28 acres per 1,000 people. However, inclusion of visitors is not mandated. Furthermore, the inclusion of state parks in the planning area, a large draw for visitors, brings the service level to 1.5 acres per 1,000 people if visitors are included.

COASTAL ACCESS

One of the fundamental goals of the Coastal Act is to provide maximum public access to the coast by protecting existing access points and creating new public access. Upholding this goal is a crucial part of developing a Local Coastal Plan. Coastal access benefits Morro Bay by creating open beaches and coastlines that promote recreation, tourism, and ecosystem health. Coastal access points in Morro Bay are shown below in Figure 11.3.

Two types of access are shown in this map. Lateral access defines the ability to walk parallel to the coastline. In Morro Bay, lateral access is found along from the City's northern border, around Morro Rock, to the start of the Embarcadero. Previously, when water from Morro Creek crosscut the beach to reach the ocean, there was a lateral access interruption and the creek was difficult or impossible to cross.

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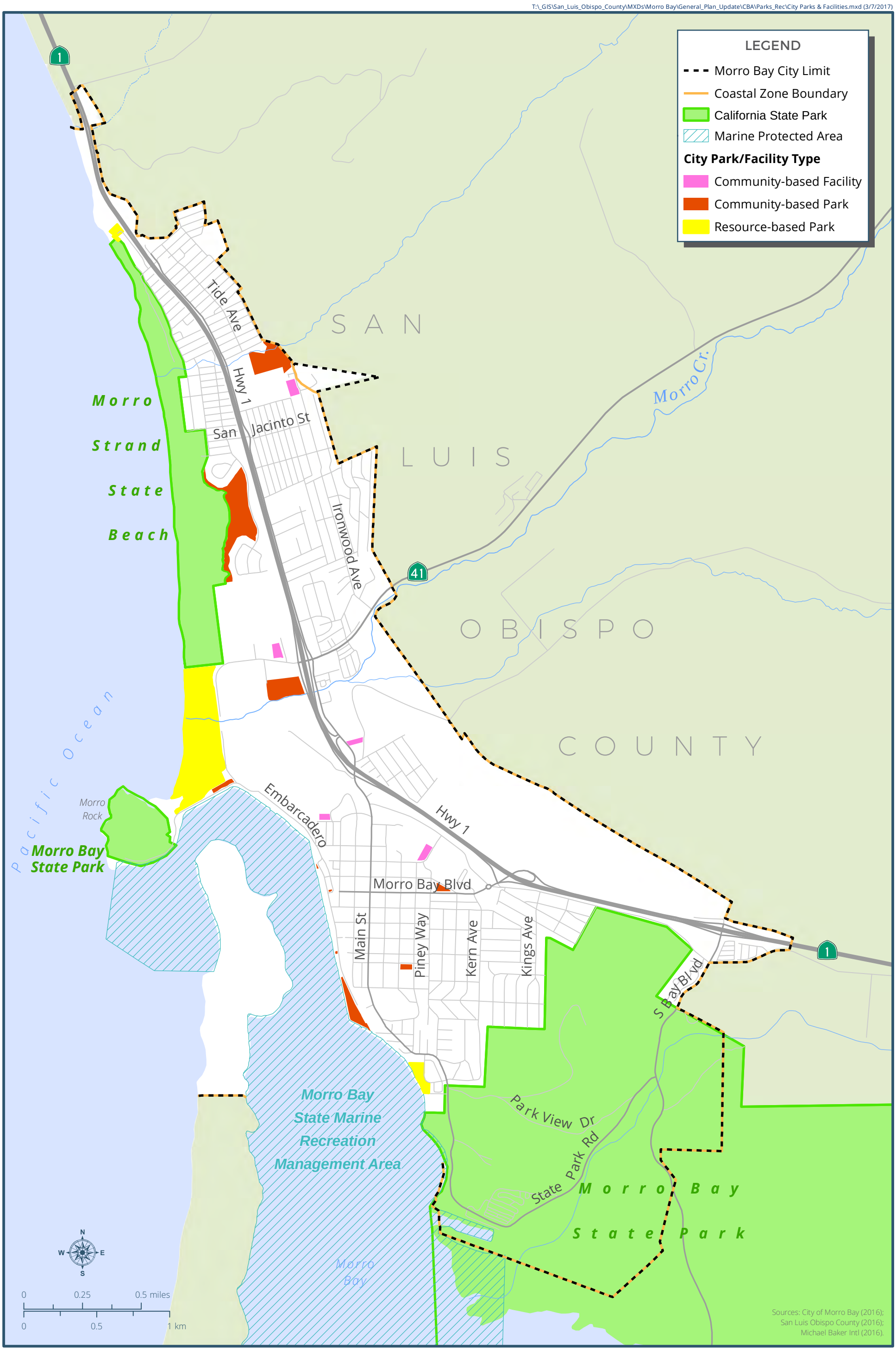

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FIGURE 11.1

City Parks and Facilities

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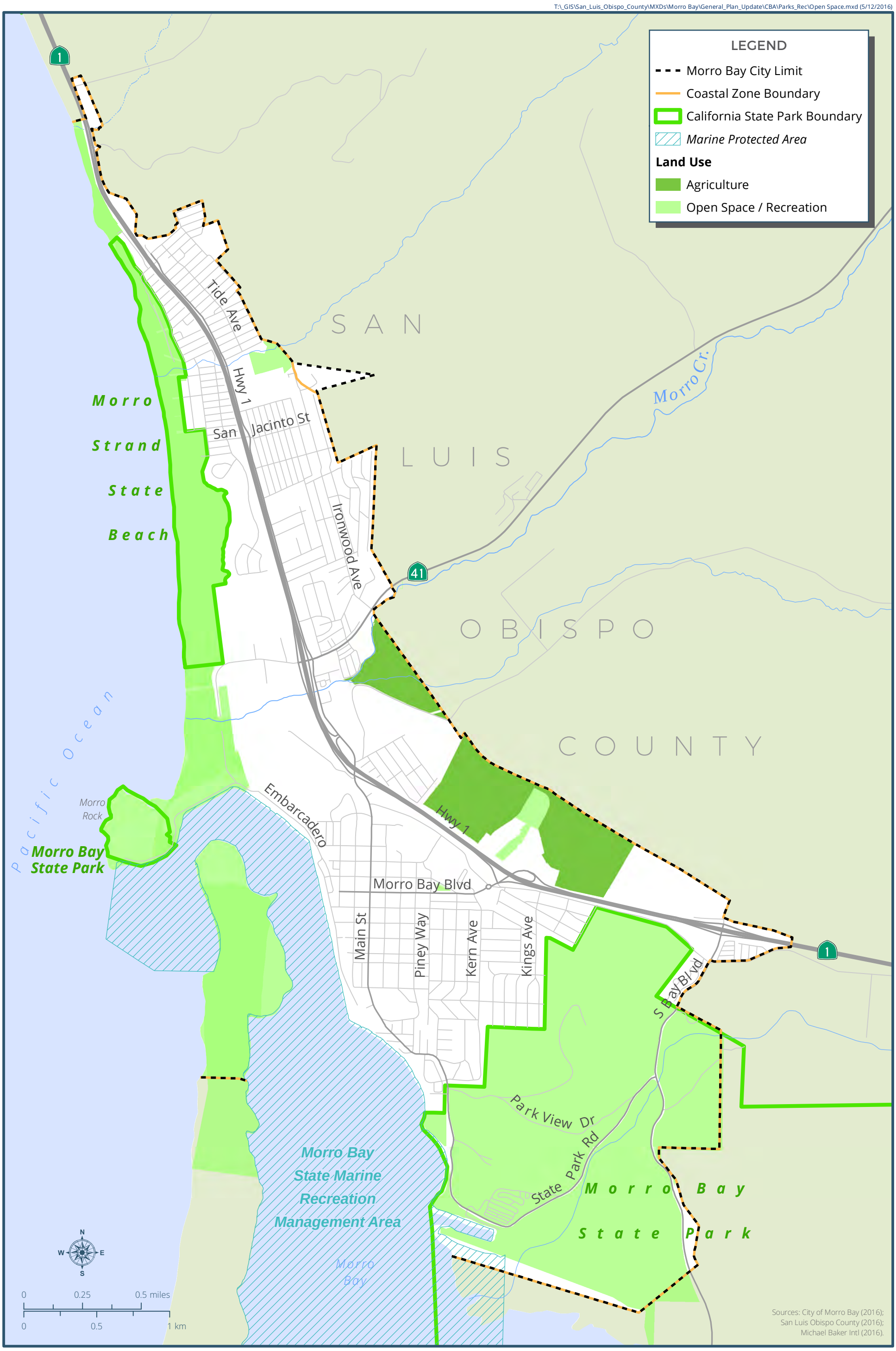

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FIGURE 11.2

Morro Bay Open Space

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The development of a multiuse trail and bridge project, completed in 2015, provides safe crossing for pedestrians, bicyclists, and emergency vehicles across the creek. There is an outstanding lateral access issue on the southwestern portion of the coastline, near Bayshore Bluffs Park, where a hotel and housing development block public access to the coast. While commercial uses stand between the sidewalk along the Embarcadero and the coast, bayside decks with access roughly between every two commercial buildings allows segments lateral access along the bay. Additionally, the City requires that property owners extend the community's pedestrian and bicycle waterfront trail (the Harborwalk) in front of their properties when buildings are retrofitted, if the trail does not already serve their properties.

Lateral access is reached by vertical access points, which indicate perpendicular access to the coast. As illustrated in Figure 11.3, the City has extensive vertical access points throughout the entirety of the coastal zone.

California Coastal Trail

The California Coastal Trail (CCT) is an ongoing effort to connect the state's multiple pedestrian routes along the Pacific Ocean into a unified, 1,200-mile trail extending from the Oregon to Mexican borders. This goal was supported by the 1972 passage of California Proposition 20, which recommends that a trail system be established along or near the coast. In 1999, the CCT was designated California's Millennium Legacy Trail by the governor and the White House Millennium Trail Council. This was followed in 2000 by an official assembly declaration (AACR20) of the CCT as an official state trail. Approximately 600 miles of the CCT has been completed to date (Coastwalk 2016). This vision promotes the Coastal Commission's coastal access objectives.

The beach from the northern border of Morro Bay to the end of the Morro Strand State Beach, and Highway 1 starting at Morro Bay Boulevard, are segments of the CCT, shown in Figure 11.3. Because of the tentative nature of these routes, as identified by the state, the routes shown on this map are only conceptual alignments. Additional lateral coastal access along Morro Rock Beach is not identified as part of the CCT, nor are the numerous vertical coastal access points along the Embarcadero. The City does not have an existing plan detailing further implementation of the CCT.

Encroachments on Public Access

The Coastal Commission identifies structural development on beaches, even structures such as decks, boardwalks, or parking lots, as limits to the use of the beach. These limitations, which include fences, no parking signs or barriers, private development, and extensive landscaping, are all understood to be encroachments on the public's ability to access the coast. In Morro Bay, only a handful of encroachment issues impede coastal access. At the city's northern border along Highway 1, chain link fencing has been placed along the coastline, obstructing access to the northernmost portions of Morro Strand State Beach. In portions of this fence, the chain link has been pulled back, creating informal access points to the coast. Along the city's northern border as Highway 1 runs south into Morro Bay, parking lots are intermittent, and a portion of the highway's shoulder is marked with no parking signs. The lack of continuous coastal parking along this northern coastline creates a potential encroachment issue.

Along the California coast, the public has historically used coastal areas, prior to development and infrastructure obstructions being put in place. Trails to the beach, informal parking areas, beaches, and bluff tops have provided recreational opportunities for hiking, picnicking, fishing, swimming, surfing, diving, views, and nature observation. California law provides that under certain conditions, long-term public access across private property may result in the establishment of a permanent public easement. This is called a public prescriptive right of access (California Coastal Commission 2016a). In 2015, the prescriptive rights of a trail between Toro Lane and the coast (at 3420 Toro Lane) drew assertion of frequent public access across the private property from over 75 Morro Bay residents (City of Morro Bay 2016e). Completed questionnaires demonstrated that coastal access from the path started as early as the 1960s.

A home is currently proposed to be built over the existing trail, and as a condition of approval for the home, the City required that the property owners construct a replacement trail similar in location, configuration, and utility to the existing trail. City staff has determined that there are sufficient coastal access routes in the vicinity of the project (City of Morro Bay 2015c).

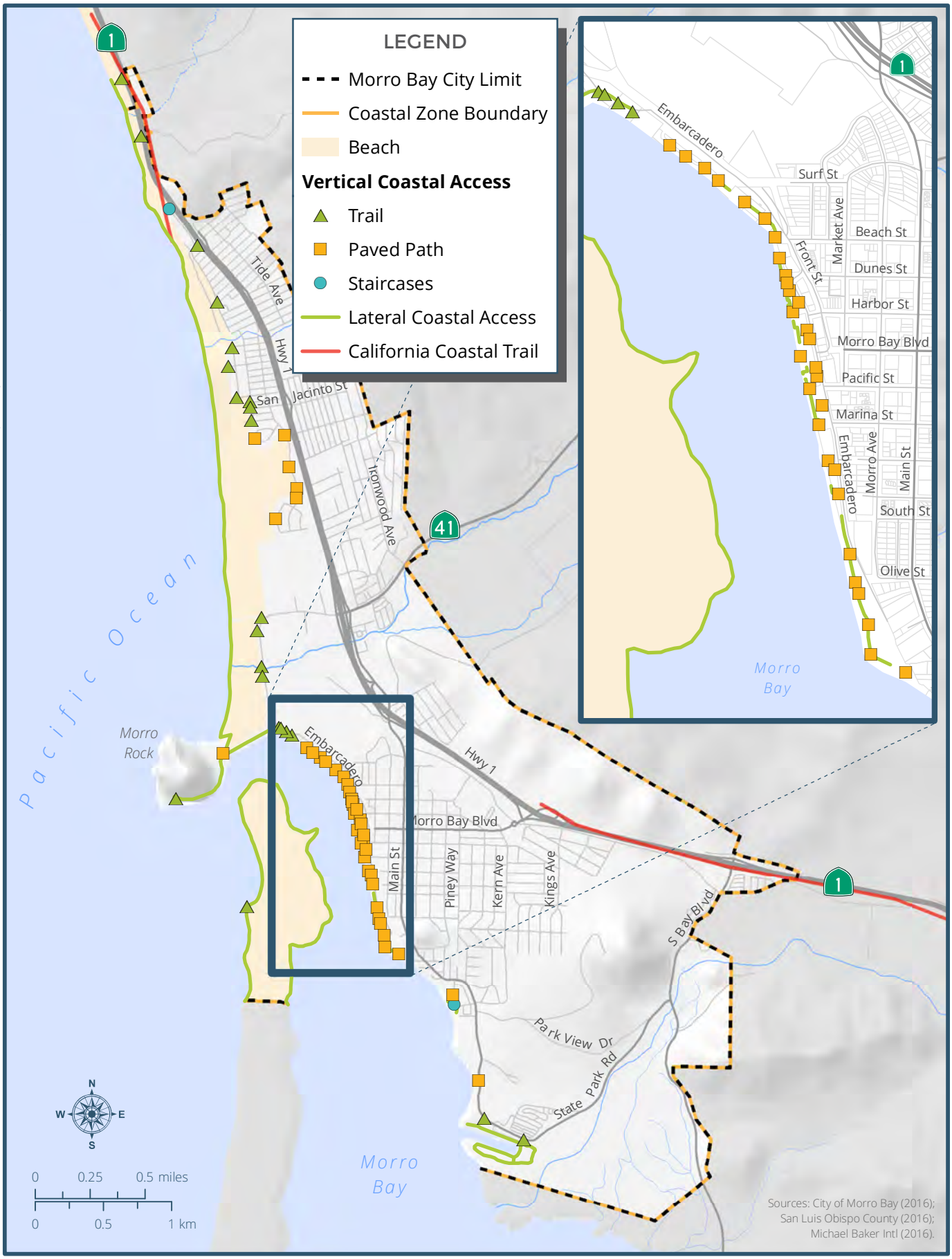

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FIGURE 11.3

Coastal Access

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The California Coastal Commission did not find that building a home over the existing trail and constructing a replacement trail created a substantive barrier to coastal access (California Coastal Commission 2016b). The access point is currently subject to a lawsuit (Wilson 2016).

Coastal Amenities

Morro Bay residents and visitors alike are served by coastal amenities that make the city's beaches safer, cleaner, and more attractive. There are 10 public restrooms located within the coastal zone. During summer months (typically Memorial Day to Labor Day), the Morro Bay Harbor Department staffs two lifeguard towers on the City Beach north of Morro Rock. Lifeguards are on duty from 10 a.m. to 6 p.m. during active months.

Coastal amenities are shown in Figure 11.4. The waterfront zoning district also supports and encourages use of the coastline. The purpose of the waterfront district is to provide for the continued mixture of visitor-serving commercial and recreational and harbor-dependent land uses in appropriate waterfront areas, as shown on Figure 11.4 (City of Morro Bay 2016d).

Special Events

Morro Bay's scenic vistas, mild climate, and expansive coastal resources make it a popular place for special events such as food and wine events, sporting and running events, arts fairs, and seasonal gatherings. Such events attract visitors and tourism dollars, and bring excitement to the community, but these economic and social benefits must also be examined for any encroachments on coastal access. As detailed in the regulatory setting below, the Coastal Commission's *Local Coastal Program Update Guide* specifies the impact of temporary events on loss of public access, stating that "temporary events staged on beaches also limit use by the general public, especially when they would commit large areas to special, commercial events on most summer weekends. The LCP should address such topics as the type, location, and intensity of such events, including scheduling, transportation to the event, how the location of the event will affect public use, signage, mitigation measures, and clean-up" (California Coastal Commission 2013).

The City's current LCP does not include policies, programs, or background information about special events. However, the City retains the right to not grant a permit for the use of City property, when for any reason as determined by the Recreation Services Division such use may not be in the best interest of the department or the City of Morro Bay. This includes unlawful obstruction of public access to the coastline. While the facilities (including parking lot and beach) at Morro Rock can be reserved for special events, Morro Strand State Beach is a state property and remains open to the public even when the Morro Rock Beach is reserved. Clear lateral access along the beach allows for foot access to the coast even if main coastal thoroughfares, such as the Embarcadero, are closed to vehicle traffic. Coastal access to the beach has not been disrupted by special events that have historically occurred in Morro Bay.

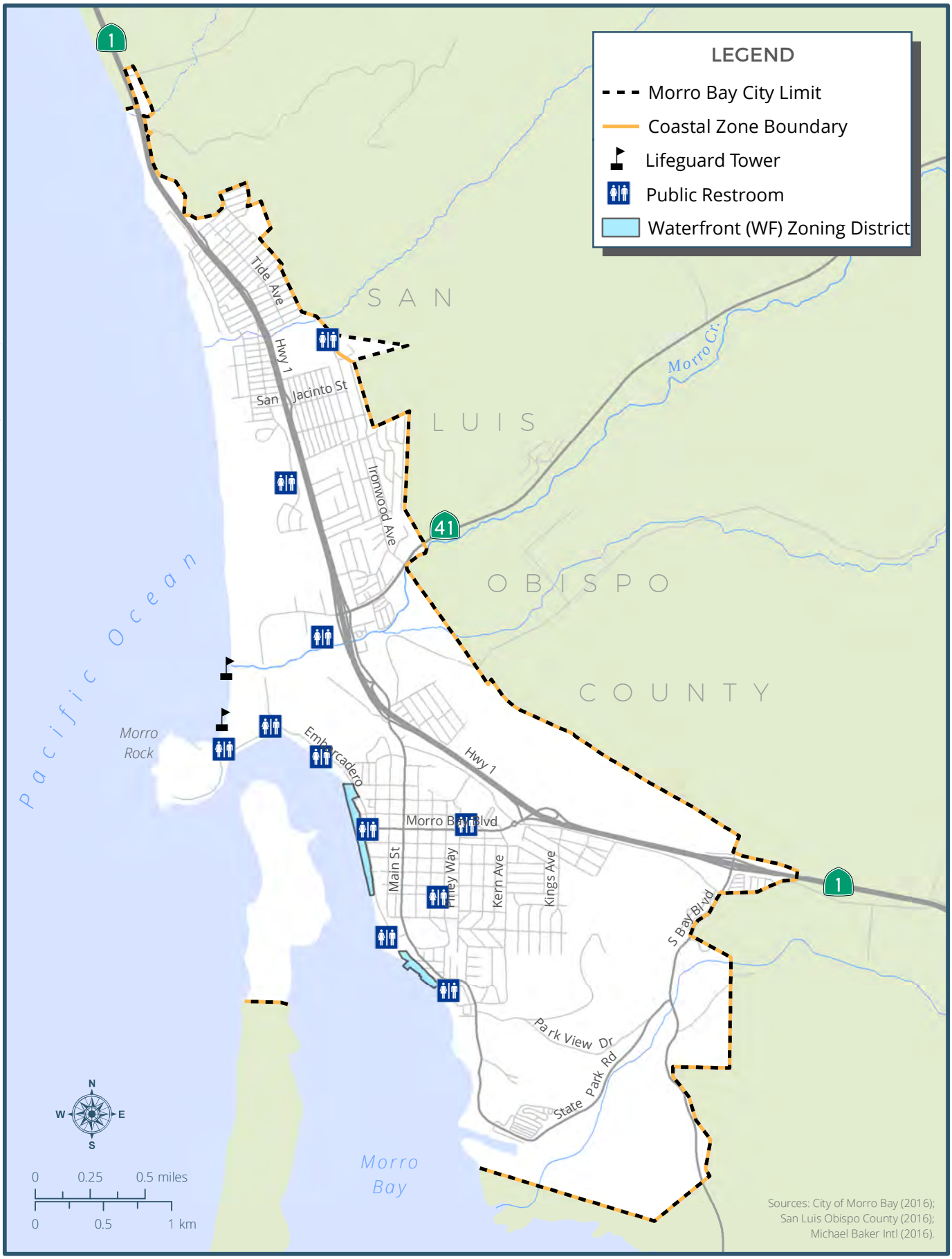

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FIGURE 11.4

Coastal Zone Amenities

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11.2 REGULATORY SETTING

FEDERAL

No federal regulations apply to parks, recreation, or open space.

STATE

Quimby Act

As a condition of approval of a final tract or parcel map, the California Quimby Act allows a city to require dedication of land, the payment of in-lieu fees, or a combination of both to be used for the provision of parks and recreational services. Under the act, cities can require land or in-lieu fees for a minimum of 3 acres per 1,000 residents, with the possibility of increasing the requirement to a maximum of 5 acres per 1,000 residents if the city already provides more than 3 acres per 1,000 residents.

California Coastal Act

In 1972, a voter initiative established the California Coastal Act of 1976 (Coastal Act) and the California Coastal Commission, the state's coastal protection and planning agency. The Coastal Act and the California Coastal Commission plan for and regulate new development, and create strong policies to protect public access to and along the shoreline. To ensure maximum public access to the coast and public recreation areas is provided, the Coastal Act directs each local government within the coastal zone to prepare an LCP in consultation with the Coastal Commission and the public that is consistent with Section 30501 of the Coastal Act. Provisions of the Coastal Act surrounding parks and recreation are summarized below.

Section 30210 - Access; recreational opportunities; posting

In carrying out requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all of the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30212.5 - Public facilities; distribution

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Section 30221 - Oceanfront land; protection for recreational use and development

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Section 30252 - Maintenance and enhancement of public access

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit high-intensity uses such as high-rise office buildings, and (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of on-site recreational facilities to serve the new development.

Until an LCP has been adopted by the local jurisdiction and certified compliant with the Coastal Act, the Coastal Commission retains permitting authority within the local jurisdiction. A coastal development permit is required for development in the Coastal Zone that results in changes to the density or intensity of the use of land, water use, and/or coastal access.

Section 30610(i) - Coastal development permit requirements for temporary events

In 2013, the Coastal Commission released the updated *Local Coastal Program Update Guide*. The document provides guidance and best practices for local governments that are updating an LCP. With regard to public access, the guidance notes that "LCP updates should evaluate whether incremental actions since LCP certification may reduce public access and … include measures to prevent any reduction in public access." The "Preventing Loss of Public Access" subsection that covers temporary events reads as follows: "Temporary events staged on beaches also limit use by the general public, especially when they would commit large areas to special, commercial events on most summer weekends. The LCP should address such topics as the type, location, and intensity of such events, including scheduling, transportation to the event, how the location of the event will affect public use, signage, mitigation measures, and clean-up."

The guidance notes that all temporary events are to be excluded from coastal development permit requirements except those which meet all of the following criteria:

a) Are held between Memorial Day weekend and Labor Day; and

b) Occupy all or a portion of a sandy beach area; and

c) Involve a charge for general public admission or seating where no fee is currently charged for use of the same area (not including booth or entry fees).

Additionally, events may be excluded from permit requirements when:

a) The fee is for preferred seating only and more than 75 percent of the provided seating capacity is available free of charge for general public use; or

b) The event is held on sandy beach area in a remote location with minimal demand for public use, and there is no potential for adverse effect on sensitive coastal resources; or

c) The event is less than one day in duration; or

d) The event has previously received a coastal development permit and will be held in the same location under similar conditions and circumstances.

Even in cases where a temporary event is consistent with the requirements listed above, the Coastal Commission can require that event to be subject to coastal development permit review if that particular event has the potential for the following significant adverse impacts on coastal resources:

a) The event, either individually or together with other temporary events scheduled before or after the particular event, precludes the general public from use of a public recreational area for a significant period of time; or

b) The event will directly or indirectly impact sensitive natural or visual resources; or

c) The event is scheduled between Memorial Day weekend and Labor Day and would restrict public use of roadways or parking areas or otherwise significantly impact public use or access to coastal waters; or

d) The event has historically required a coastal development permit.

LOCAL

The City of Morro Bay Recreation Services Division provides recreation and parks programs that support health and wellness for all people and families in the community (City of Morro Bay 2016a). The City boasts parks and recreational resources that highlight the region's natural coastal resources and provide community gathering places for all residents and visitors. The planning area includes nearly 50 acres of parkland and 3 linear miles of public beaches. Morro Bay State Park and Morro Strand State Beach are located within the planning area. These natural resources are both owned and managed by the California Department of Parks and Recreation, but provide significant recreational benefits to Morro Bay residents and visitors.

The Recreation Services Division comprises three divisions (City of Morro Bay 2016b):

- Administration – This division supports all divisions with numerous reports, billing, budgeting, and clerical duties. The Administration Division also provides and coordinates classes, affiliated clubs, and youth sports camps, and oversees the department's online registration program, permitting, and facility and park reservations.

- Recreational Sports – The Recreational Sports Division hosts adult and youth sports leagues, tournaments, the Brian Waterbury Memorial Rock to Pier Run, and the Junior Lifeguard program. The Recreational Sports Division works with youth and adult sports advisory boards to provide all-star opportunities for some youth sports leagues.

- Youth & Senior Services – The Youth and Senior Services Division provides programming to meet the needs and interests of children and the elderly in Morro Bay. Programming includes operation of the Morro Bay Teen Center and Skate Park. The Youth and Senior Services Division provides before- and after-school care for Del Mar Elementary students, licensed by the state of California. During the summer, this division offers a summer day camp program for children entering 1st through 6th grades. Additionally, this division coordinates with Morro Bay Senior Citizens Inc., a nonprofit 501(c)(3) organization, to provide senior activities offered at the Morro Bay Senior Center.

The Morro Bay Recreation and Parks Commission, composed of seven voting members, provides recommendations to the City Council on all matters relating to parks and public recreation (City of Morro Bay 2016c). The commission's other obligations are:

- Cooperate with other governmental agencies and civic groups in the advancement of sound recreation and parks planning and programming.

- Formulate policies on recreation services, parks, and open space for approval by the City Council.

- Recommend to the City Council the development of recreational areas, parks, facilities, open spaces, programs, and improved recreation services.

- Recommend to the City Council the adoption of rules, regulations, and standards concerning recreation and parks in respect to organization, personnel, areas and facilities, programs, and financial support.
- Advise the Recreation Services director in the preparation of the annual parks maintenance, park improvement and recreation budgets, and long-range recreation and parks facilities improvements.
- Hold public hearings and meetings to conduct investigations and surveys for the purpose of securing facts and data concerning parks and public recreation.

Together, the Recreation and Parks Commissions and the Recreation Services Department continue to develop a range of policies and programs that provide the Morro Bay community with a variety of recreational opportunities.

Morro Bay Municipal Code

The Morro Bay Municipal Code guides planning activities to support the community's goals and vision. The following sections of the code support the development and protection of parks and recreation resources in the city.

Chapter 2.24 - Recreation and parks department

This chapter establishes the recreation and parks department for the City of Morro Bay. The functions established are to provide opportunities for wholesome, year-round public recreation service for all age groups. The recreation and parks department is also responsible for development and maintenance of park and recreation facilities, and the planning of facilities and standards in the city.

Chapter 15.08.040 - Special events – traffic restriction authority

This section provides the authority to restrict or prohibit waterborne traffic in the harbor to ensure the safety of persons, vessels, or other property during a race, regatta, parade, or other event held on the waters surrounding Morro Bay.

Chapter 16.44 - Conservation subdivisions

This chapter guides the design of new subdivisions to cluster development lots on smaller sizes and offer dedicated land for open-space use in the area saved. This ordinance is centered on the principles of open space preservation and community connectivity.

Morro Bay Local Coastal Program (LCP)

The Morro Bay LCP consists of the Coastal Land Use Plan (general plan-level policies and maps) and a Local Implementation Program (coastal zoning code, zoning maps, and implementing ordinances). Adopted by the City and certified by the Coastal Commission in 1984, Chapter 3 of the City's LCP addresses considerations of public access and recreation in the Coastal Zone. LCP policies and plans address both shoreline access and coastal recreation, given the extent of overlap between the topics. As stated in the Coastal Land Use Plan, "Morro Bay enjoys an exceptionally large amount of shoreline public access and recreation opportunities, and some of these opportunities have the capability to be expanded or enhanced." These policies are in compliance with Coastal Act requirements for access and recreational opportunities.

11.3 PRIORITY FINDINGS

COASTAL ACCESS

The City provides exceptional lateral and vertical access to the coast. The northern coastline, part of the CCT's general alignment, provides pedestrians unfettered access along the shore. As the Pacific coast turns into the bay, the city maintains both urban and coastal access to the water. The jetty allows visitors to walk along the entire outer rim, providing access to both the ocean and bay sides. Along the Embarcadero, spaces between bayside businesses allow visitors and residents to walk between the commercial uses to docks and decks that face the bay. The City is constructing the Harborwalk along the waterfront, which will provide a dedicated pathway for pedestrians and bicyclists, along with designated viewing areas, seating, and bicycle parking. The first phase of the project was completed in 2008.

CALIFORNIA COASTAL TRAIL

While SLOCOG identifies the CCT as extending north to south to the end of the state beach, and picking up again from US 101 south into San Luis Obispo, there is no specific CCT alignment through Morro Bay. The City has the potential to identify and establish an alignment that could make use of the community's excellent lateral coastal access. Recent pedestrian improvements over Morro Creek have demonstrated the City's continued commitment to coastal access, which could be further supported by an official alignment of the CCT through the community. The California Coastal Commission is the lead state agency responsible for planning and permitting along the coastline. While the CCT is not a requirement of the Coastal Act, it supports Coastal Act requirements to provide access to the coastline while respecting and protecting natural resources.

PARKS AND OPEN SPACE AVAILABILITY

Existing levels of service for parks and open space in the community far exceed applicable standards. The City's community and resource-based parks provide a diverse range of recreational opportunities for year-round residents and seasonal visitors. This demonstrates how Morro Bay residents of all ages are able to capture the advantages of a robust parks system, including a healthier community and strong tourism economy. The distribution of parks and open space throughout the community enables residents of different economic means to enjoy equitable access to recreational opportunities.

12.0 Shoreline Management and Protection

Plan Morro Bay

12.0 SHORELINE MANAGEMENT AND PROTECTION

This chapter discusses existing shoreline conditions in Morro Bay, including protective devices and natural shorelines. Original construction associated with harbor development and ongoing channel maintenance were major factors that shaped local shoreline conditions. Projected shoreline conditions will continue to be affected by natural factors, such as seasonal storm and wave patterns, and larger scale climatic factors, including sea level rise. Anthropogenic activities, such as beach nourishment and coastal development, will also play a role in how the shoreline conditions change over the planning horizon.

12.1 EXISTING CONDITIONS

Prior to the 1930s, Morro Bay was the home of a small commercial fishing fleet that was able to use the natural channels within the bay (CSMW 2016). Vessels would enter the bay from both northern and southern entrances, contingent on seasonal processes. In the 1930s, the Works Progress Administration built a seawall that connected the Morro Rock to the mainland, eliminating vessel access to the bay from north of the rock and blocking longshore sediment transport that predominantly moves north to south in this area. In the 50 years following the seawall's construction, beaches advanced seaward (accreted) about 250 feet near San Jacinto Street and almost 500 feet in front of Morro Bay High School (Griggs, Patsch, and Savoy 2005). This accretion has provided an effective storm buffer in the form of a sandy beach backed by a vegetated dune system along most beaches north of Morro Rock.

In the 1940s, the US Army Corps of Engineers (USACE) constructed a north breakwater, which extended southerly from Morro Rock, and a south jetty which extended seaward, perpendicular from the sandspit, to provide protected harbor for small Navy patrol vessels. The north breakwater was damaged repeatedly soon after construction was completed. The breakwater was eventually reconstructed in 1964. In contrast, the south jetty suffered no major damage during this time and only required maintenance typical for this type of structure. Over the same time period, the landside element of Morro Bay's existing Embarcadero waterfront was created with dredged material pumped from the navigation channel and placed behind a rock seawall.

The City's shoreline management primarily consists of routine USACE dredging and the placement of sediment derived from Morro Bay navigation channels. Materials dredged from these channels are placed in the nearshore or surf zone in the Morro Bay Littoral Cell. Shoreline structures in the city include two shoreline revetments used to protect backlands from wave-driven erosion, a jetty system used to provide safe vessel passage into the harbor, and bayside riprap and bulkhead walls that serve to protect these lands against wave and tidal induced erosion along the bay.

DREDGING OPERATIONS IN MORRO BAY

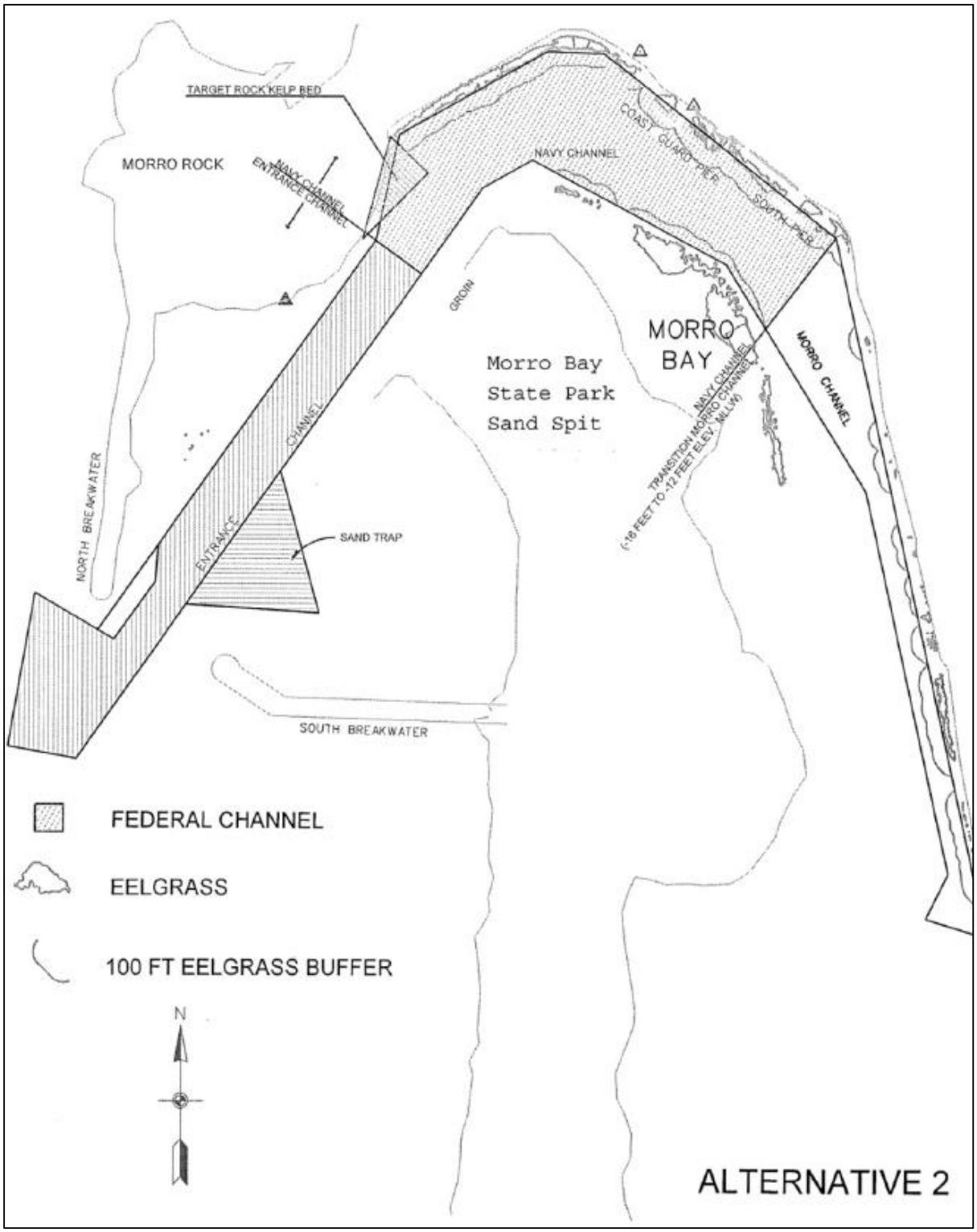
Over time, the USACE has frequently dredged the federal channel in Morro Bay to maintain safe passage of vessels into the bay. The federal channel consists of the entrance channel, the transition channel, the sand trap, the main channel, the Navy channel, and the Morro Channel (Figure 12.1).

From 1960 to 1990, maintenance dredging of the federal channel occurred on average twice per decade. However, channel dredging has occurred annually from 1994 to the present. The average annual dredging rate from 2006 to 2014 was 185,000 cubic yards per year (CSMW 2016). Based on a US Geological Survey study, littoral sediment transported north along the sandspit by waves and currents accounts for approximately 90 percent of the shoaling within the navigation channels (City of Morro Bay 1982). Other sources of sediment that contribute to shoaling are wind-blown sand from the dunes and sediment from Chorro Creek and Los Osos Creek.

Dredged materials have historically been placed in the nearshore area off Morro Bay State Park sandspit or the surf zone at Morro Strand State Beach (Figure 12.2). Use of either of these sites is dependent on the type of USACE dredge platform used. The Morro Bay State Park sandspit placement site is used when a hopper or clamshell dredge is used and is located in nearshore waters between water depths of -20 to -40 feet relative to the mean lower low water level.

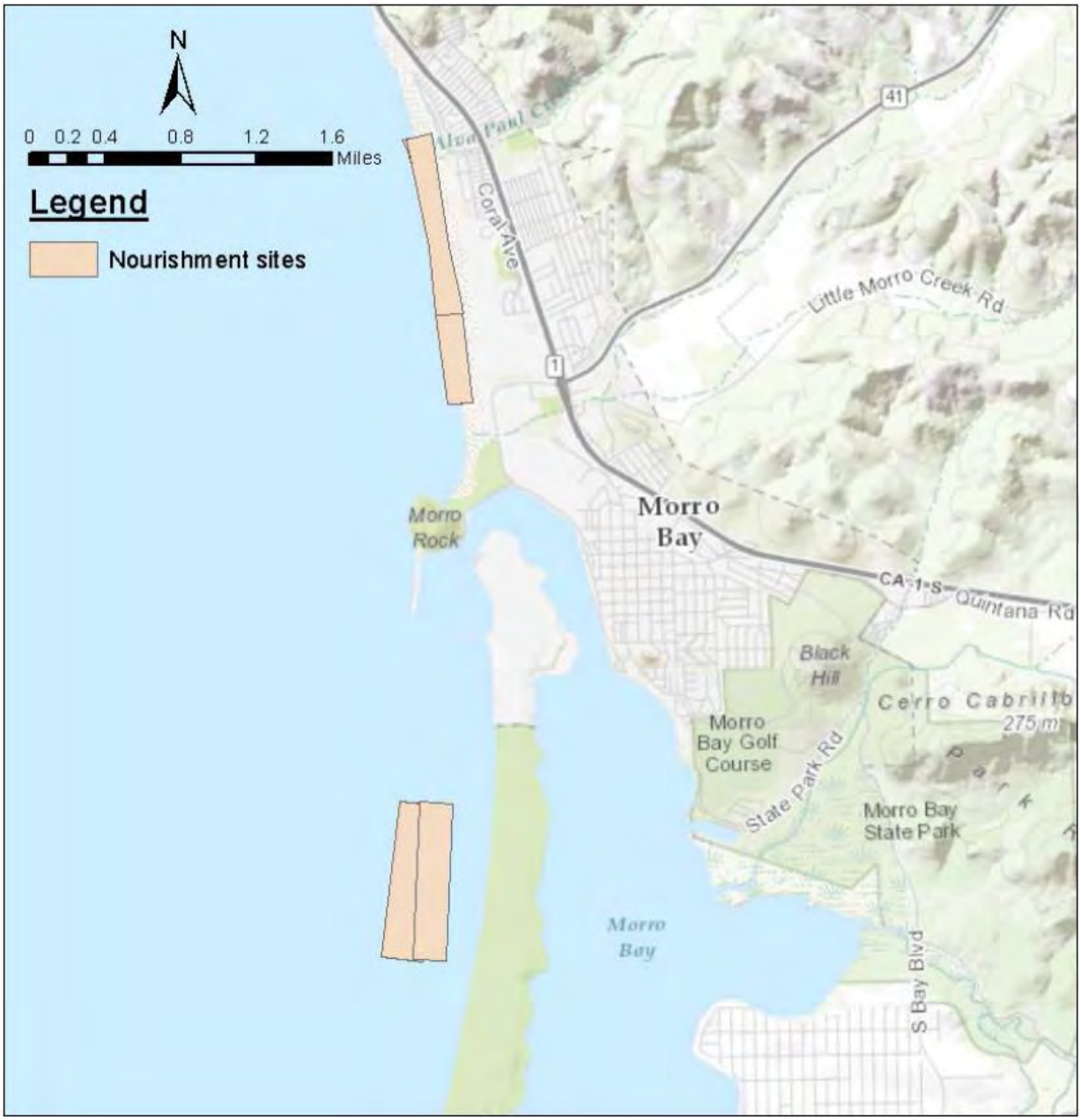
Placement in the surf zone at Morro Strand State Beach is associated with dredging of the Navy and Morro Channels. This occurs once a cycle within the six-year dredging program, and is performed with a hydraulic suction dredge. The site is located between Sienna Street and Morro Creek. The pipeline is placed perpendicular to the beach and extended into the surf zone.

Figure 12.1
Dredging in Morro Bay



Source: USACE 2016

Figure 12.2
Sediment Placement Sites in Morro Bay



Source: USACE 2016

SHORELINE PROTECTION

Most shoreline protection structures in the city are associated with original harbor and waterfront development activities in the 1930s and 1940s. The north breakwater and south jetty were constructed at the harbor entrance, and land was reclaimed along the existing Embarcadero with material dredged from the harbor and placed behind a rock seawall.

Shoreline protection in the city includes two coastal shoreline protective devices, a harbor entrance channel jetty system, and numerous structures along the bay waterfront. The location of these structures are shown in Figure 12.3. The function and need of these structures are discussed below (the numbers in the list below correspond with structure numbers in Figure 12.3).

1) Chevron bulkhead wall – This timber bulkhead wall just south of Toro Creek is associated with the Chevron marine terminal. A pier structure historically extended into the ocean from the wall at this location. The marine terminal is currently not in service and future plans for this land are unknown; therefore, the need for this structure is not known at this time.

2) Highway 1 revetment – This rock revetment is located at the toe of the earthen slope fronting Highway 1 just south of Toro Creek. This structure serves to protect the highway from bluff erosion. The highway is heavily traveled and provides a vital north–south transportation link to communities along the central coast.

3) Morro Rock revetment – This rock revetment serves to protect the northern edge of the Morro Rock parking lot. The revetment is commonly covered and uncovered with sand from seasonal beach shifts. The parking lot is heavily used by the public.

4) Dynegy power plant outfall structure – This rock revetment and wall are used to stabilize the water discharge feature from the power plant. The Dynegy power plant is no longer in service, and it has been reported that the outfall has silted in. A conduit within the outfall serves as the brine discharge from the City desalination plant. Future use of this site and the outfall structure is undetermined at this time.

5) Morro Bay Harbor jetty system – This system consists of a northern breakwater and southern rock jetty structures used to stabilize the Morro Bay entrance channel and provide safe passage for vessels. Morro Bay is a critical harbor of refuge and commercial fishing is an important local economic driver. The jetty system is owned and maintained by the USACE.

6) Coleman Drive revetment – This rock revetment shoreline protection extends from Morro Rock to Coleman Beach. Rock protection along this reach varies in both quantity and size, but seems to be scaled according to the waves and currents in a given area. The rock provides erosion protection of the earthen slopes from waves and tidal currents. Protected landside improvements include pedestrian/recreational amenities and Coleman Drive.

7) Embarcadero revetment and bulkhead walls – This consists of rock revetment and bulkhead walls of various design (e.g., concrete, steel sheetpile, timber). The walls protect the privately held backlands from erosion, and allow for access to floating docks via gangways and piers.

8) State Parks marina revetment – This rock revetment protection serves to stabilize the marina entrance and interior channel.

Figure 12.3
Shoreline Protection Structures in Morro Bay

12.2 PROJECTED CONDITIONS

NATURAL SHORELINE CONDITIONS

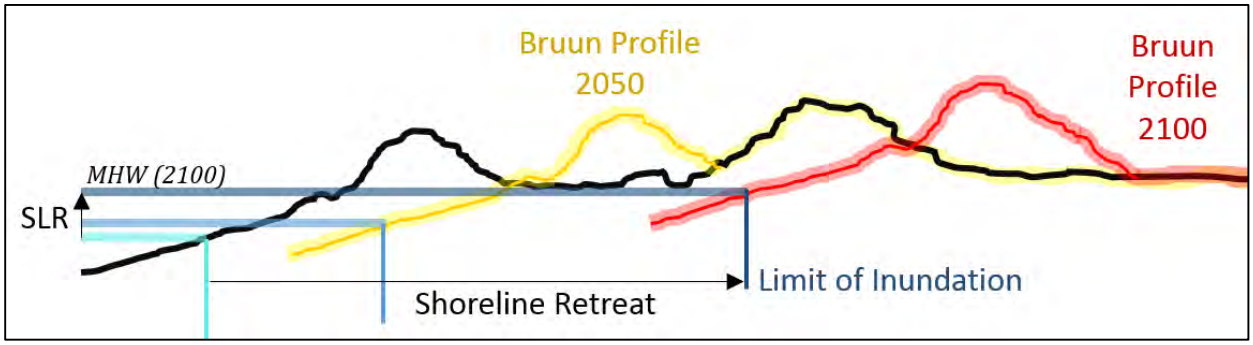
Historical trends in shoreline change indicate that the beaches in Morro Bay have been relatively stable and have accreted north of Morro Rock. The historically stable shoreline indicates an ability to recover from seasonal storm conditions, including strong El Niño events. The shoreline has also accommodated a historical sea level rise of about 8 inches over the past century, although sea levels have been relatively constant for the past 15 years (CCC 2015).

The projected shoreline conditions are expected to be similar to existing conditions in the near term. The shoreline will be subject to seasonal beach loss driven by winter storm waves, followed by beach recovery during calmer wave conditions in the summer months. This seasonal cycle can be exacerbated during El Nino events in which more frequent and larger wave events are often accompanied by elevated water levels.

The shoreline has shown an ability to adapt to the historical rate of sea level rise. However, projected rates of sea level rise are expected to accelerate, especially for time horizons beyond 2050. As the rate of sea level rise accelerates, it is unlikely the shoreline will be able to maintain its current position, and a trend of long-term erosion is expected to shape projected shoreline conditions.

A widely acknowledged impact of sea level rise is a landward and upward shift in the beach profile and shoreline position, which is predicted using a method known as the Bruun Rule. The rule assumes that, as mean sea level rises, the beach profile and the foredune are able to adjust upward and landward as sediment is conserved across the profile (Figure 12.4.). Using an approximate beach slope of 20:1 (horizontal to vertical) for Morro Bay, the average shoreline position would be expected to shift up and back 20 feet for every foot of sea level rise. The rule assumes that: 1) adequate sand exists in the system, and 2) sufficient space exists for the beach and dune system to migrate landward.

Figure 12.4
Beach Profile Change Due to Sea Level Rise

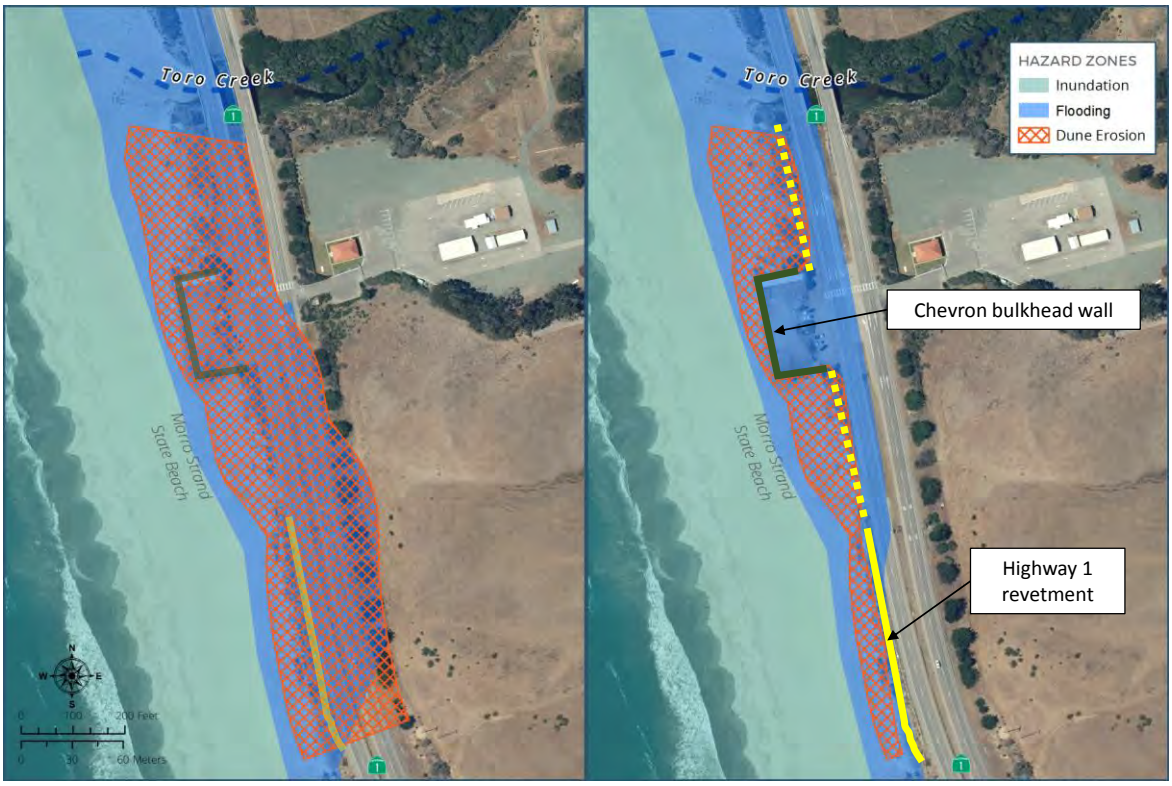


In instances where inadequate space exists for landward migration of the beach and dune, the shoreline would narrow, and the dune system would be more exposed to seasonal and storm-related erosion. This phenomena is known as the "coastal squeeze," and is the result of the beach system impinging on coastal development. The consequence is a loss of beach and dune habitat, recreational beach area, and reduced storm protection for development landward of the dunes.

PROTECTED SHORELINE CONDITIONS

Protected shorelines on the open coast, such as the Chevron seawall and Highway 1 revetment south of Toro Creek, will experience increased scour due to beach loss and increased wave heights due to elevated water levels. These projected conditions could undermine or destabilize these structures, extending the coastal hazard zones farther landward (Figure 12.5).

Figure 12.5
Effect of Shore Protection on 2030 Coastal Hazards



Without Shore Protection **With Shore Protection**

The Morro Rock revetment along the north side of the parking area is oriented perpendicular to the shore and is expected to experience increases in wave energy due to similar factors. Increased toe scour would be expected as the beach profile migrates landward, and increased wave heights can be expected due to higher water levels along the toe of the structure. These projected conditions could have a destabilizing effect on the existing structure with wave run-up and overtopping of the structure becoming more frequent.

The Morro Bay Harbor jetty system will be subject to increased wave heights in the future due to the effects of sea level rise. These jetty structures, particularly the north breakwater, are subject to impact from large waves and require frequent repair to maintain functionality. As sea levels rise, increased wave energy on the jetty structures is anticipated, which will likely result in further, significant damage and reduce the functionality of these structures.

Both the north and south jetty systems are rubble mound structures, and as such can sustain significant damage and continue to provide protection. However, with increasing wave energy impacts as a result of sea level rise, it is likely that these structures will require extensive maintenance and repair work by the USACE in the future.

Protected shorelines in Morro Bay, such as the Coleman Drive and Embarcadero revetments, will experience elevated water levels that will focus tidal currents higher up on the banks. These structures are constantly subject to flood and ebb tidal currents and, over time, the rock facing has been undercut, resulting in some displacement of rock from the upper bank to fill voids in the lower bank. Numerous locations were observed along the upper bank to have unprotected fill material that will become more vulnerable to erosion as sea levels rise.

Development along the Morro Bay Embarcadero waterfront is located alongside or on top of existing rock revetments and bulkhead structures along this shoreline. The continued use of this land is dependent upon these structures' ability to hold the line against the rising tides. Routine inspection, maintenance, and repair of these structures will be required in the future to hold the line and maintain current functionality.

12.3 REGULATORY SETTING

FEDERAL AGENCIES

NOAA Fisheries

In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act, NOAA Fisheries must be consulted on any potential impacts to Essential Fish Habitat. Essential Fish Habitat includes all tidal waters; therefore, future shoreline management and protection actions in tidal waters will require consultation with NOAA Fisheries.

US Army Corps of Engineers

Any shoreline management or protection action that involves the placement of structures or sand below the high water line requires a permit from the USACE under Section 404 of the Clean Water Act. Any project that places structures or sand below the mean high tide line or that involves dredging requires a permit from the USACE under Section 10 of the Rivers and Harbors Act. For projects below the mean high tide line, the USACE processes the Section 10 and Section 404 permits together.

US Fish and Wildlife Service

Under Section 7 of the Federal Endangered Species Act, a federal agency must consult with the US Fish and Wildlife Service for any project that has the potential to affect a federally listed threatened or endangered species. Species of concern for shoreline management and protection activities in Morro Bay include the snowy plover and least terns.

STATE AGENCIES

California Coastal Commission

The California Coastal Act requires cities and counties in coastal California to prepare local coastal programs that provide ground rules for future development and protection of resources in the coastal zone. The California Coastal Commission (CCC) Sea Level Rise Policy Guidance (CCC 2015) lays out the following guiding principles for addressing the challenge of rising sea levels:

- Use science to guide decisions.
- Minimize coastal hazards through planning and development standards.
- Maximize protection of public access, recreation, and sensitive coastal resources.
- Maximize agency coordination and public participation.

The CCC has taken a position against hard structure alternatives for shore protection. To receive a concurrence that an alternative involving a hard structure is consistent with the California Coastal Act, it will be necessary to demonstrate that the structure is necessary to protect existing structures and beach-dependent uses, and that nonstructural alternatives are not feasible.

Regional Water Quality Control Board

Any project that requires a Section 404 permit from the USACE must also obtain a Water Quality Certification under Section 401 of the Clean Water Act from the Regional Water Quality Control Board. Morro Bay lies within the jurisdiction of the Central Coast Regional Water Quality Control Board.

California State Lands Commission

The state of California owns state tidelands, which generally are all lands seaward of the mean high tide line. This includes the waterside infrastructure along the Morro Bay Embarcadero that supports commercial fishing and recreational boating activities. If a

project extends into state lands, a letter of concurrence for the project will need to be obtained from the California State Lands Commission.

12.4 PRIORITY FINDINGS

NATURAL SHORELINE CONDITIONS

Projected shoreline conditions will strain the natural beach and dune system that provides habitat for endangered species and storm protection for existing development. A key challenge in future shoreline management will be protecting and preserving the benefits of the sandy beach and dune system that will become squeezed between a migrating shoreline and existing development. These impacts could be partially offset by shoreline management efforts, including beach nourishment and dune restoration. However, as sea levels rise, channels in the bay will become more navigable, which may reduce the frequency and amount of maintenance dredging performed by the USACE. The City may need to develop a funding mechanism for such management measures to preserve these coastal resources.

EXISTING SHORELINE PROTECTION STRUCTURES

Existing shoreline protection structures will also be stressed as the beach profile migrates landward and wave heights impacting the structures increase with sea level rise. Several existing structures subject to increased wave forces such as the Chevron bulkhead wall, Highway 1 revetment, and harbor entrance jetty system are not City-owned. However, many of these structures provide protection for important infrastructure, facilities, and services that are key to the city's function. Stakeholder outreach will be necessary so that all parties understand the future hazards and risks associated with sea level rise and can develop a coordinated approach to implementing adaptation measures.

13.0 Transportation and Mobility

Plan MORRO BAY

13.0 TRANSPORTATION AND MOBILITY

This chapter identifies existing transportation and mobility conditions in the planning area and summarizes applicable regulations for transportation facilities. This includes conditions related to driving, walking, bicycling, and transit in the city as well as parking and coastal access. The existing transportation system assessment is used to identify existing needs and provide a context for potential circulation goals and objectives. The City historically has assessed vehicular transportation in terms of level of service (LOS), which measures the average delay experienced by drivers. Legislation in California has changed allowable transportation metrics from LOS to vehicle miles traveled (VMT).

13.1 EXISTING CONDITIONS

AUTOMOBILES

Roadway Classifications

Roadways are typically classified according to how their planned functions provide access and mobility. Federal transportation regulations define a classification system, but local jurisdictions can define different functional classifications if desired. Roadways are typically classified as follows:

- Freeways are intended to carry high volumes and high speed traffic. Access is limited with grade-separated interchanges accommodating flows to and from the freeway mainline. Freeways are designed to maximize mobility, not to serve abutting land uses. The segment of Highway 1 in Morro Bay between South Bay Boulevard and Atascadero Road operates as a freeway.

- Expressways are high volume and high speed facilities with access provided at controlled at-grade intersections. Expressways emphasize mobility and are not intended to serve abutting land uses. The segment of Highway 1 in Morro Bay from Yerba Buena Street north to the city limits operates as an expressway.

- Arterials balance mobility and access, carrying moderate volumes at lower speeds and serving abutting land uses. Main Street, Morro Bay Boulevard, and the segments of State Route (SR) 41 in Morro Bay east of Highway 1 operate as arterials. Arterials can also be divided into principal and minor arterials. Principal arterials serve more vehicles and have wider shoulders than minor arterials. Principal arterials can also have a median and partial access controls, while minor arterials always lack a median and have uncontrolled access.

- Collectors gather traffic from local roads and tie into the arterial roadway network. Collector roadways often pass through residential areas and may have direct driveway access connected to individual residential parcels. Collectors can be divided into major and minor collectors, with the principal distinction between qualitative differences about their distance and the types of land uses served.

- Local roads provide access to abutting land uses and connect to the collector and arterial street network. Local roads typically constitute the largest percentages of roadways in terms of mileage.

Figure 13.1 shows the functional classifications of roadways in the planning area according to the California Department of Transportation (Caltrans 2016) and the Federal Highway Administration. In some cases the functional classifications used by Caltrans as shown on Figure 13.1 differ from the generic descriptions provided above.

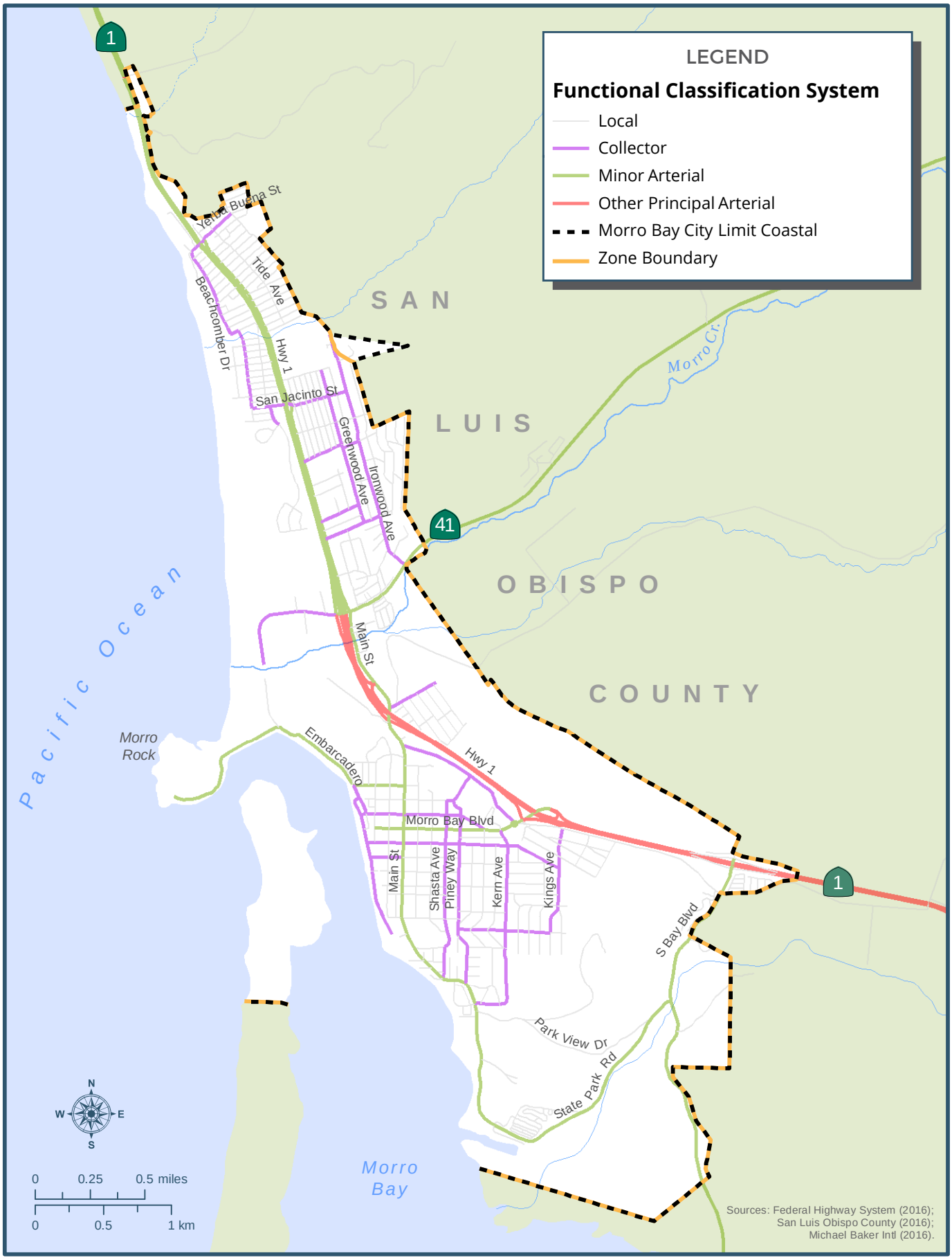


FIGURE 13.1

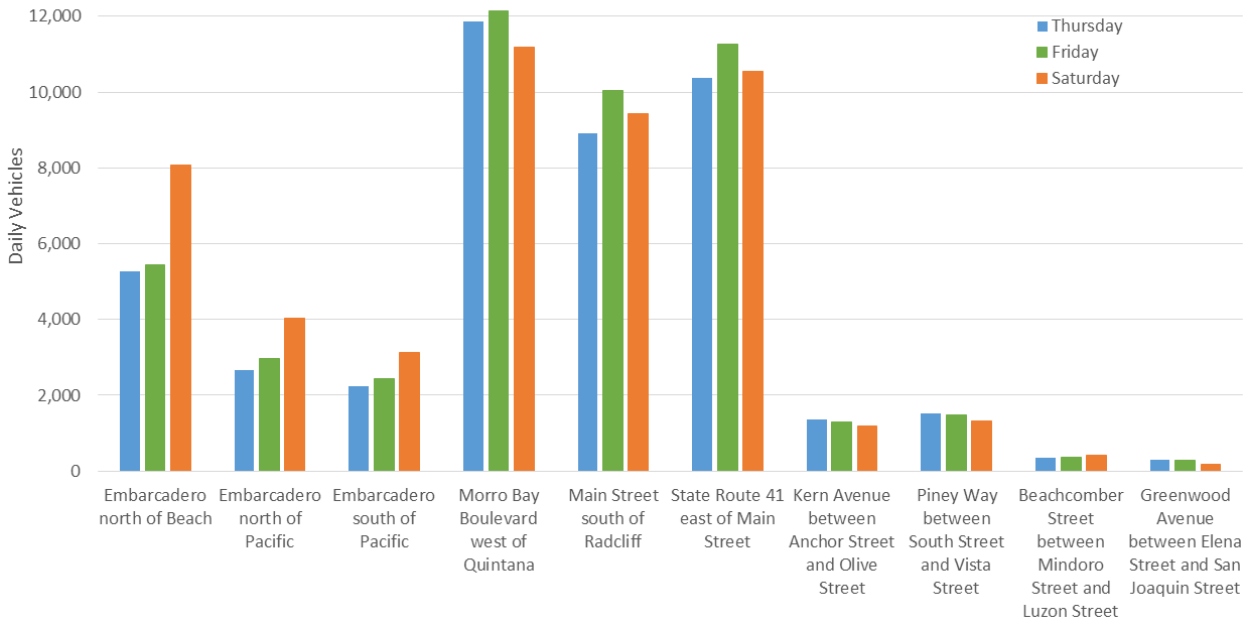
Functional Classification Map

Page 2

Daily Traffic Variation

Daily traffic counts were collected on a Thursday, Friday, and Saturday in March 2016 and are summarized in Figure 13.2. The Embarcadero showed the largest daily variation due to tourist traffic on Saturday, whereas traffic on Morro Bay Boulevard, Main Street, and SR 41 were highest on Friday. Neighborhood streets showed relatively consistent volumes on Thursday, Friday, and Saturday.

Figure 13.2
Daily Traffic Volumes, March 2016



Automobile Intersection Operations

Automobile intersection operations are typically described in terms of average delay experienced per vehicle during the peak hour of travel. The delay per vehicle correlates to an LOS grade ranging from LOS A for free-flowing conditions to LOS F for highly congested conditions. The City does not have a formal LOS threshold defining acceptable operations, but historically has applied the Caltrans target of LOS C or better. Refer to Appendix D for further details on LOS thresholds and calculation sheets.

Operations at key intersections in the city in March 2016 are shown below during the Saturday midday and weekday p.m. peak hours (Table 13.1).

Table 13.1
Level of Service at Key Intersections (2016)

Intersection	Peak Hour	V/C[1]	Delay[2]	LOS
1. San Jacinto Street/Highway 1	Weekday p.m.	0.56	18.2	B
	Sat midday	0.46	17.1	B
2. San Jacinto Street/Main Street	Weekday p.m.	-	6.7 (13.9)	A (B)
	Sat midday	-	5.0 (10.0)	A (A)
3. State Route 41/Highway 1 SB Ramps	Weekday p.m.	0.4	7.5 (**28.7**)	A (**D**)
	Sat midday	0.3	6.7 (18.2)	A (C)
4. State Route 41/Main Street	Weekday p.m.	0.99	**37.6**	**E**
	Sat midday	0.82	**28.3**	**D**
5. Beach Street/Main Street	Weekday p.m.	0.52	13.9	B
	Sat midday	0.75	23.9	C
6. Morro Bay Boulevard/Quintana Road	Weekday p.m.	0.7	12.7	B
	Sat midday	0.59	10.7	B

[1] V/C refers to volume to capacity ratio reported for worst movement.

[2] Delay refers to the HCM 2010 average control delay in seconds per vehicle. Side-street stop-controlled intersections report the worst approach's delay and LOS in parentheses next to the overall intersection delay.

*Intersections or movements operating at LOS D or worse are shown in **bold** text.*

The intersection of SR 41/Main Street operates at LOS E during the weekday p.m. peak hour and LOS D during the Saturday midday hour peak hour. These are below the Caltrans target of LOS C or better. This all-way stop-controlled intersection and nearby ramps are currently under study for improvements through the Caltrans project development process. The southbound approach to the SR 41/Highway 1 southbound ramps operates at LOS D during the weekday p.m. peak hour. All other intersections perform at or above LOS C.

Roadway Segment Operations

Roadway segment operations in 2016 are described for pedestrians, bicycles, and vehicles in Table 13.2. The Embarcadero north of Pacific Street, Morro Bay Boulevard west of Quintana Road, and Main Street south of Radcliff Drive are short segments, with a high number of stops per mile, decreasing their auto performance. Main Street south of Radcliff Drive and westbound SR 41 east of Main Street have high free-flow speeds

and no sidewalks, resulting in pedestrian LOS D. All other segments perform at or above LOS C. The City and Caltrans do not have LOS thresholds for pedestrian and bicycle facilities.

Table 13.2
Roadway Segment Operations (2016)

Segment	Peak Hour	Direction	Ped Score	PLOS	Bike Score	BLOS	Auto V/C Ratio	Auto Score	ALOS
Embarcadero - north of Beach Street	Weekday PM	NB	2.10	B	4.00	B	0.10	3.28	C
		SB	1.51	A	2.76	C	0.10	3.02	C
	Sat Mid-day	NB	2.48	B	3.02	C	0.18	3.28	C
		SB	1.77	A	2.97	C	0.15	3.02	C
Embarcadero - north of Pacific Street	Weekday PM	NB	1.32	A	2.86	C	**0.08**	**3.72**	**D**
		SB	1.16	A	2.74	B	**0.07**	**3.72**	**D**
	Sat Mid-day	NB	1.51	A	3.38	C	**0.09**	**3.72**	**D**
		SB	1.43	A	3.46	C	**0.10**	**3.72**	**D**
Embarcadero - south of Pacific Street	Weekday PM	NB	1.13	A	2.54	B	0.05	3.28	C
		SB	1.12	A	2.68	B	0.06	3.28	C
	Sat Mid-day	NB	1.32	A	3.12	C	0.07	3.28	C
		SB	1.27	A	3.12	C	0.07	3.28	C
Morro Bay Boulevard - west of Quintana Road	Weekday PM	EB	2.37	B	2.43	B	**0.24**	**3.62**	**D**
		WB	2.53	B	2.50	B	**0.28**	**3.62**	**D**
	Sat Mid-day	EB	2.27	B	2.38	B	**0.22**	**3.62**	**D**
		WB	2.47	B	2.47	B	**0.26**	**3.62**	**D**
Main Street - south of Radcliff Drive	Weekday PM	NB	2.56	B	2.34	B	0.17	3.28	C
		SB	**3.79**	**D**	2.48	B	0.23	3.02	C
	Sat Mid-day	NB	3.04	C	2.58	B	0.25	3.28	C
		SB	**3.94**	**D**	2.55	B	0.24	3.02	C
State Route 41 - east of Main Street	Weekday PM	EB	3.39	C	0.75	A	0.23	3.16	C
		WB	3.32	C	0.71	A	0.22	3.16	C
	Sat Mid-day	EB	3.31	C	0.71	A	0.21	3.16	C
		WB	**3.56**	**D**	0.82	A	0.26	3.16	C

Scores and LOS refer to the HCM 2010 methods for calculating segment performance.
*Segments with LOS D or worse operations are shown in **bold** text.*

Neighborhood Traffic

There are a variety of different neighborhood types throughout Morro Bay. Most neighborhoods are served by a well-defined grid of local streets. This grid system spreads traffic by providing a variety of routes to destinations.

Some collector streets pass through residential areas. While traffic volumes along these corridors are well below the roadway's carrying capacity, the adjacent residences can be impacted by excessive vehicle volumes and speeds. Table 13.3 summarizes the volumes and speeds along key neighborhood roadway corridors in 2016.

Table 13.3
Neighborhood Roadway Traffic Conditions (2016)

Segment	Day	Daily Traffic	Average Daily Traffic	85th Percentile Speed (mph)	Average 85th Percentile Speed (mph)
Kern Avenue - Anchor Street to Olive Street	Thursday	1,365	1,277	23.9	29.9
	Friday	1,285		33.0	
	Saturday	1,181		32.7	
Piney Way - South Street to Vista Street	Thursday	1,524	1,440	32.7	32.6
	Friday	1,470		32.7	
	Saturday	1,326		32.5	
Beachcomber Street - Mindoro Street to Luzon Street	Thursday	355	375	28.0	26.5
	Friday	353		26.4	
	Saturday	416		25.0	
Greenwood Avenue - Elena Street to San Joaquin Street	Thursday	307	258	26.3	25.5
	Friday	287		25.9	
	Saturday	180		24.4	

Source: CCTC 2016

The roadways listed in Table 13.3 are classified as major collectors in the California Road Systems maps. However, they meet the criteria for a residential district as defined in Section 515 of the California Vehicle Code, and therefore have a prima facie speed limit of 25 mph. The segments of Kern Avenue and Piney Way show 85th percentile speeds of 29.9 and 32.6 mph, respectively.

Goods Movement

Local businesses rely on roadways and other City infrastructure, such as piers, to transport goods. The following roadways, shown on Figure 13.3, are identified as truck routes in the City's Circulation Element:

- Main Street from Yerba Buena Street to Morro Bay Boulevard
- SR 41/Atascadero Road east of Highway 1
- Quintana Road from Main Street to Morro Bay Boulevard and east of South Bay Boulevard
- Morro Bay Boulevard from Main Street to Highway 1
- Beach Street from the Embarcadero to Main Street
- Harbor Street from the Embarcadero to Main Street
- Highway 1 through the City

Downtown and Embarcadero area businesses receive deliveries from trucks parked on curbside spaces, off-street lots, or in designated loading zones. Community members have also expressed concern about delivery trucks occasionally parked in the middle of streets, which can create or exacerbate congestion.

Commercial fishing and aquaculture offloading occurs at a number of piers along the Embarcadero. The City operates a launch ramp facility, fish cleaning station, and wash-down area for trailered vessels. No facilities are provided for large vessel haul-outs. For more information about commercial fishing and aquaculture facilities, see Chapter 7, Land Use, Community Form, and Coastal Uses.

Vehicle Miles Traveled

VMT measures travel on roadways by all types of motorized vehicles carrying passengers or cargo. Each mile traveled is counted as one vehicle mile regardless of the number of people in the vehicle. VMT is typically expressed as VMT per day. Table 13.4 shows daily VMT in Morro Bay as of 2016. In this table, the column titled "Daily VMT in SOI" reflects the vehicle miles traveled entirely within city limits and the City's sphere of influence. The column titled "Daily VMT in the County" reflects the vehicle miles traveled within the City's

sphere of influence and those trips that either originated in San Luis Obispo County and concluded in Morro Bay, or vice versa. The final column, "Daily VMT in State," reflects vehicle miles traveled within the City's sphere of influence, and those trips that either originated in Morro Bay and concluded anywhere in California (including San Luis Obispo County), or vice versa.

Table 13.4
Vehicle Miles Traveled in Morro Bay (2016)

Trip Type	Daily VMT in SOI	Daily VMT in County	Daily VMT in State
Origin and destination within City SOI	52,256	52,256	52,256
Origin only within City SOI	16,061	50,924	66,688
Destination only within City SOI	16,422	48,024	63,788
Total	84,739	151,205	182,732

Note: SOI is sphere of influence, which includes the City limits as well as land under County jurisdiction and indicates the reasonable limits of future growth or a boundary for providing municipal services.

Daily vehicle miles traveled were extracted from the SLOCOG Travel Demand Model and calibrated to match local conditions. Through trips passing through Morro Bay but not stopping are excluded. Trips external to San Luis Obispo County have been adjusted to reflect typical trip lengths from the California statewide model.

Daily VMT is shown for trips with both an origin and destination within the city and trips with either an origin or destination in the city, but not both. A Morro Bay resident driving to dinner on the Embarcadero would have an origin and destination within the city. A Morro Bay resident driving to work in Paso Robles would have an origin only within the city, while an Atascadero resident driving to work in Morro Bay would have a destination only within the city. A Fresno resident visiting Morro Bay would have a destination only within the city, and the trip length and VMT would be adjusted to reflect the portion of the trip occurring outside of San Luis Obispo County.

VMT estimates were extracted from the SLOCOG Travel Demand Model calibrated for use in Morro Bay. The SLOCOG Model tracks trips within the county, but does not reflect regional trips that continue to destinations outside of the county. The California statewide model was used to determine the average trip lengths for trips leaving San Luis Obispo County, which were then used to forecast the daily VMT.

Trips with an origin and destination in the city were counted as being 100 percent generated by the city. Trips that have an ending or beginning in the city were counted as being 50 percent generated by the city. Trips that pass through the city but do not begin or end within the city were excluded from the VMT analysis.

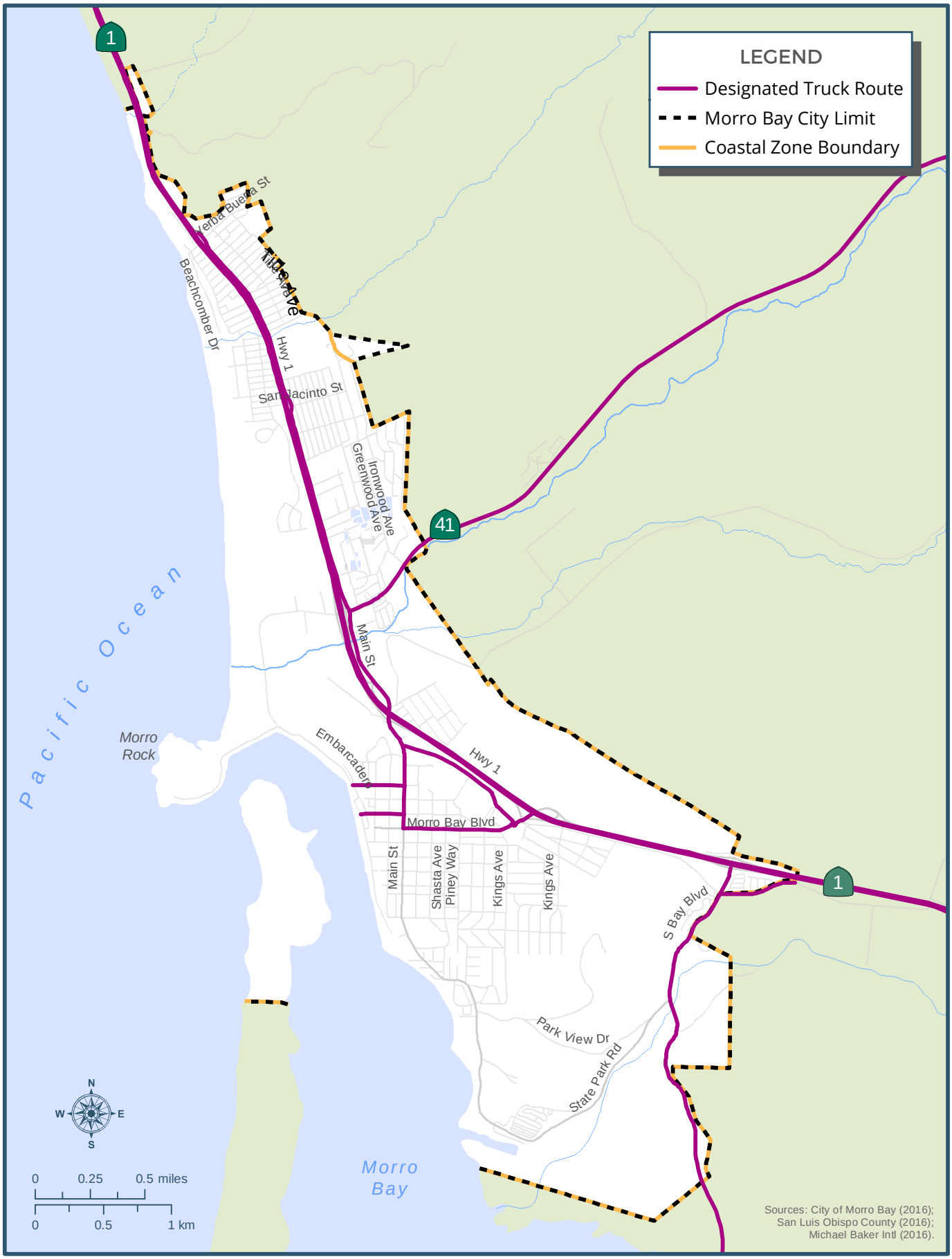


FIGURE 13.3

Truck Routes

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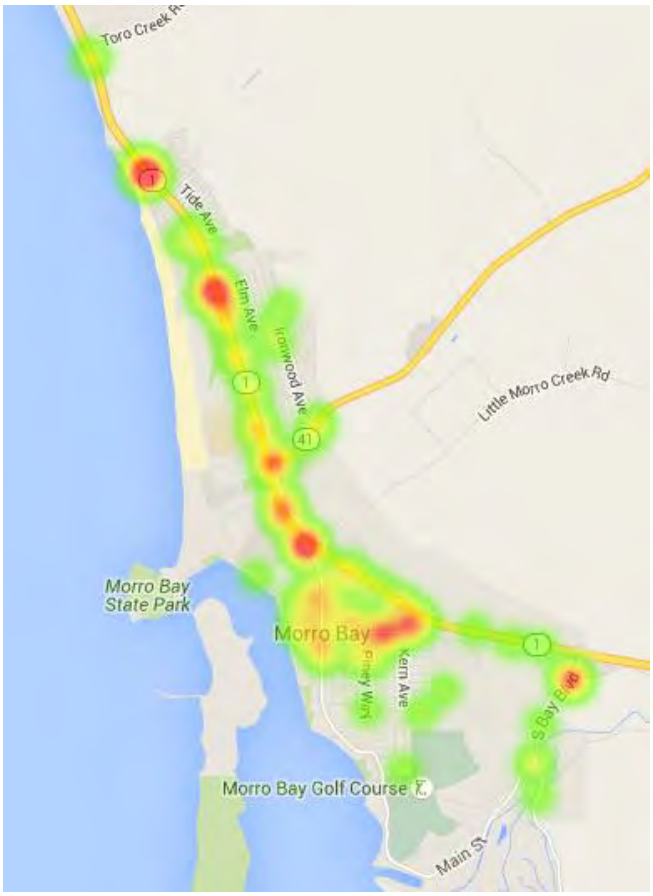
Collisions

The Statewide Integrated Traffic Records System (SWITRS) is a tool used by the California Highway Patrol to collect and process collision information. Figure 13.4 shows injury and fatal collision hot-spots (including vehicles, pedestrians, and bicyclists) throughout the city based on five years of collision data. Most of the collisions occur at intersections along Highway 1 and along the Main Street and Morro Bay Boulevard corridors.

The California Office of Traffic Safety compares collision rates for cities throughout the state. There are 105 cities in Morro Bay's category with a population between 10,001 and 25,000. In 2013, Morro Bay's fatal and injury collision rank was 43 of 105, indicating that 42 similar-sized cities had higher collision rates and 62 had lower rates.

Figure 13.4
Injury and Fatal Collision Locations (2009–2013)



Source: California Highway Patrol 2016

The 10 intersections with the largest number of reported collisions are summarized in Table 13.5. Where these intersections overlap with the intersections identified in the current General Plan, those values (for the period 1982–1984) are provided as well.

Table 13.5
High Collision Locations in Morro Bay (2012–2014)

Intersection	2012	2013	2014	Total	1982–1984
Highway 1/Main Street	2	5	5	12	-
Quintana Road/South Bay Boulevard	5	3	4	12	2
Quintana Road/Main Street	3	2	4	9	5
Highway 1/Yerba Buena Street	3	4	2	9	4
Highway 1/San Jacinto Street	1	5	2	8	9
Highway 1/Morro Bay Boulevard	3	3	2	8	-
Quintana Road/Morro Bay Boulevard	2	2	3	7	7
Main Street/Morro Bay Boulevard	2	3	2	7	-
Main Street/SR 41	2	4	1	7	-
Embarcadero/Embarcadero	2	3	2	7	-

Source: California Highway Patrol 2014; City of Morro Bay 1988

SWITRS does not provide a precise location for all collisions, so it is unclear where the collisions at the Highway 1 intersections with Main Street and Morro Bay Boulevard occurred.

Five locations analyzed in the 1988 General Plan are also in the top 10 collision locations between 2012 and 2014. The number of reported collisions increased at three of these intersections, and stayed the same or decreased at two locations, despite traffic volume increases.

Parking

The City prepared a Parking Management Plan in 2007, which focused on parking conditions Downtown and along the Embarcadero. Nearly 2,500 parking spaces are located in this study area. Of these, more than 70 percent are managed by the City. Occupancy surveys were also conducted from noon to 6:00 p.m. on a Tuesday preceding Memorial Day and Saturday of Memorial Day weekend of that year.

The occupancy surveys showed that parking on the Embarcadero was fully utilized and several Downtown blocks were nearly fully utilized during the peak hour of the holiday weekend. The high parking occupancy rates were short in duration and supply was

available within four blocks of all surveyed areas at all times, even during a holiday weekend.

The study developed an action plan to address the temporary supply issues present during busy weekends and more effectively manage the City's parking supply. The action plan includes the following recommendations:

1) Enhance the signage program to better direct drivers to the appropriate parking areas.
2) Improve public information related to parking for different users.
3) Encourage shared parking between different land uses.
4) Encourage employee parking policies to support parking availability for visitors.
5) Expand and enhance trolley service.
6) Regulate delivery truck parking.
7) Replace parallel parking with angled parking in selected areas.
8) Enhance pedestrian facilities with a focus on connections to parking and attractions.
9) Modify time limits to more effectively utilize the parking supply.
10) Encourage public-private partnerships to effectively provide parking.
11) Monitor and adjust the Parking In-Lieu Fee program.
12) Allow the provision of pervious parking surfaces to minimize stormwater runoff.

The City is implementing the action plan as opportunities arise. As recently as June 28, 2016, the Morro Bay City Council was considering approaches to prevent parking requirements from negatively impacting economic development.

Coastal Zone Access and Parking

Public parking provides access to the Coastal Zone at numerous locations in Morro Bay. More than 2,200 free public parking spaces are provided by the City in the Coastal Zone. The primary public access points are described below and shown on Figure 13.5.

- North Point Natural Area, located at the north end of Toro Lane, provides 10 marked vehicle parking spaces on the bluff connecting to stairways and trails to the beach. These parking spaces are occasionally fully utilized, but additional curbside parking is nearby in the Morro Strand campground area.
- Beachcomber Street provides approximately one-half mile of curbside parking (roughly 100 spaces) on the bluffs above the Morro Strand campground. These spaces are frequented by surfers and other beachgoers.
- The Morro Strand campground provides five marked parking spaces for day use in addition to the camp sites.
- Beachcomber Street offers curbside parking and two informal off-street parking areas south of Alva Paul Creek.
- An off-street parking lot at the end of Azure Street provides approximately 30 parking spaces as well as a restroom for beachgoers. This parking lot connects to the Cloisters trail network.
- The Cloisters Community Park offers 28 off-street parking spaces serving the park and multiuse trails providing beach access.
- Informal dirt parking lots and curbside parking are situated along the Embarcadero north of Morro Creek. A bicycle and pedestrian bridge crosses Morro Creek to connect with the Harborwalk path.
- A dirt parking lot is located at the end of the Embarcadero just south of Morro Creek. This lot also offers parking for bikes and surreys.
- Numerous parking areas are along Coleman Drive between the Embarcadero and Morro Rock. These provide access to the Harborwalk, basketball courts, small craft launch sites at Coleman Beach, Morro Rock, and other amenities in the area. Most of the parking areas consist of dirt lots. The lot closest to the harbor mouth is closed to vehicles during high surf for public safety.

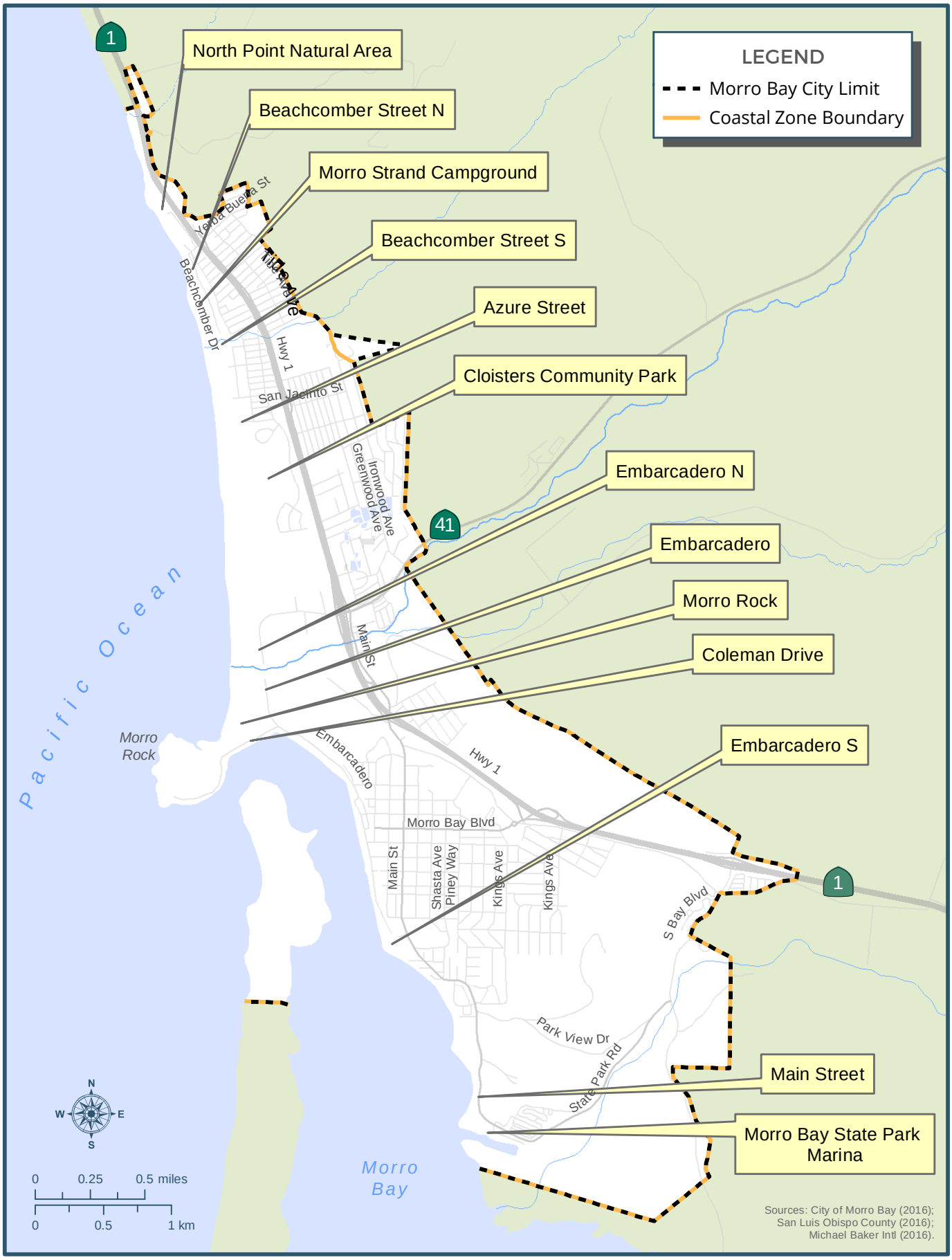


FIGURE 13.5

Primary Public Coastal Access

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- Parking supply and demand along the Embarcadero south to the launch ramp are discussed in detail in the 2007 Parking Management Plan.
- An informal dirt parking area accommodating approximately 12 vehicles is situated on Main Street north of the Museum of Natural History. This lot is regularly used as a launching point for small boats.
- A paved parking lot is located at the Morro Bay State Park Marina serving the general public and vessel owners. This lot also provides access to estuary walking trails.

Free parking is provided at all coastal access parking locations.

WALKING AND BICYCLING

The City's well-established grid network, mild weather, and relatively flat topography support walking and biking. The *Morro Bay Bicycle and Pedestrian Master Plan* (2011) describes existing conditions and identifies goals, objectives, and planned improvements to serve these modes of travel.

The American Community Survey estimates that in 2014, 4.5 percent of working-age residents in Morro Bay walked to work, 1.4 percent biked to work, and 72.8 percent drove alone to work.

Walking

Pedestrian facilities consist of sidewalks, Class I paths, and crosswalks. Sidewalks are provided along the Embarcadero and along most streets in the Downtown area. Most single-family residential areas in the city lack sidewalks. Section 12.04.010 of the Municipal Code requires that new developments conform to the City's Standard Drawings and Specifications (City of Morro Bay 1987), which require sidewalks for commercial, industrial, and high-density residential uses as well as on arterial, local, and collector roads not bordered by one or more of these land uses. Hillside streets in R1/R2 zoning are required to provide a flat, walkable surface on one side of the road.

Crosswalks

There are four types of crosswalks in the city. Signalized crossings provide marked crosswalks and pedestrian signal heads. The three signalized intersections in the city provide signalized crossings on at least two legs of the intersection.

Controlled marked crossings provide striped crosswalks with a stop or yield sign on at least one leg of the intersection. There are 44 controlled marked crossings in the city, mostly in the Downtown area. There are two controlled marked crossings across Highway 1, one at San Jacinto Street and a second at Yerba Buena Street. A crosswalk, green bike lane striping, and Rectangular Rapid Flash Beacon were recently installed near the Atascadero Road/Highway 1 southbound ramp intersection. This area experiences high pedestrian volumes due to the proximity of the high school and nearby hotels.

Uncontrolled marked crossings provide striped crosswalks at mid-block and uncontrolled locations.

Unmarked crossings constitute the remainder of crosswalks wherever two public roads intersect, per the California Vehicle Code.

The Harborwalk provides a multi-use bicycle and walking path connecting the Embarcadero to Morro Rock. This path is heavily used by locals and visitors.

Trails

The California Coastal Trail is a hiking trail that spans from Oregon to Mexico. The California legislature formally established the trail in 2001 and provided a general alignment. There are no current specific alignments planned for the City, nor are there any trails designated as the California Coastal Trail. Additional recreational hiking trails are provided in Morro Bay State Park. These include the Black Hill hiking areas and walking paths along the estuary near the State Park marina.

Schools

Greenwood Avenue was identified prior to 2004 as the primary walking route to the city's only elementary school, Del Mar Elementary. No sidewalks are provided on Greenwood Avenue, causing pedestrians to walk in the roadway. In 2011 the City and stakeholders

applied unsuccessfully for grant funding for segment improvements through the Cycle 3 Federal Safe Routes to School Grants program. Funding for improvements to this segment has not yet been identified.

Morro Bay High School is connected to the beach tract by a Class I path. Many students walk through the Main Street/SR 41/Atascadero Road intersection, which is congested during peak hours. Recent pedestrian and bicycle improvements to the Highway 1 Southbound Ramps/Atascadero Road intersection have improved conditions for student cyclists and pedestrians.

Bicycling

Bicycle facilities are described in four classes of facilities:

- Class I bikeways provide a completely separate right-of-way for the exclusive use of bicycles and pedestrians with a minimum of vehicular cross-flow. The Harborwalk path is an example of a Class I facility. Approximately 3.6 miles of Class I facilities exist in the city.
- Class II bike lanes consist of a striped lane for one-way bicycle travel on a street or highway. Approximately 7.1 miles of Class II bike lanes exist in the city.
- Class III bike routes are shared by motorists and bicyclists. These routes are supplemented with signs and pavement legends including sharrows. The section of Beachcomber Street south of Yerba Buena Street is an example of a Class III bike route with sharrows.
- Class IV bike lanes, often called cycle tracks or protected bike lanes, are exclusive bike facilities physically separated from vehicles. Types of separation include grade separation, flexible posts, physical barriers, or on-street parking. No Class IV bike lanes currently exist in Morro Bay.

Figure 13.6 shows existing bike facilities in Morro Bay and Figure 13.7 shows the future bike and pedestrian facilities proposed in the city's *Bicycle and Pedestrian Master Plan* (2011). The California Pacific Bike Route connects Vancouver, British Columbia, to Imperial Beach, California, and follows Highway 1 through Morro Bay.

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Plan MORRO BAY

FIGURE 13.6

Existing Bicycle Facilities

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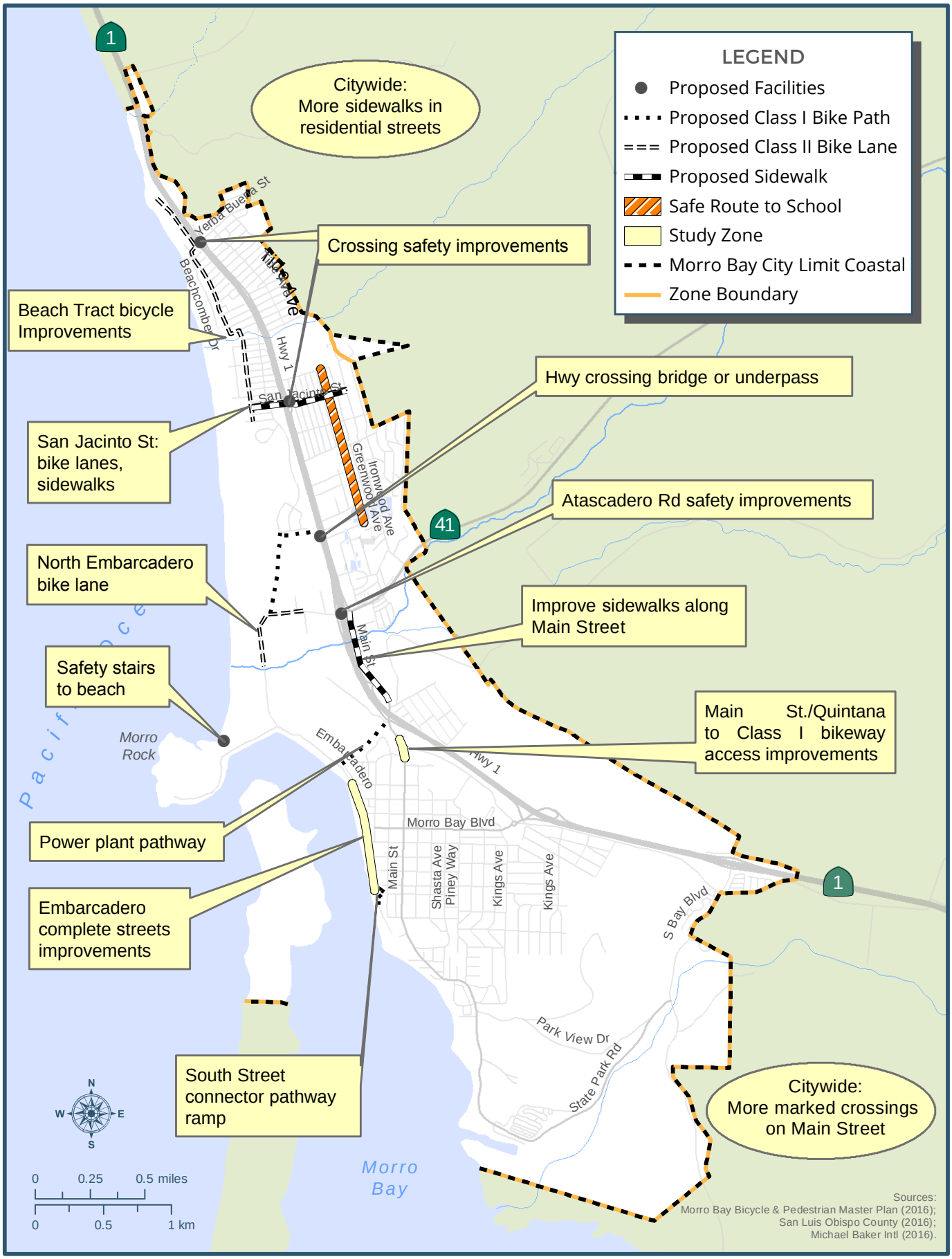

FIGURE 13.7

Planned Bicycle and Pedestrian Facilities

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TRANSIT

Morro Bay is served by regional and local transit services.

Regional Transit

The San Luis Obispo Regional Transit Authority (RTA) is a joint powers authority providing fixed-route regional service throughout the county and serving the Morro Bay Transit Center on Harbor Street. RTA provides ADA paratransit service through the Runabout, a demand response system operating within three-quarters of a mile of all fixed-route services in the county. Figure 13.8 shows the RTA routes.

RTA Route 12 runs from Morro Bay to San Luis Obispo with stops in Los Osos, Cuesta College, and Cal Poly. It runs on one-hour headways on weekdays and two-hour headways on weekends.

RTA Route 15 runs from Morro Bay to San Simeon with stops in Cayucos and Cambria. It operates on two- to three-hour headways on weekdays and Saturdays and four-hour headways on Sundays.

RTA ridership has consistently increased each year since 2007. Additionally, 2013 ridership is 270 percent greater than 2003 ridership.

Local Transit

The City operates Morro Bay Transit, which provides fixed-route service with hourly headways from 6:25 a.m. to 6:45 p.m. on weekdays and 8:25 a.m. to 4:25 p.m. on Saturdays. Curb-to-curb service is provided within three-quarters of a mile of the fixed route on a reservation basis. This route serves the city's major campgrounds, high school, senior center, grocery store, and neighborhoods throughout the city. Figure 13.9 shows the Morro Bay Transit routes.

The Morro Bay Trolley operates three loops from Memorial Day weekend through the first weekend in October. The routes serve north Morro Bay, Downtown, and the waterfront with headways under one hour. Stops are provided at the State Park

campground, Downtown, the Embarcadero, Morro Rock, and Morro Strand campground. Figure 13.10 shows the Morro Bay trolley routes.

Morro Bay Transit's 2013 triennial performance audit provided four recommendations:

1) Establish performance standards for all services to better track performance trends.

2) Construct a full ridership profile based on the North County Transit Surveys and additional customer feedback. This information should be used to tailor marketing and public outreach activities.

3) Consider implementing targeted public information campaigns about services to increase ridership among key populations.

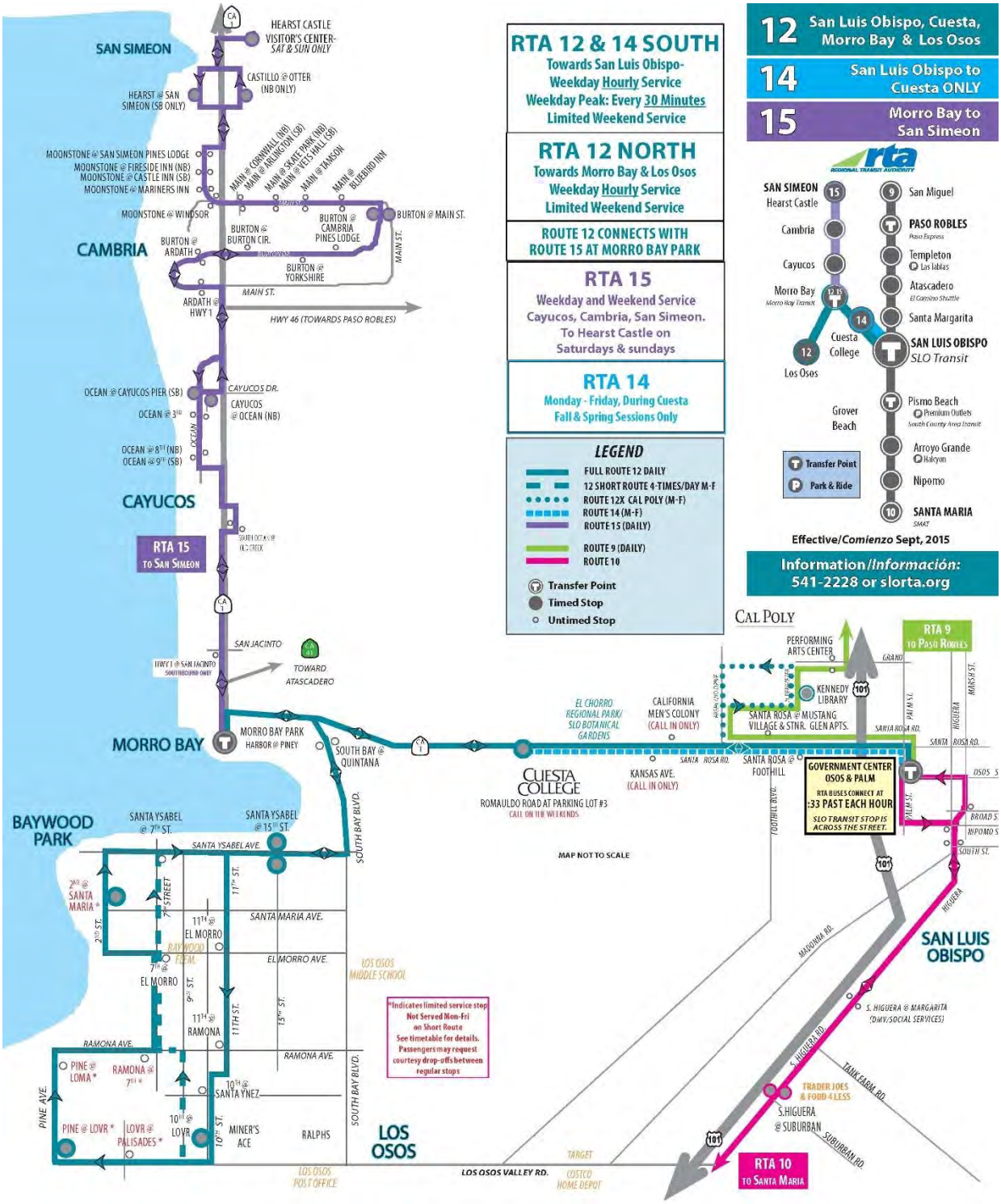
4) Make it easier for riders to submit feedback about transit services.

In response to the first recommendation, the City established performance standards regarding passengers per vehicle service hour and incentivized these goals in its service contract. To the second recommendation, the City solicited feedback through both print and electronic methods in addition to conducting on-board opinion surveys and boarding/alighting counts. The City acted on the third recommendation by publicizing unmet transit needs hearings, advertising in local newspapers, visiting senior centers, using targeted marketing to tourists, and identifying a small commuter market. The City implemented the fourth recommendation by offering several methods to receive customer feedback, including an online customer feedback link and a comment form printed in the Morro Bay Transit brochure.

Morro Bay Transit Fixed Route and Call-A-Ride service saw ridership increase by about 30 percent from fiscal years 2012 to 2015. However, over the same period, Morro Bay Trolley ridership decreased by about 15 percent.

The Morro Bay Senior Citizens, Inc. operates a senior transportation shuttle on Monday through Thursday from 9:00 a.m. to 4:00 p.m. It serves destinations throughout the county.

Figure 13.8
San Luis Obispo RTA Fixed-Route Service to Morro Bay



Source: San Luis Obispo RTA 2016

Figure 13.9
Morro Bay Fixed Route

Figure 13.10
Morro Bay Trolley Service

Source: City of Morro Bay 2016

13.2 REGULATORY SETTING

FEDERAL

There are no federal regulations directly applicable to transportation for the General Plan update.

STATE

California Department of Transportation

Caltrans is responsible for operating and maintaining the state highway system. In the planning area, Highway 1 and SR 41 fall under Caltrans jurisdiction. Caltrans provides administrative support for transportation programming decisions made by the California Transportation Commission for state funding programs. The State Transportation Improvement Program is a multi-year capital improvement program that sets priorities and funds transportation projects envisioned in long-range transportation plans.

Caltrans modifies the Federal *Manual on Uniform Traffic Control Devices* (MUTCD) (Federal Highway Administration 2009) to produce it for use in California. The California MUTCD (California State Transportation Agency 2014) defines standards for the installation and maintenance of traffic control devices on all public streets, highways, bikeways, and private roads open to public travel.

The Caltrans *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002) provides general guidance regarding the preparation of traffic impact studies for projects that may have an impact on the state highway system. The guidance includes when a traffic study should be prepared and the methodology to use when evaluating operating conditions on the state highway system.

The guidance states, "Caltrans endeavors to maintain a target LOS at the transition between LOS 'C' and LOS 'D' on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS." It also states that where "an existing

State highway facility is operating at less than the appropriate target LOS, the existing [measure of effectiveness (MOE)] should be maintained."

Complete Streets

Caltrans Deputy Directive DD-64-R1 – Complete Streets - Integrating the Transportation System provides for the needs of travelers of all ages and abilities in all programming, planning, design, construction, operations, and maintenance activities and products on the state highway system. Caltrans views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycles, pedestrians, and transit modes as integral elements of the transportation system.

Caltrans develops multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian, and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance and operations.

The CA 2008 Complete Streets Act (Assembly Bill 1358) requires that cities and counties in California plan for the accommodation of all users, including pedestrians, bicyclists, transit riders, drivers, and persons with disabilities.

Government Code Section 65302 (b) requires that any substantive revision of the circulation element must "plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the general plan."

Senate Bills 375 and 743

Senate Bill (SB) 375 (2008) requires that regional transportation plans include a sustainable communities strategy (SCS) to reduce greenhouse gas emissions from passenger vehicles and light trucks.

SB 743 (2013) directs the Governor's Office of Planning and Research to develop new guidelines for the evaluation of transportation impacts under the California Environmental Quality Act. The draft guidelines identify VMT as the primary metric used to identify transportation impacts instead of vehicular LOS. SB 743 also creates a new exemption for certain projects that are consistent with a specific plan, and eliminates the need to evaluate aesthetic and parking impacts of a project, in some circumstances. The intent of SB 743 is to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

REGIONAL

The San Luis Council of Governments (SLOCOG) is an association of local governments in San Luis Obispo County and includes seven incorporated cities and the County of San Luis Obispo. SLOCOG is responsible for transportation planning and funding in the region and serves as a forum for study and resolution of regional issues.

SLOCOG prepared a *Regional Transportation Plan/Sustainable Communities Strategy* (SLOCOG 2014), laying out the blueprint for regional transportation system. The RTP identifies multimodal improvements to the transportation system over the next 20 years with a focus on maximizing transportation choices.

LOCAL

The City of Morro Bay has a number of local plans, policies, and regulations pertaining to the local circulation system in the planning area.

The City's 1987 *Engineering Standards and Specifications* provide design standards and details for city roadways, sidewalks, and street signs, among other public infrastructure standards.

The 1988 Morro Bay *General Plan* Circulation Element plans the circulation network for all modes of travel within the city.

The 1996 Morro Bay *Waterfront Master Plan* details proposals for four waterfront planning areas from Morro Rock to Tidelands Park and provides design guidelines

specifying height limits, site design and parking, and architectural characteristics. The plan also includes a section on transportation and harbor improvements including a recommended new vehicular connection across Morro Creek from the Embarcadero to Atascadero Road.

The 2007 Morro Bay *Parking Management Plan* documents existing parking supply and demand conditions and recommends measures to improve parking conditions in the city.

The 2011 Morro Bay *Bicycle & Pedestrian Master Plan* establishes goals and objectives related to walking and biking in the city. The plan identifies and ranks specific improvements to improve conditions for cyclists and pedestrians.

The 2013 City of Morro Bay *Climate Action Plan* sets benchmarks for Morro Bay's 2005 greenhouse gas emissions and identifies measures to reduce greenhouse gas emissions to a level 15 percent below 2005 levels by 2020, including measures related to transportation which constitutes 40 percent of the 2005 greenhouse gas emissions.

13.3 PRIORITY FINDINGS

EXCESSIVE MOTOR VEHICLE SPEEDS

Some collector streets in residential areas routinely experience speeds greater than five miles per hour above the speed limit. This results in part from the fact that many collector streets are not consistent with current Federal Highway Administration guidelines, and so posted sign limits are not always sufficient to allow for a safe, orderly flow of traffic.

AREAS IN NEED OF IMPROVEMENT

The intersection of Main Street/SR 41/Atascadero Road experiences high levels of delay and congestion during the weekday p.m. peak hour. The Greenwood Avenue corridor is an important route to the city's only elementary school and should be a priority for safe routes to school improvements. The intersections of Highway 1/San Jacinto Street and Main Street/San Jacinto Street are complicated for drivers, cyclists, and pedestrians to navigate. Sidewalks along the Embarcadero are often congested with pedestrians and

would benefit from widening. Many Downtown streets are wider than needed, resulting in long pedestrian crossing distances which increase pedestrian exposure to vehicles and make walking less comfortable. The connections between the Embarcadero and Downtown could be improved to encourage pedestrian activity between these two areas. Specific information about the current state of repair of Morro Bay's transportation network is not readily available at time of writing, but it is likely that there are areas where the condition of the pavement could be improved. Similarly, information is not available about the precise locations in Morro Bay that do not have sidewalks, but these locations are areas in need of improvement and should be identified so the lack of sidewalks can be corrected.

VMT AND LOS STANDARDS

The City does not currently have a policy in place for evaluating transportation conditions. Recent legislation favors VMT to measure CEQA transportation impacts instead of LOS.

ADEQUATE PARKING

Parking supply is generally adequate except for a short time during peak holiday weekends in localized areas.

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14. 0 Water and Water Quality

Plan Morro Bay

14.0 WATER AND WATER QUALITY

This chapter identifies existing water and water quality conditions in the planning area and summarizes applicable regulations for pollutant discharge from point sources and runoff, and water quality management programs.

For more information on water supply and municipal water service, see Chapter 6, Infrastructure and Public Services.

14.1 EXISTING CONDITIONS

HYDROLOGICAL SETTING

Local Hydrology

The majority of the City of Morro Bay is in the Morro Bay Watershed. Located primarily in the central area of coastal San Luis Obispo County, the Morro Bay Watershed covers 46,598 acres. A small portion of the city north of Morro Bay Boulevard is located within the Cayucos Creek - Whale Rock Watershed. Waters in the Cayucos Creek - Whale Rock Watershed drain into Morro Creek and discharge into the Pacific Ocean. The watershed boundaries and primary creeks providing drainage are detailed in Figure 14.1.

Morro Bay Watershed

The geology of the Morro Bay Watershed is highly varied, consisting of complex igneous, sedimentary, and metamorphic rock. Over 50 diverse soils, ranging from fine sands to heavy clays, have been mapped in the area. Soils in the upper watershed are predominantly coarse-textured, shallow, and weakly developed. Deeper medium- or fine-textured soils are typically found in valley bottoms or on gently rolling hills. Earthquake activity and intense rain events increase landslide potential and severity in sensitive areas (for more information, see Chapter 8, Natural and Environmental Hazards).

Much of the watershed remains as open space used primarily for agriculture and a range of public uses, including parks, golf courses, nature preserves, a military base, and university-owned rangeland. The developed portions of the watershed include the community of Los Osos/ Baywood Park, parts of the City of Morro Bay, Cuesta College, Camp San Luis Obispo, the California Men's Colony, and various facilities operated by the County of San Luis Obispo. Specifically, land use in the watershed consists of about 60 percent ranchland, 19 percent brushland, 7 percent urban areas, 7 percent agriculture, and 7 percent woodland.

The Morro Bay Watershed climate is Mediterranean, and the majority of precipitation occurs as rainfall in the winter. The area receives about 95 percent of its 18-inch average annual precipitation between the months of November and April. The mean air temperature ranges from around 45 degrees F in January to 65 degrees F in July, with prevailing winds from the northwest averaging about 15 to 20 miles per hour.

The Morro Bay Watershed was formed during the last 10,000 to 15,000 years. A post-glacial rise in sea level of several hundred feet resulted in a submergence of the confluence of Chorro and Los Osos Creeks. Today, waters in the Morro Bay Watershed drain into Chorro and Los Osos Creeks. A series of creeks that originate in the steeper hillslopes to the east of the bay drain westward into both creeks, which then drain into the bay.

Chorro Creek accounts for about 60 percent of the total land area, approximately 43 square miles, draining into the estuary. Major tributaries to Chorro Creek include San Bernardo, San Luisito, Walters, Pennington, and Dairy Creeks. Figure 14.2, from the Central Coast Wetlands GIS Project, shows the components of the Chorro Creek drainage system. Chorro Creek and its tributaries originate along the southern flank of Cuesta Ridge, at elevations of approximately 2,700 feet. Annual discharge of Chorro Creek and its tributaries is highly variable, ranging from approximately 2,000 to over 20,000 acre-feet, and averaging about 5,600 acre-feet. Flow in tributaries is intermittent in dry years and may disappear in all but the uppermost areas of the watershed.

In 2006, Chorro Creek, and its tributary Dairy Creek, were identified by the Central Coast Regional Water Quality Control Board (RWQCB) as having exceedances of biostimulatory substances and levels of dissolved oxygen. By 2010, the creek was delisted for dissolved oxygen impairment. The nutrients listing remains in effect; sampling shows nutrient concentrations are improving.

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Plan MORRO BAY

FIGURE 14.1

Watersheds

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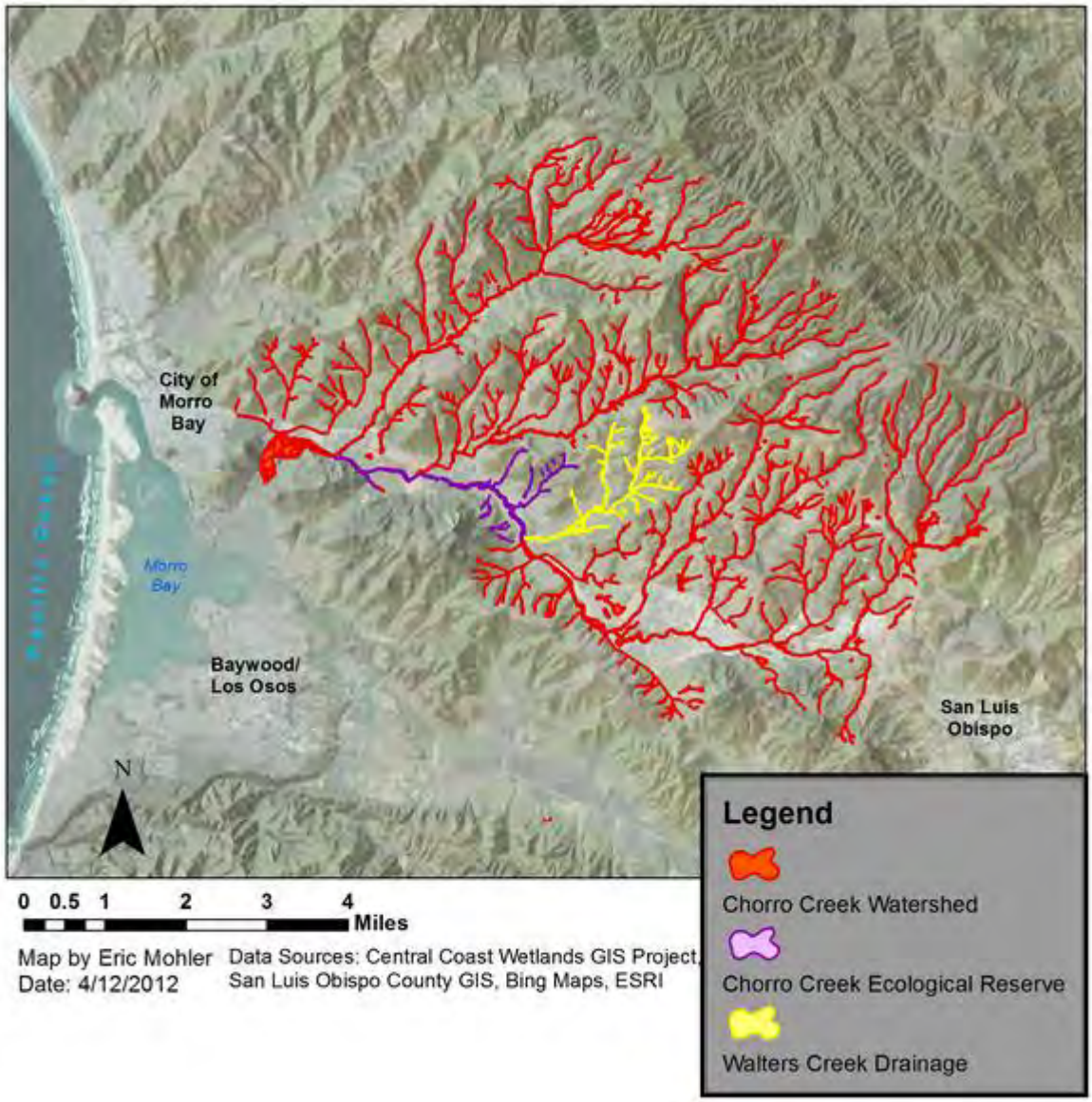
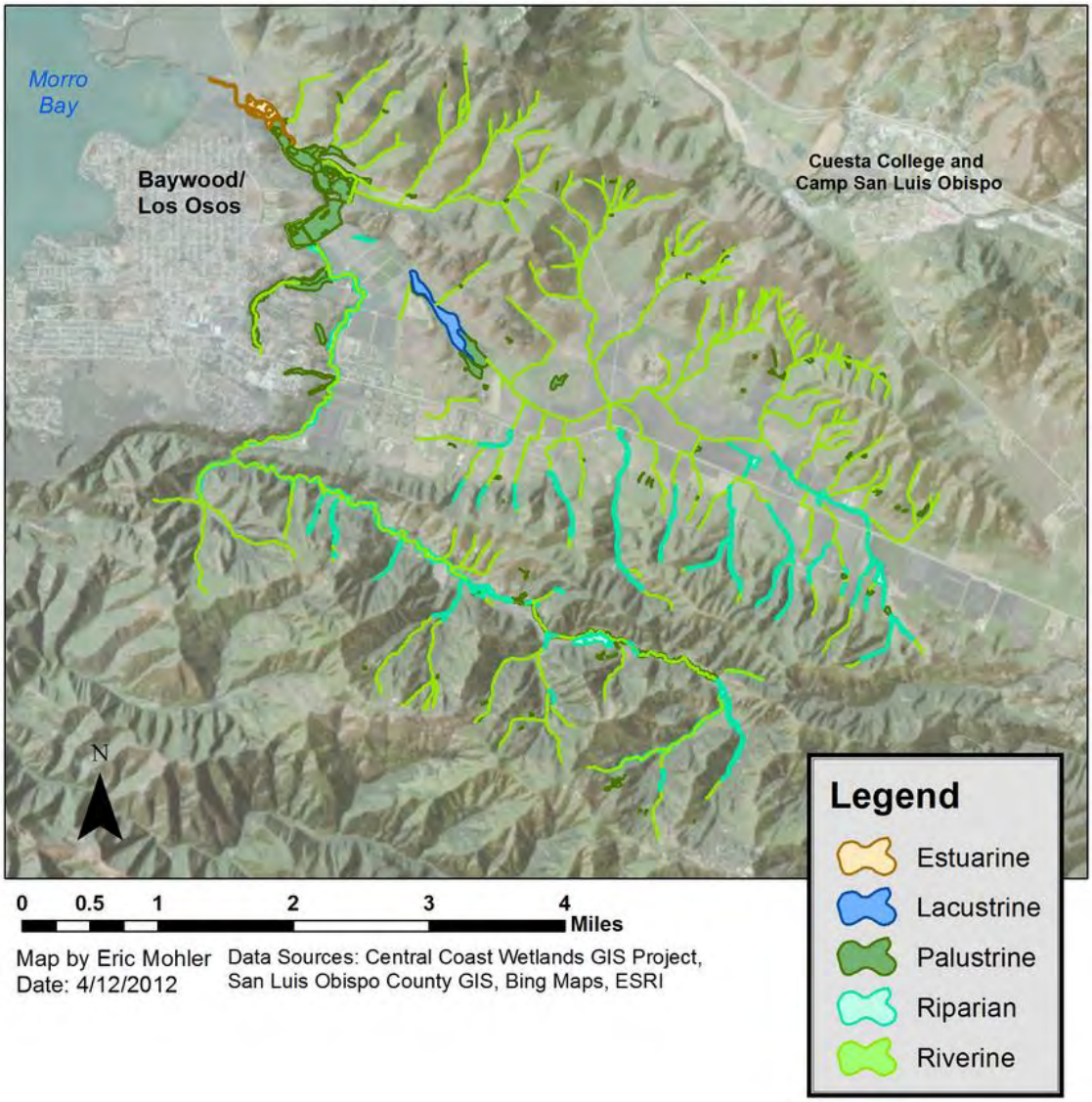
Figure 14.2 - Chorro Creek Drainage System



The Los Osos creek system is much smaller and does not run through the planning area. Los Osos Creek subwatersheds consist of steep pre-Quaternary noninfiltrative headwaters and a flat, highly infiltrative Quaternary valley. Los Osos Creek starts in Clark Valley and flows northwest toward Morro Bay. Warden Creek is a major tributary to Los Osos Creek. The creek system also includes Eto Lake and Warden Lake. Figure 14.3, from the Central Coast Wetlands GIS Project, shows the components of the Los Osos Creek drainage. Los Osos Creek regularly goes dry during the summer at its crossing with Los Osos Valley Road.

Los Osos Creek and its tributary, Warden Creek, were identified as impaired for nutrients in 1998, specifically nitrate-nitrogen (nitrate-N), due to discharges from agricultural cropland, and were added to the 303(d) list (a list of impaired waterways pursuant to the 1972 federal Clean Water Act [CWA]) in 2002. Nitrate-N levels exceed the objectives of the Water Quality Control Plan for the Central Coast Basin (Basin Plan) for the protection of the municipal water supply (MUN) beneficial use. To address the impairment, Region 3 (the Central Coast RWQCB) adopted the Los Osos Creek, Warden Creek, and Warden Lake Wetland Nutrient total maximum daily load (TMDL) in 2004. To protect the MUN beneficial use, the TMDL established a receiving water nitrate-N concentration numeric target that is equal to the existing Basin Plan water quality objective of 10 mg/L nitrate-N (Central Coast RWQCB 2004). The TMDL also established an implementation plan to achieve the numeric target. A water quality report released by the Central Coast RWQCB in 2014 shows that conditions in the creeks are improving and closer to achieving numeric targets but that continued implementation of the programs to address impairment must continue.

Figure 14.3 - Los Osos Creek Drainage System



Cayucos Creek - Whale Rock Watershed

A portion of the planning area north of Morro Bay Boulevard is located within the Cayucos Creek - Whale Rock Watershed. Waters in the Cayucos Creek - Whale Rock Watershed drain through four major drainages that independently reach the Pacific Ocean: Cayucos Creek, Old Creek, Toro Creek, and Morro Creek, the latter of which borders and shares some attributes with the Morro Bay Watershed. Morro Creek is the only one of these drainages geographically relevant to the planning area.

The headwaters of this watershed are in the Santa Lucia Range, reaching a maximum elevation of approximately 2,345 feet with the lowest elevation at around at sea level, draining into the Pacific Ocean. Whale Rock Reservoir is located in the watershed approximately one-half mile east of the community of Cayucos. The dominant land use in the watershed is agriculture, with the seaside town of Cayucos providing an urban core area with tourist-oriented opportunities.

Morro Creek

The Morro Creek subwatershed consists of steep pre-Quaternary noninfiltrative headwaters and a flat Franciscan low infiltrative valley. The watercourse flows from the Santa Lucia Mountains to discharge into the Pacific Ocean, at its mouth on Estero Bay, just north of Morro Rock. There has been historic mining of chromium as well as grazing by the cattle ranches within the catchment basin. There have been indications that the creek has experienced some environmental degradation from acid mine drainage to watersheds and sediment mobilization during storms. TMDLs have not been assessed by the Central Coast RWQCB.

Local Drainage

Urban runoff (stormwater) flows from inland locations through the planning area into the bay and the Pacific Ocean. Water flows through a network of storm sewer pipes and open channels as identified in Figure 14.4. The lines generally terminate through one of 65 outfalls and outlets at the western end of the city. Of these outfalls and outlets, 43 drain to the bay, 3 drain directly into the Pacific Ocean, and 19 drain to various creeks. A main storm drain, carrying water from Morro Creek, runs out to sea near Atascadero Road. Alva Creek waters reach the ocean through a storm drain terminating at the beach roughly between Jamaica Street and Island Street. To the south of Morro Rock, numerous smaller outlet pipes, inlets, and culverts drain into Morro Bay.

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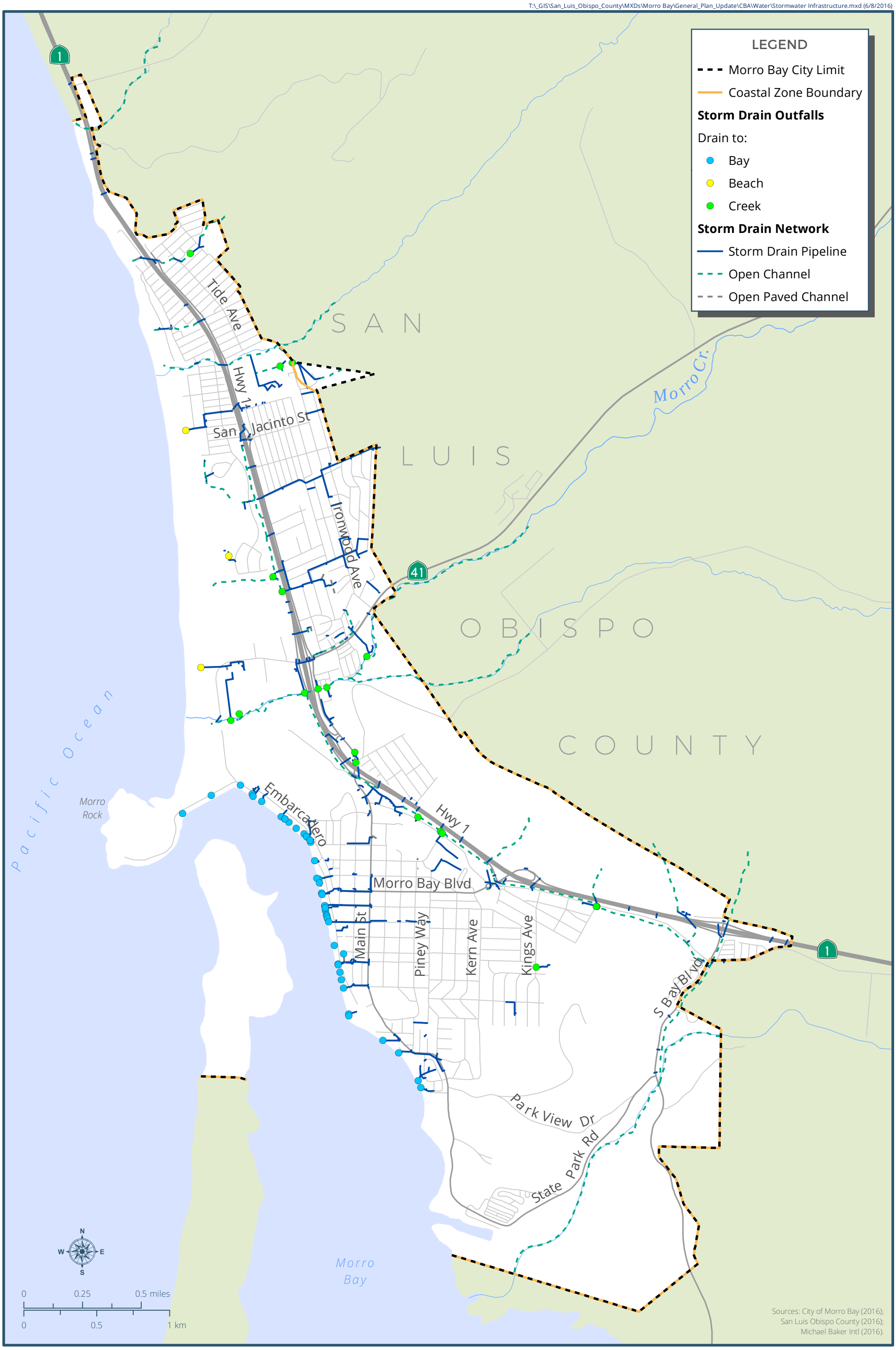

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FIGURE 14.4

Stormwater Infrastructure

Page 2

Groundwater Hydrology

Two distinct groundwater basins underlie the project area: Morro Valley and Chorro Valley. The Chorro Valley and Morro Valley Groundwater Basins are shallow alluvial basins that behave similarly to an underground stream. Rainfall in the watershed percolates into the ground and flows underground to the ocean. Use of groundwater resources is controlled by the State Water Resources Control Board (SWRCB). The Chorro Valley and Morro Valley Groundwater Basins are supplied entirely by riparian underflow, groundwater outflow that takes place in valley alluvium instead of at the surface. Therefore, the SWRCP enforces permit use by outflow discharge quantity rather than the more easily measurable gaging station method.

Morro Valley Groundwater Basin

The Morro Valley Groundwater Basin underlies Morro Valley in west central San Luis Obispo County. The basin is bounded on the west by the Pacific Ocean and on all other sides by contact with impermeable rocks of the Jurassic to Cretaceous age Franciscan Group. The valley is drained by Morro Creek to the Pacific Ocean. Precipitation ranges from 15 to 17 inches per year. Groundwater is found in alluvium, dune sand, and terrace deposits. Well logs indicate a thickness of sedimentary rocks of about 60 feet.

The total storage capacity has been estimated at 7,600 acre-feet and 33,900 acre-feet. Recharge to the basin is by percolation of stream flow, precipitation, and excess irrigation flow (DWR 2004a). During drought conditions, concurrent operation of Morro Bay's seawater and freshwater supply wells from the Morro Valley Groundwater Basin could subject freshwater wells to seawater intrusion. Seawater intrusion and nitrates are the predominant concerns for water quality in this basin (City of Morro Bay 2015).

Chorro Valley Groundwater Basin

The Chorro Valley Groundwater Basin underlies Chorro Valley in west central San Luis Obispo County. The basin is currently bounded on the west by the Pacific Ocean and on all other sides by impermeable Franciscan Group and Miocene intrusive rocks. Chorro Creek drains this valley into Morro Bay. Precipitation ranges from 15 to 19 inches.

Groundwater is found in Holocene and late Pleistocene age alluvium, which consists of sand, gravel, and clay. The alluvium reaches a thickness of 70 feet near the mouth of

Chorro Creek. The total storage capacity of the aquifer is estimated at 9,600 acre-feet. Recharge to the basin is by percolation of stream flow, precipitation, and excess irrigation flow (DWR 2004b). The Chorro Valley Basin, especially in the lower valley area, is constrained by seawater intrusion, especially during drought conditions (City of Morro Bay 2015).

WATER QUALITY

The City's potable water supply quality depends on the quality of imported water and local groundwater, as well as the proportion in which the two sources are blended. The quality of these two sources is described below.

Groundwater

The City's water supply is tested at multiple locations annually. The City publishes a water quality report which details the water quality sampling results for City wells and SWP water. While the range of contamination in raw well water may exceed drinking water standards, all of the water delivered to customers is blended or treated to reduce contaminant levels to acceptable levels to meet health and safety requirements. Maximum contaminant levels are the highest level of a contaminant allowed in drinking water. Table 14.1 lists the drinking water contaminants that were detected during the most recent sampling.

Table 14.1
Water Sampling Results for Morro Bay Sources (2014)

Substance (units)	State Water Project		Well Water		Maximum Contaminant Level	Violation of State Thresholds?
	Average Amount	Range	Average Amount	Range		
Primary Drinking Water Standard						
Aluminum (ppm)	0.069	ND - .11	0.0017	ND - .01	1	No
Barium (ppm)	ND	ND -. 11	0.106	.3 - .128	1	No
Fluoride (ppm)	ND	ND - .11	0.1	.1 - .2	2	No
Nickel (ppb)	ND	ND - .11	0.35	ND - 10	100	No
Nitrate (ppm)	0.38	0.38	48	3.7 - 165	45	No
Selenium (ppb)	ND	ND - .11	8	2 - 13	50	No
Secondary Drinking Water Standard						
Chloride (ppm)	120	78 - 170	90.9	41 - 162	500	No
Color (units)	ND	ND	ND	ND	15	No
Copper (ppm)	ND	ND	1.7	ND - 20	1	No
Iron (ppb)	ND	ND	11.7	ND - 80	300	No
Manganese (ppb)	ND	ND	NA	NA	50	No
Odor (units)	ND	ND - 1	ND	ND	3	No
Specific Conductance (umhos/cm)	769	606 - 969	1118.3	893 - 1490	1,600	No
Sulfate (ppm)	120	120	83.3	54 - 121	500	No
Total Dissolved Solids (TDS) (ppm)	428	340 - 572	653.3	460 - 910	1,000	No
Turbidity (NTU)	0.07	.04 -.11	0.2	ND - 1	5	No
Zinc (ppm)	ND	ND	0.0025	ND - .03	5	No

Source: City of Morro Bay 2014

ppm = parts per million; ppb = parts per billion; µS/cm = micro-Siemens per centimeter; ND = not detected

In general, imported surface water has a lower total dissolved solids (TDS) concentration than local groundwater. The local groundwater produced by the City's groundwater wells generally has a TDS concentration ranging from 460 parts per million (ppm) to 910 ppm, with an average of 653.3 ppm (City of Morro Bay 2014b). The City's surface water supply imported through the SWP generally has a TDS concentration range of 340 to 572 ppm, with an average of 428 ppm (City of Morro Bay 2014b). Blending surface water and groundwater can help ensure TDS levels stay below state thresholds.

Currently, the nitrate contamination issue in the groundwater basins affects supply reliability of Chorro Valley groundwater wells, with levels averaging 48 ppm. Nitrates in

drinking water at levels above 45 ppm is a health risk for infants less than six months of age and pregnant women. However, the City is not in violation, as blending reduces the concentrations below established thresholds. The City is working to renew this water supply source by providing nitrate treatment or blending by 2020. Once treatment technologies are in place, the City does not anticipate future water quality issues that may affect supply or reliability.

Surface Water

The City of Morro Bay purchases water from the Central Coast Water Authority (CCWA). The CCWA obtains its water supply from the coastal reach of the SWP California Aqueduct. The source water of the SWP originates in Northern California's mountains, rivers, and streams, and flows through the Sacramento-San Joaquin Delta before entering the SWP's 444-mile California Aqueduct. The Coastal Branch Reach II of the SWP consists of a 101-mile-long aqueduct from Kern County to Vandenberg Air Force Base in Santa Barbara County.

Water is pumped from the West Branch of the SWP through a series of four pumping stations and ultimately delivered to the Polonial Pass Filtration Plant where the water is treated using conventional surface water filtration techniques. The Polonial Pass Plant is located in the Cholame Hills at an elevation of approximately 1,400 feet. This elevation allows the plant to distribute water from the plant to San Luis Obispo County, which is approximately 100 miles away. Typically, there is no other treatment of the purchased surface water. The City provides additional chlorine treatment as needed to keep an active disinfection residual in the distribution system. The interconnection is located downstream of the Polonial Pass Plant along the Coastal Branch Reach II (City of Morro Bay 2010).

Under Section 303(d) of the 1972 federal CWA, the state must submit an updated list of impaired waterways, called the 303(d) list, to the US Environmental Protection Agency (EPA) every two years. Impairment is measured by TMDL, the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. In California, reporting is assigned to the regional water quality control boards. The Central Coast RWQCB is Morro Bay's regional water control board. CCWQCB's last report to the EPA on impaired waterways identified which waterways in the Central Coast exceeded

maximums and if implementation plans to reduce TMDL were proving effective or not. It also detailed which water quality standards were not yet met for each waterway.

A large number of the 20 tracked pollutants are present in some amount in waterways in the Central Coast region, including fecal coliform, pH, E. coli, low dissolved oxygen, nitrate, sodium, turbidity, chloride, sedimentation/siltation, and unknown toxicity (Central Coast RWQCB 2009). According to the 2010 Integrated Report on Water Quality, impaired water bodies (those with one or more of these pollutants listed in quantities above the allowed threshold) in or near Morro Bay included Morro Bay and Chorro Creek. Morro Creek was assessed for a number of pollutants, but none were ultimately placed on the list. Table 14.2 shows the pollutants related to each of these water bodies.

Table 14.2
Impaired Water Bodies in the Planning Area (2010)

Water Body Name	Water Body Type	Listing Category*	Pollutant
Chorro Creek	River & Stream	5	Escherichia coli (E. coli)
		5	Nutrients
		5	Sedimentation/Siltation
Morro Bay	Bay & Harbor	4A	Dissolved Oxygen
		5	Pathogens
		5	Sedimentation/Siltation

Source: Central Coast RWQCB 2010

** TMDL requirement status definitions for listed pollutants are: 5= TMDL still required, 4A= addressed by EPA approved TMDL*

Groundwater Management

The Morro Valley Groundwater Basin is susceptible to nitrate contamination, primarily from nitrate-based agricultural fertilizers. A 2007 study found that nitrate concentrations in groundwater beneath farming operations in the lower Morro Valley had risen from an average of 34 milligrams per liter (mg/l) in 1980 to an average of 160 mg/l in 2007 (Morro Valley Groundwater Monitoring Cooperative 2013). Due to these elevated nitrate concentrations, which have periodically exceeded state drinking water standards, the City has reduced groundwater pumping from most groundwater wells since the late 1990s.

The Morro Valley Groundwater Basin was entirely unavailable to the city in 2000 due to nearby methyl tertiary butyl ether (MTBE) contamination in the basin. The City began treatment for MTBE in 2002 and continued this treatment until MTBE contamination levels fell below the RWQCB's monitoring threshold in 2008. Since then, the MTBE levels continue to remain below the RWQCB's monitoring threshold. The City has made significant investments in providing treatment for the Morro Valley Groundwater Basin.

A drinking water source assessment completed in 2009 found that Morro Valley Groundwater Basin wells are considered most vulnerable to the following activities: gas stations, known contaminant plumes, and agricultural drainage. The Chorro Valley Groundwater Basin wells are considered most vulnerable to the following activities not associated with any detected contaminants: agricultural drainage, septic systems, wells (agricultural, irrigation), and other animal operations (City of Morro Bay 2014a).

Stormwater Runoff

Stormwater runoff can be a significant contributor to both surface water and groundwater contamination. Runoff from agricultural fields often contains fertilizers that contain nitrates. In large quantities, nitrates have a negative impact on water ecosystems and human health. In 2007, the City conducted an analysis to determine the source of nitrate contamination throughout the basin, since concentrations in groundwater have been intermittently above allowable levels. The 2007 Morro Valley Nitrate Analysis identified nitrate-based agricultural fertilizers as the primary source of nitrate contamination in the Morro Valley Groundwater Basin.

Stormwater runoff in the city is regulated primarily through a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit program defines stormwater discharges as point sources because stormwater discharges from the end of a stormwater conveyance system (a single point). A point source is defined by the EPA as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." Point sources are regulated differently than dispersed pollutant sources; point source dischargers are required to obtain an NPDES permit in order to legally discharge pollutants into a water body. Consequently, the City of Morro Bay must obtain an NPDES permit for stormwater draining from the city.

The City is currently in compliance with the standards set forth in the MS4 permit (for small Municipal Separate Storm Sewer Systems). The City's Stormwater Management Program (SWMP) was developed to comply with its NPDES permit approved by the Central Coast RWQCB in 2009; an updated version was completed in 2010. For each year of the general permit, the City must comply with a detailed list of requirements to improve stormwater quality in the region. The requirements fall into 10 categories:

- Program management
- Education and outreach
- Public participation and involvement
- Illicit discharge detection and elimination
- Construction site storm water runoff control program
- Pollution prevention / good housekeeping for city operations
- Post-construction stormwater management program
- Water quality monitoring
- Program effectiveness assessment
- Total maximum daily loads compliance

Annual Reporting

City staff reviews development applications to ensure they provide designs which are environmentally conscious, enhance water quality, and preserve and protect coastal waters and resources. All development and redevelopment projects which create or replace more than 2,500 square feet of impervious area must incorporate stormwater management controls.

To promote low impact development, the City has developed the *EZ Manual* (2014a), a guidance manual that supplements the Department of Public Services' overall standard Drawings and Specifications (1987). The manual lists necessary tasks, compliance years, and notes on implementation.

Morro Bay Estuary Water Quality

The Morro Bay Estuary is a 2,300-acre semi-enclosed body of water where freshwater flowing from the land mixes with the saltwater of the sea. The estuary environment encompasses the lower reaches of Chorro and Los Osos Creeks, a wide range of wetlands, salt and freshwater marshes, intertidal mud flats, eelgrass beds, and other subtidal habitats. Morro Bay is an important estuary to the city and larger region for its economic and ecological resources. The estuary is home to an important habitat for birds, fish, and other animals. It is a vital stop for migrating birds on the Pacific Flyway. Sheltering pools and eelgrass beds provide nursery habitat for fish and invertebrates.

The Morro Bay National Estuary Program (NEP) is one of 28 estuaries nationwide designated and funded by the EPA as National Estuary Projects due to its national significance. The Morro Bay NEP, detailed in the *Morro Bay National Estuary Program Comprehensive Conservation and Management Plan* (2012), protects and restores the important estuarine and watershed resources through on-the-ground projects, partnerships, and education. The Morro Bay NEP and its partners monitor water and sediment quality, habitat, and species. Monitoring is used to identify and track the most critical environmental issues, and to determine the effectiveness of restoration and pollution control actions.

Although the condition of the Morro Bay Watershed is relatively good when compared to other West Coast estuaries, and the resources present are relatively intact, the watershed is at great risk of degradation. Potential ongoing issues of concern include:

- Increased sedimentation in the bay and at the base of Chorro and Los Osos Creeks
- Elevated amounts of bacteria and pathogens
- Elevated amounts of nutrients
- Reduced amounts of dissolved oxygen

Impaired waterways flowing into the Morro Bay estuary, including Chorro Creek, Los Osos Creek, Dairy Creek, and Warden Creek, have effects on all these areas of concern. These waterways are impacted by agricultural runoff as well as a variety of human

activities. Urban runoff and loss of natural floodplains also have impacts on the health of the bay.

The NEP *Comprehensive Conservation and Management Plan* also found that climate change may result in additional TMDLs in impaired waterways and additional impaired waterways. Elevated nutrients, already an issue in Chorro and Los Osos Creeks, could continue to be increased by additional storms. Similarly, reduced amounts of dissolved oxygen result from high numbers of certain bacteria. Increasingly warm seasons from the warming climate may further elevate the presence of these bacteria and pathogens.

14.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Clean Water Act

Growing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (CWA). The act established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave the EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The act made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also created grant programs to assist states and local governments with the construction of sewage treatment plants and the implementation of watershed management programs. The act has been regularly amended (with substantial amendments in 1981 and 1987) since its enactment and includes multiple programs to protect water quality.

National Pollutant Discharge Elimination System Program

CWA Section 402 establishes the NPDES permit program, which sets nationwide permitting requirements for discharging pollutants into waterways. The limits vary by category of industry and are based on a level of treatment that is achievable using the best available technology. CWA Section 402 prohibits the discharge of pollutants into waters of the United States from any point source without an NPDES permit. To regulate stormwater (non-point source) discharges, the EPA developed a two-phased NPDES permit program, commonly referred to as Phase I and Phase II. The Phase I program for Municipal Sanitary Storm Sewer Systems (MS4s) requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a stormwater management program as a means to control polluted discharges from these MS4s.

Stormwater discharges from MS4s in urbanized areas are a concern because of the high concentration of pollutants found in these discharges. The NPDES Phase II permit program also requires the development and implementation of stormwater management plans to reduce such discharges. The Phase II program is based on the use of federally enforceable NPDES permits. The Phase II program encourages the use of general permits; provides flexibility for regulated operators to determine the most appropriate stormwater controls; allows for the recognition and inclusion of existing NPDES and non-NPDES stormwater programs in Phase II permits; includes public education and participation efforts as primary elements of the small MS4 program; attempts to facilitate and promote watershed planning and to implement the stormwater program on a watershed basis; and works toward a unified and comprehensive NPDES stormwater program with Phase I of the program.

Section 303(d) Impaired Waters List

CWA Section 303(d) requires states to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a TMDL for each of the listed pollutants. As noted previously, the TMDL is the amount of loading that the water body can receive and still be in compliance with water

quality objectives. The TMDL can also act as a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The state-prepared TMDL must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings (sources of naturally occurring pollutants) and a margin of safety. The TMDL must also include an analysis that shows links between loading reductions and attainment of water quality objectives. The EPA must either approve a TMDL prepared by the state or, if it denies the state's TMDL, issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of a TMDL, it is intended that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

Water Quality Criteria and Standards

The EPA is the federal agency with primary authority for implementing regulations adopted under the CWA. The EPA has delegated to the state of California the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the state's Porter-Cologne Act, described below.

Under federal law, the EPA has published water quality regulations under Volume 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of the designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires the EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use.

Safe Drinking Water Act

Under the Safe Drinking Water Act (Public Law 93-523) passed in 1974, the EPA regulates contaminants of concern to domestic water supply. The act defines contaminants of concern as contaminants that pose a public health threat or alter the aesthetic acceptability (e.g., taste and odor, staining of laundry and porcelain fixtures) of the water. The EPA's primary and secondary maximum contaminant levels (MCLs), which apply to

treated water supplies delivered to the distribution system, regulate contaminants of concern. MCLs and the process for setting these standards are reviewed every three years. Amendments to the Safe Drinking Water Act enacted in 1986 and 1996 established an accelerated schedule for setting MCLs for drinking water.

The EPA has delegated the responsibility for administering California's drinking-water program to the California Department of Public Health. The Department of Public Health is accountable to the EPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by the EPA. The applicable state primary and secondary MCLs are set forth in Title 22, Division 4, Chapter 15, Article 4 of the California Code of Regulations (CCR), and described in Title 22 Standards, below.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California National Pollutant Discharge Elimination System Permit Programs

In many states, the EPA has delegated administration of the NPDES permit program to the state water quality control authority. In California, the State Water Resources Control Board (SWRCB) and its regional boards (RWQCBs) administer the NPDES permit program. Currently, discharges from construction, industrial, and municipal activities are regulated under the NPDES program, all of which are described below.

National Pollutant Discharge Elimination System Municipal Permits

The regional boards implement the municipal stormwater NPDES permit program. The state issues area-wide permits for urban areas that are considerable sources of pollutants or contribute to water quality standard violations. Regardless of population, the area-wide permits cover all municipalities within the defined urban area. The main goal of the general permit is to protect water quality from the impacts of stormwater runoff from small MS4s. The intent is that stormwater quality impacts will be considered in all aspects of a municipality's activities and that multiple departments within the

municipality will work together to implement stormwater best management practices (BMPs). Many activities that a municipality already does can be recognized as a benefit to stormwater or can be modified to add stormwater quality benefits. The general permit states that the permittee shall maintain, implement, and enforce an effective SWMP, and develop adequate legal authority to implement and enforce the SWMP.

On February 15, 2008, the Central Coast RWQCB sent a letter notifying the City of Morro Bay of the new enrollment process for the NPDES permit. This letter sets forth the RWQCB's expectations for the SWMP in order to be found in compliance with the general permit. The letter stated that the SWMP must include additional control measures, including six minimum control measures: maximize infiltration of clean stormwater, and minimize runoff volume and rate; protect riparian areas, wetlands, and their buffer zones; minimize pollutant loading; and provide long-term watershed protection. In order to achieve the maximum extent practicable standard, the City has incorporated each of these conditions into the six minimum control measures.

State Water Resources Control Board (SWRCP)

The California SWRCB is one of six branches of the California Environmental Protection Agency. The SWRCB oversees the allocation of the state's water resources to various entities and for diverse uses, from agricultural irrigation to hydroelectric power generation to municipal water supplies, and for safeguarding the cleanliness and purity of Californians' water.

Under the federal CWA and the state's Porter-Cologne Water Quality Control Act, the SWRCB has regulatory authority for protecting the water quality of nearly 1,600,000 acres (6,500 km^2) of lakes, 1,300,000 acres (5,300 km^2) of bays and estuaries, 211,000 miles (340,000 km) of rivers and streams, and about 1,100 miles (1,800 km) of California coastline. The SWRCB also provides financial assistance to local governments and nonprofit agencies to help build or rejuvenate wastewater treatment plants, and protect, restore, and monitor water quality, wetlands, and estuaries.

California Coastal Act of 1976

The California Coastal Act of 1976 (Coastal Act) and the California Coastal Commission, the state's coastal protection and planning agency, were established by voter initiative

in 1972 to plan for and regulate new development, and to protect public access to and along the shoreline. The Coastal Act considers water quality and water-related public safety concerns as issues of public importance.

To provide maximum public access to the coast and public recreation areas, the Coastal Act directs each local government located within the coastal zone to prepare a Local Coastal Program consistent with Section 30501 of the Coastal Act, in consultation with the Coastal Commission and with public participation.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, the SWRCB is provided with the ultimate authority over state water rights and the water quality policy. However, Porter-Cologne also established nine regional boards, or RWQCBs, to provide oversight on water quality issues at a regional and local level. Morro Bay lies within the jurisdiction of the Central Coast RWQCB (Region 3). The SWRCB has overall responsibility for water quality regulation under division 7 of the Porter-Cologne Water Quality Control Act. This act also divides the state into nine hydrological basins for local administration of the act by the semiautonomous RWQCBs with coordination and oversight from the SWRCB. The RWQCBs have authority to regulate point source discharges, such as municipal stormwater discharges, through the adoption of waste discharge requirements under chapter 5.5 of the act. In addition, the responsibility for implementing the NPDES permit program has been delegated to the SWRCB and its local RWQCBs.

Title 22 Standards

California's drinking water quality standards are contained in Title 22 of the CCR. Water quality standards are enforceable limits composed of two parts: the designated beneficial uses of water and criteria (i.e., numeric or narrative limits) to protect those beneficial uses. Municipal and domestic supply is among the "beneficial uses" defined in Section 13050(f) of the Porter-Cologne Act as uses of surface water and groundwater that must be protected against water quality degradation. MCLs are components of the drinking water standards adopted by the California Department of Health Services (now the Department of Public Health) pursuant to the California Safe Drinking Water Act (Title 22 CCR, Division 4, Chapter 15, Domestic Water Quality and Monitoring). Primary water quality objectives were established for protection of health. Secondary water quality

objectives were established for aesthetic concerns (e.g., taste and odor, staining of laundry and porcelain fixtures), and at elevated levels do not pose a health hazard.

Drinking water MCLs directly apply to water supply systems "at the tap" (i.e., at the point of use by consumers in, for example, their home and office), and are enforceable by the state and San Luis Obispo County. California MCLs, both primary and secondary, directly apply to groundwater and surface water resources when they are specifically referenced as water quality objectives in the pertinent basin plan. In such cases, MCLs become enforceable limits by the SWRCB and RWQCBs.

Central Coast Regional Water Quality Control Board

The Central Coast RWQCB is one of nine regional boards which serve as the frontline for state and federal water pollution control efforts. Central Coast RWQCB is Region 3, and extends roughly from Santa Cruz to Santa Barbara and from the coast inland with a boundary approximately locational with I-5. The Central Coast RWQCB's basin plan encompasses hydrologic areas, monitoring water quality and issuing waste discharge requirements and enforcement action against violators.

California Nondegradation Policy

In 1968, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

- Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

- Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements, which would ensure: (1) pollution or

nuisance would not occur, and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

California Toxics Rule and State Implementation Plan

On May 18, 2000, the EPA promulgated numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to waters in California. The EPA promulgated this rule based on the administrator's determination that numeric criteria are necessary in California to protect human health and the environment. These federal criteria are legally applicable in California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA.

The policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries became effective in 2006 and is commonly referred to as the State Implementation Plan. The plan applies to discharges of toxic pollutants into inland surface waters, enclosed bays, and estuaries of California subject to regulation under the Porter-Cologne Water Quality Control Act and the CWA. Such regulation may occur through the issuance of NPDES permits or other relevant regulatory approaches. The State Implementation Plan establishes a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.

NPDES Permit System and Waste Discharger Requirements for Construction

The Central Coast RWQCB has adopted specific NPDES permits for activities that have potential to discharge wastes to waters of the state. The Central Coast RWQCB has issued a general NPDES permit and general Waste Discharge Requirements (WDR) covering discharges from construction, industrial, and municipal activities. The discharge requirements include provisions mandating notification, sampling and analysis, and reporting of dewatering and testing-related discharges. The NPDES permits all involve similar processes including submittal of notices of intent to discharge to the Central Coast RWQCB and implementation of BMPs to minimize those discharges.

Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or

reduce non-stormwater discharges to storm sewer systems and other waters. The permit also requires dischargers to install post-construction permanent BMPs that would remain in service to protect water quality throughout the life of the project, consistent with the planning and land development requirements of the MS4 permit. Types of BMPs include source controls, treatment controls, and site planning measures.

Activities subject to the NPDES general permit for construction activity must develop and implement a stormwater pollution prevention plan. The plan includes a site map and description of construction activities and identifies the BMPs that will be employed to prevent soil erosion and discharge of other construction-related pollutants, such as petroleum products, solvents, paints, and cement, that could contaminate nearby water resources. A monitoring program is generally required to ensure that BMPs are implemented according to the stormwater pollution prevention plan and are effective at controlling discharges of pollutants related to stormwater.

Municipal Stormwater Permit Program

The SWRCB Municipal Storm Water Permitting Program regulates stormwater discharges from MS4s. MS4 permits are issued in two phases. Under Phase I, which started in 1990, the RWQCBs adopted NPDES stormwater permits for large and medium municipalities (large MS4 systems serve populations of 250,000 or more people). Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. Morro Bay is under a Phase II Small MS4 General Permit, which became effective on July 1, 2013 (Order No. 2013-0001 DW). Phase II permits provide permit coverage for smaller municipalities (population less than 100,000). The current MS4 permit requires the discharger to develop and implement a stormwater management plan/program with the goal of reducing the discharge of pollutants in stormwater to the maximum extent practicable, which is the performance standard specified in CWA Section 402(p). The management programs specify which BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. For each year of the general permit, the City must comply with a detailed list of requirements aimed at improving stormwater quality in the region. The requirements fall into 10 categories:

1) Program management

2) Education and outreach

3) Public participation and involvement

4) Illicit discharge detection and elimination

5) Construction site storm water runoff control program

6) Pollution prevention / good housekeeping for city operations

7) Post-construction stormwater management program

8) Water quality monitoring

9) Program effectiveness assessment

10) Total maximum daily loads compliance

To assist in implementing the general permit, the City of Morro Bay has compiled a guidance document listing necessary tasks, compliance years, and notes on implementation. In addition to the new permit requirements, the City must also continue to fulfill the requirements outlined in the City's SWMP, which was developed under the previous general permit.

Recycled Wastewater Requirements

Wastewater recycling in California is regulated under Title 22, Division 4, of the CCRs under the jurisdiction of the Department of Public Health. The intent of these regulations is to ensure protection of public health associated with the use of recycled water. The regulations establish acceptable levels of constituents in recycled water for a range of uses and prescribe means for ensuring reliability in the production of recycled water. Using recycled water for nonpotable uses is common throughout the state and is an effective means of maximizing use of water resources. The Central Coast RWQCB establishes water reclamation requirements under the Title 22 regulations and is responsible for implementing wastewater recycling projects.

California Department of Water Resources

The DWR is responsible for preparation of the California Water Plan, regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Urban Water Management Plan

The City's UWMP (2010) serves as a foundational document and source of information for Water Supply Assessments (SB 610) and Written Verifications of Water Supply (SB 221). The UWMP ensures the City as a water provider has adequate water supplies available or planned infrastructure improvements to meet future demand in the face of diminishing water resources. The City is currently completing an update to the UWMP reflecting 2015 conditions.

Morro Bay Municipal Code

The Morro Bay Municipal Code has several sections relating to water quality. Chapter 13.12 governs the connection, permitting, and design of new sewers as well as quality of sewer and stormwater discharge; grease, oil, and sand interceptors for construction; and both commercial and residential facility operations. It also identifies sewer charges and discharge fees.

Chapter 14.48 covers building regulations, including illicit discharge and stormwater management control. It identifies the responsibilities of the discharger, illegal discharges, exceptions, and requirements to eliminate illegal discharges and remediate discharges.

Morro Bay Stormwater Management Plan

The Morro Bay SWMP identifies key BMPs of the NPDES permit (NPDES General Permit Order No. 2003-0005-DWQ). It outlines implementation tasks and additional continuing tasks for the 10 categories as outlined under Municipal Stormwater Permit Program, above.

Morro Bay Stormwater Management Guidance Manual for Low Impact Development and Post-Construction Requirements (and EZ Manual)

The City of Morro Bay is required by the Central Coast RWQCB to implement hydromodification criteria and low impact development (LID). As a site is developed, the site becomes less permeable and therefore less water can infiltrate back into the ground. LID techniques attempt to mimic the natural site hydrology before development in order to protect water quality and control runoff flows in new and significant redevelopment projects.

The City participated in a joint effort with other municipalities and agencies on the Central Coast to develop hydromodification criteria for long-term watershed protection. The results of that joint effort included the preparation of the *Stormwater Management Guidance Manual for Low Impact Development & Post-Construction Requirements* (known as the *EZ Manual*). Two versions of the EZ Manual are available. The condensed manual identifies LID practices for individual single-family homes. The main EZ Manual is used for all other projects.

Morro Bay Sewer System Management Plan

The Sewer System Management Plan (SSMP) was adopted in 2009 and last updated in 2014. The plan achieves compliance with the state's WDR, which requires any public agency that owns or operates a sanitary sewer system more than 1 mile in length that conveys untreated or partially treated wastewater to a publicly owned treatment works in the state of California to comply with the requirements of the WDR. Per the requirements of the WDR, the City performed two audits of the SSMP (June 2011, June

2013), which focused on the plan's effectiveness and the City's compliance with the SSMP requirements identified in the WDR.

Morro Bay National Estuary Program Comprehensive Conservation and Management Plan

The Comprehensive Conservation and Management Plan (CCMP) defines the priority issues facing the health of the Morro Bay Estuary and Watershed and presents action plans to effectively address those issues. The CCMP is the guiding document for the NEP. The NEP has four watershed goals:

- Water quality protection and enhancement
- Ecosystem restoration and conservation
- Public education, outreach, and stewardship
- Fostering collaboration

These issues were identified through grassroots public participation, scientific study, and more than a decade of conservation and restoration experience. The priority issues include: accelerated sedimentation, bacterial contamination, elevated nutrient levels, toxic pollutants, scarce freshwater resources, preserving biodiversity, and environmentally balanced uses. The NEP has a five-year implementation period.

The CCMP includes 61 action plans that the NEP and its partners used to address the threats to the estuary. All of the action plans have been initiated. Some have been fully completed, and a few were found to be ineffective and have been discontinued. Since the first CCMP in 2001, new issues, notably the effects of climate change, have been incorporated into action plans.

14.3 PRIORITY FINDINGS

This section identifies priority findings related to water and water quality in Morro Bay. Related priority findings regarding improvements for water and wastewater infrastructure are provided in Chapter 6, Infrastructure and Public Services.

STORMWATER NITROGEN RUNOFF

The presence of nitrogen in both groundwater and surface streams and bay waters remains a significant issue for the city and the larger region. Nutrients—primarily nitrogen and phosphorus—are essential for the growth of all living organisms in the natural water system. However, excessive nitrogen and phosphorus degrade water quality and can present hazards for drinking water in higher concentrations. Although nitrogen levels in groundwater and SWP water have been below quality thresholds for the entire system in recent years, individual streams and wells continue to have unacceptably high levels.

Fertilizers from agricultural practices remain the largest contributor to nutrients such as nitrogen and phosphorus. The runoff from these lands lead to eutrophication, a decrease in oxygen levels. This can result in excessive growth of algae and aquatic vegetation (such as algae blooms), which often results in deteriorated water quality and beach closings.

The City has implemented a range of urban runoff regulations and discharge rules to address this problem. However, additional efforts are necessary to maintain and improve water quality.

SEAWATER INTRUSION OF GROUNDWATER WELLS

In the past, the Morro Valley Groundwater Basin has experienced intermittent periods of seawater intrusion during long-term droughts that result in overdraft of the shallow groundwater resources. As a result, Morro Bay has imposed intermittent building permit rationing and de facto moratoriums on new water and sewer hook-ups. The problem of overdrafting has been partially solved by the purchase of increased rights to SWP water during drought events. However, with continued growth and mounting pressure on SWP

resources statewide, plans for additional water sources may be necessary to prevent seawater intrusion into the groundwater system.

CLIMATE CHANGE IMPACTS ON THE MORRO BAY ESTUARY

Climate change is expected to have a variety of effects on the Morro Bay Estuary ecosystem and associated water quality conditions. Two possible effects include: increasing intensity and frequency of severe storm events influencing the transport of sediment; and increasingly warm seasons further elevating the presence of bacteria and pathogens. Knowledge about how climate change effects impact the watershed and estuary has greatly improved over the last decade, but additional information is needed to identify BMPs and restoration projects to be implemented in the future. Initial efforts to address this issue have been undertaken in the last decade and are included in the updated NEP.

WATER SYSTEM PLANNING

The City's water and water quality issues are currently addressed by complicated and overlapping plans (i.e., the Urban Water Management Plan, the Morro Bay Stormwater Management Plan, and the Morro Bay Sewer System Management Plan). As discussed in Chapter 6, these plans are being concurrently updated and will be included in a single planning document titled the One Water Plan. The One Water Plan represents an integrated approach to water supply, wastewater treatment, and stormwater management planning. This collaborative approach will be a more accessible, sustainable, and resilient way to manage the City's future water needs and sustain a long-term water supply.

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Plan MORRO BAY

1.0 INTRODUCTION

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APPENDICES

Plan MORRO BAY

Appendix A: Coastal Hazard Modeling and Mapping

Appendix A. Coastal Hazard Modeling and Mapping

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1. BACKGROUND

This appendix presents technical information on the numerical modeling approach used to estimate and map future sea level rise hazard zones. These hazard zones were used as the basis of the vulnerability assessment.

2. INTRODUCTION

Morro Bay's exposure to coastal hazards due to sea level rise was estimated using modeling tools and coastal datasets. The coastal hazards that were modeled as part of the Community Baseline Assessment include inundation, flooding (both coastal and fluvial) and dune/bluff erosion. Flooding and inundation terms are used explicitly in this report. Flooding is used to describe episodic events that result in relatively short-duration periods of standing water. Wave run-up limits are used as a proxy for flooded areas since these areas would only become exposed during extreme wave conditions (i.e., 50- or 100-year events). Inundation represents a condition of nearly continuous periods of standing water. The mean high water (MHW) shoreline position was used as a proxy for the inundation limit for this study.

The modeling variables, approaches, and equations used to define the study's coastal hazards are shown in Table 1. Figure 1 illustrates the response of dune-backed beach to an extreme wave event and resultant inundation, flood and dune hazard zones.

TABLE 1: MODELING APPROACHES

Hazard	Metric	Input Variables	Modeling Approach	Modeling Equations
Inundation	Mean High Water	Slope, Depth of Closure, Sea Level Rise	Empirical	Modified Bruun Rule (Rosati, Dean, Walton 2013)
Dune Erosion	Dune Toe	2% Run-up Elevation, Dune Toe, Beach Slope	Empirical +Monte Carlo	Stockdon, 2006 - Komar, 1999
Coastal Flooding	2% Run-up Elevation	Surge, Sea Level Anomalies, Tide, Significant Wave Height, Peak Wave Period, Beach Slope	Empirical +Monte Carlo	Stockdon, 2006
Fluvial Flooding	100-year Flood Limit	100-year River Discharge	Empirical	1-D HEC-RAS Steady State
Bluff Erosion	Top of Bluff	Historic Erosion Rate, Sea Level Rise	Empirical	Revell et al. 2011

The general modeling approach was to collect and analyze available coastal topographic / bathymetric data, model existing and future hazards, and then map the hazards. Experiment-based (empirical) equations and a data simulation model were used to quantify the future hazards. The data simulation was conducted using a Monte Carlo method, which is a probabilistic computational tool where the governing equations are well known, but the independent variables of the input (demand) and the resulting design components (capacity) may not be completely known. The Monte Carlo approach uses a distribution of each variable, then uses that random variable within the described parameters to generate a single computation. The process repeats hundreds or thousands of times to generate a statistical output of design parameters, which accounts for the uncertainty of the input parameters. For instance, tides, waves and beach characteristics all influence coastal flooding and have their own statistics and likelihoods. These variables were randomly combined thousands of times in order to simulate the statistics and likelihood of a given coastal hazard.

Details on model inputs, such as local water levels, waves and sea level rise scenarios, as well as how the respective coastal hazards were mapped are described in this section.

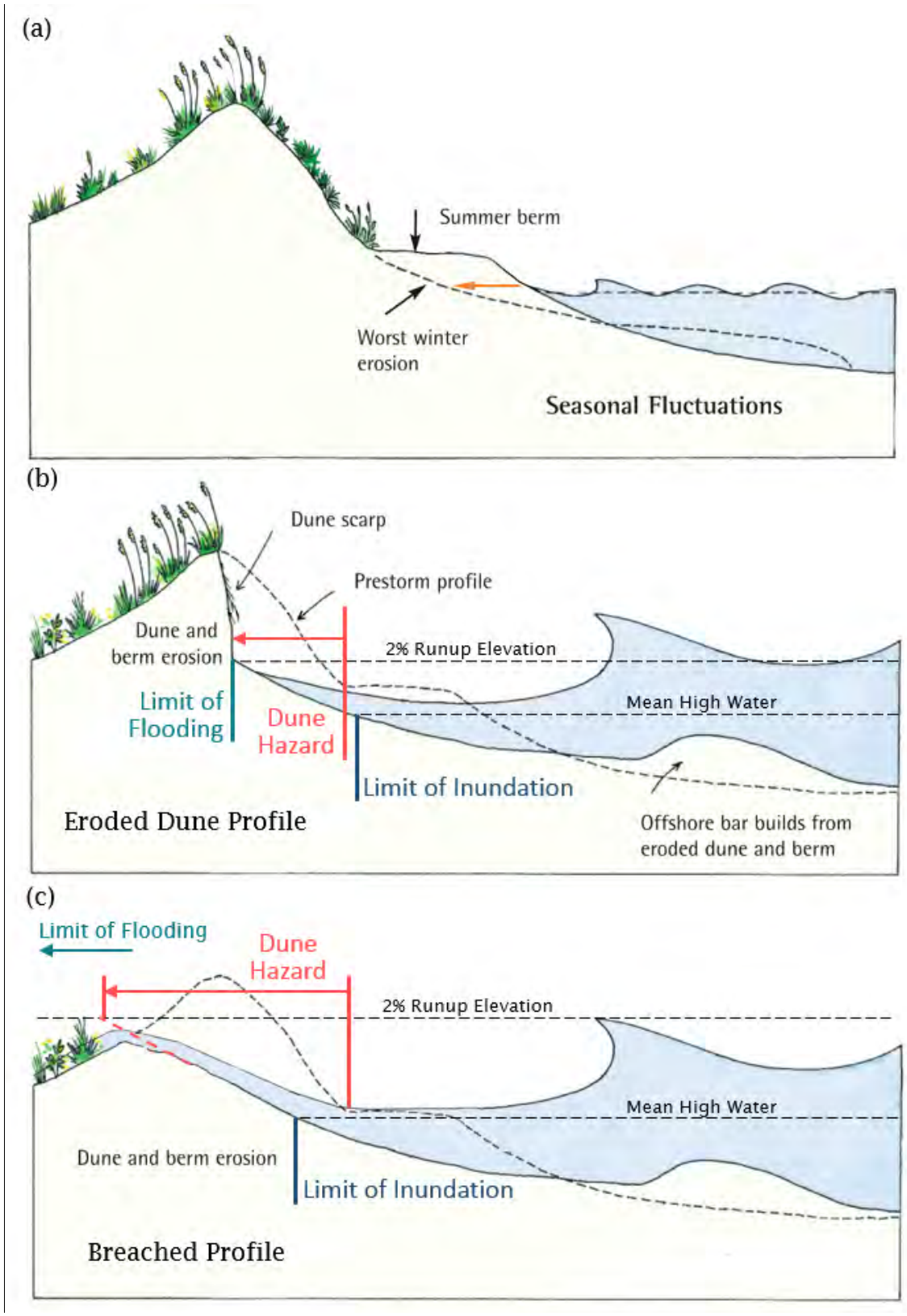


FIGURE 1: DETERMINATION OF COASTAL FLOODING AND INUNDATION ZONES
(Modified Illustrations. Originals by D Williams, in Rogers & Nash 2003)

3. COASTAL SITE CONDITIONS

3.1. WATER LEVELS

3.1.1. Historical Statistics

The nearest, long-term sea level record in proximity to the study area is the Port San Luis tide gage (Station 9412110) operated by the National Oceanic and Atmospheric Administration (NOAA). The gage is located on the Harford Pier, which has been collecting data since 1948. These data are applicable to the open-ocean coastline in Central California and are summarized in Table 2.

TABLE 2: WATER LEVELS IN PORT SAN LUIS (1983-2001 TIDAL EPOCH)

Description	Datum	Elevation (feet MLLW)
Highest Observed Water Level (1/18/1973)	Maximum	7.65
Highest Astronomical Tide	HAT	7.10
Mean Higher-High Water	MHHW	5.32
Mean High Water	MHW	4.62
Mean Sea Level	MSL	2.80
Mean Low Water	MLW	1.04
Mean Lower-Low Water	MLLW	0.00
North American Vertical Datum of 1988	NAVD88	0.08
Lowest Astronomical Tide	LAT	-1.99
Lowest Observed Water Level (01/07/1951)	Minimum	-2.40

(Source: NOAA 2016)

Tidal data obtained from the Port San Luis tide gage was used to estimate probability distributions for tidal levels, surge, and sea-level anomalies (e.g., higher water levels due to warm water temperatures or low atmospheric pressure). The parameterized water levels used in the Monte Carlo analysis are described below:

- Tides – Tides in Morro Bay are semi-diurnal, which refers to two highs and two lows occurring per day. A mean of 0 ft (MSL) with a standard deviation of 1.6 ft was used. These probabilistic parameters were calculated by analyzing the astronomical tide record. Astronomical tides result solely from gravitational effects of the moon and sun, without any atmospheric influences.

- Sea-Level Anomaly (SLA) – Anomalous water levels as a result of unusual water temperatures (El Niño), salinities, average monthly winds, atmospheric pressures, and/or coastal currents. These effect occur on a time scale of weeks and months. A mean SLA of 0 ft (MSL) with a standard deviation of 0.2 ft was used. These parameters were calculated using 14-day moving average of tidal residual. The tidal residual is the difference between the recorded tide and the predicted astronomical tide.

- Storm Surge – Storm surge is the abnormal rise of sea levels in response to wind associated with a short-term event. Return period storm surge values of 2.4 ft (10 yr), 2.9 ft (25 yr), 3.2 ft (50y r) and 3.5 t (100 yr) were used in the analysis. These return periods were calculated by running an extreme value analysis on tidal residual. Storm surge events were limited to tidal residuals spikes less than a day in length.

3.1.2. Sea Level Rise Scenarios

The California Coastal Commission Sea Level Rise Policy Guidance (CCC 2015) document considers "Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past Present, and Future" (NRC 2012) the best available science on relative sea level rise for the state of California. Therefore, the Coastal

Commission recommends that the sea level rise projections in this study be used for coastal planning and sea level rise policy. Sea level rise projections for the various planning horizons being considered (i.e., 2030, 2050, and 2100) were derived from this study. The NRC 2012 study's high range sea level rise projections for the area south of Cape Mendocino were used as the basis of the vulnerability assessment (Table 3). The high range projections for sea level rise coincide with an upper estimate of a "business as usual" greenhouse gas emissions scenario. This climate scenario assumes that emissions continue to increase until the end of the 21st Century without a significant decrease in fossil fuel use (Snover et al. 2013).

TABLE 3: SEA LEVEL RISE PROJECTIONS FOR THE STUDY AREA

Year	Projected Sea Level Rise (ft)	Projection Uncertainty (ft, +/-)	Low Range (ft)	High Range (ft)
2030	0.5	0.2	0.2	1.0
2050	0.9	0.3	0.4	2.0
2100	3.1	0.8	1.5	5.5

(Source: National Research Council 2012)

3.2. WAVES

Waves act to carry sand in both the cross-shore and longshore directions and can also cause short-duration flooding events by causing dynamic increases in water levels. Thus, the wave climate (or long-term exposure of a coastline to incoming waves) and extreme wave events are important in understanding future sea level rise vulnerabilities.

Offshore wave data was analyzed by combining NOAA measurements and a USGS wave forecast data set. Data for both sources were obtained 60 miles west-northwest of Morro Bay at NOAA buoy 46028 (Figure 2).

The USGS wave forecast information was derived using four separate global circulation models (GCM) to force a numerical wave model (WaveWatch III) to create future wave information (Erikson et al. 2015). The four GCMs were forced using a future climate scenario called RCP 8.5, as defined by the fifth phase of the Coupled Model Inter-comparison Project (CMIP5). CMIP5 RCP 8.5 corresponds to the upper end of climate emission scenarios; thus, correlates with the high projected rates of sea level rise used throughout the analysis. The four forecasted wave data records and the historic NOAA buoy wave data were combined to create four, 117-year datasets.

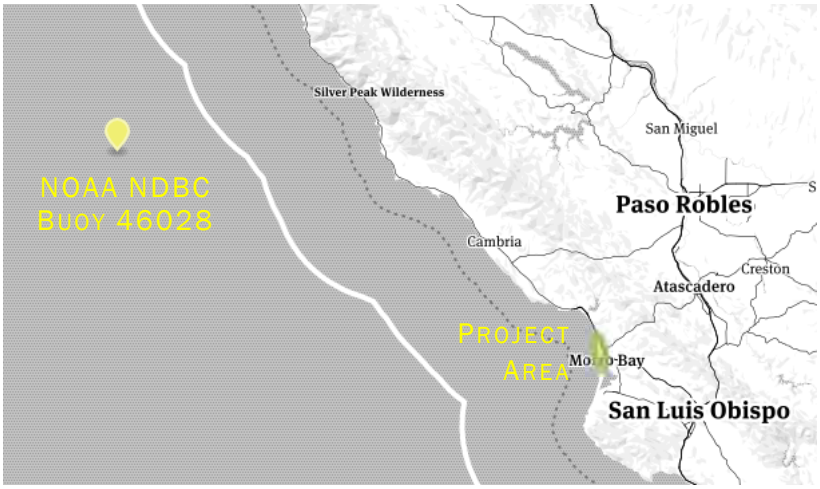


FIGURE 2: LOCATION OF NOAA NDBC BUOY 46028

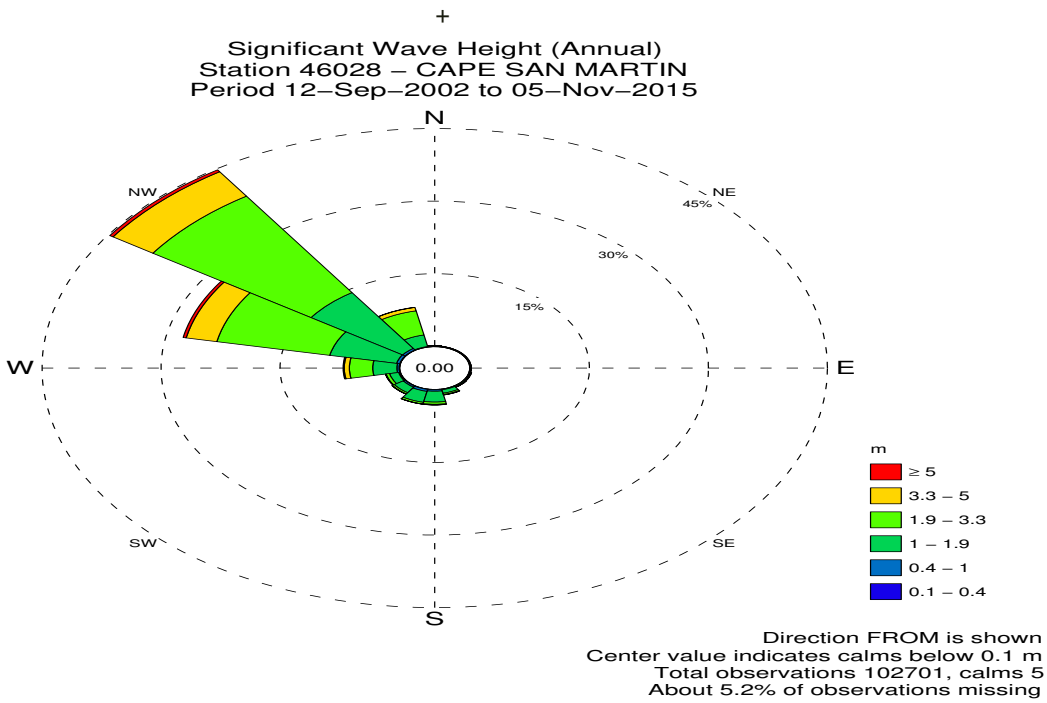
3.2.1. Wave Climate

The largest percentage (>45%) of the waves approaching Morro Bay are from the west-northwest (293 degrees). Historically, the most frequent significant wave height is 8.2 to 9.8 feet (2.5 to 3 meters) and the most frequent wave periods were between 12 to 13 seconds and 14 to 15 seconds (Figure 3 and Figure 4). The largest waves occur in the winter when northern hemisphere cyclonic storms generate powerful, long period waves.

For the sheltered beach within the Morro Bay jetties, the wave heights were reduced 75%. This wave reduction value was calculated by estimating breaking wave characteristics from aerials and bathymetry. The wave heights within the jetties were typically 75% less than those outside the jetties.

3.2.2. Extreme Waves

An extreme value analysis was used for each of the four 117-year hybrid datasets and averaged to produce extreme wave return periods. The results of the analysis on the four hybrid datasets is shown in Figure 5. The 50- and 100-year return period significant wave heights are 28.8 and 30.0 feet, respectively. A relationship between wave height and period was fitted to the historic buoy data and used to estimate peak wave periods corresponding with extreme waves (Erikson et al. 2015). The peak period for 50- and 100-year waves is approximately 18 seconds.



Percentage of Occurrence

Significant Wave Height, m	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Total	0.15					0.23	0.26	1.17	3.13	3.11	1.98	1.82	7.06	27.85	44.77	8.31	100.00
5													0.14	0.40	0.48		1.14
3.3									0.13				0.65	3.94	6.05	0.72	11.76
1.9								0.27	0.46	0.36	0.31	0.45	2.94	14.52	23.97	5.08	48.60
1							0.18	0.72	2.23	2.29	1.37	1.16	3.05	8.58	13.89	2.43	36.14
0.4									0.30	0.42	0.27	0.14	0.28	0.41	0.37		2.36
0.1																	

FIGURE 3: HISTORIC ANNUAL SIGNIFICANT WAVE HEIGHT AND DIRECTION (NOAA NDBC BUOY 46028)

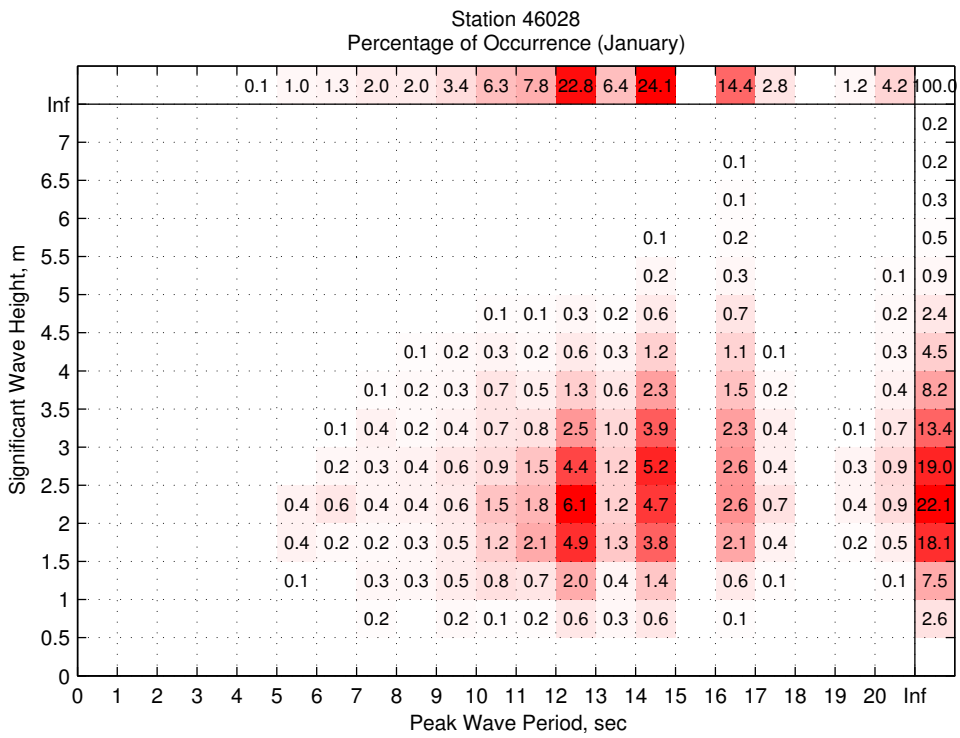


FIGURE 4: HISTORIC SIGNIFICANT WAVE HEIGHT AND PEAK WAVE PERIOD JOINT HISTOGRAM

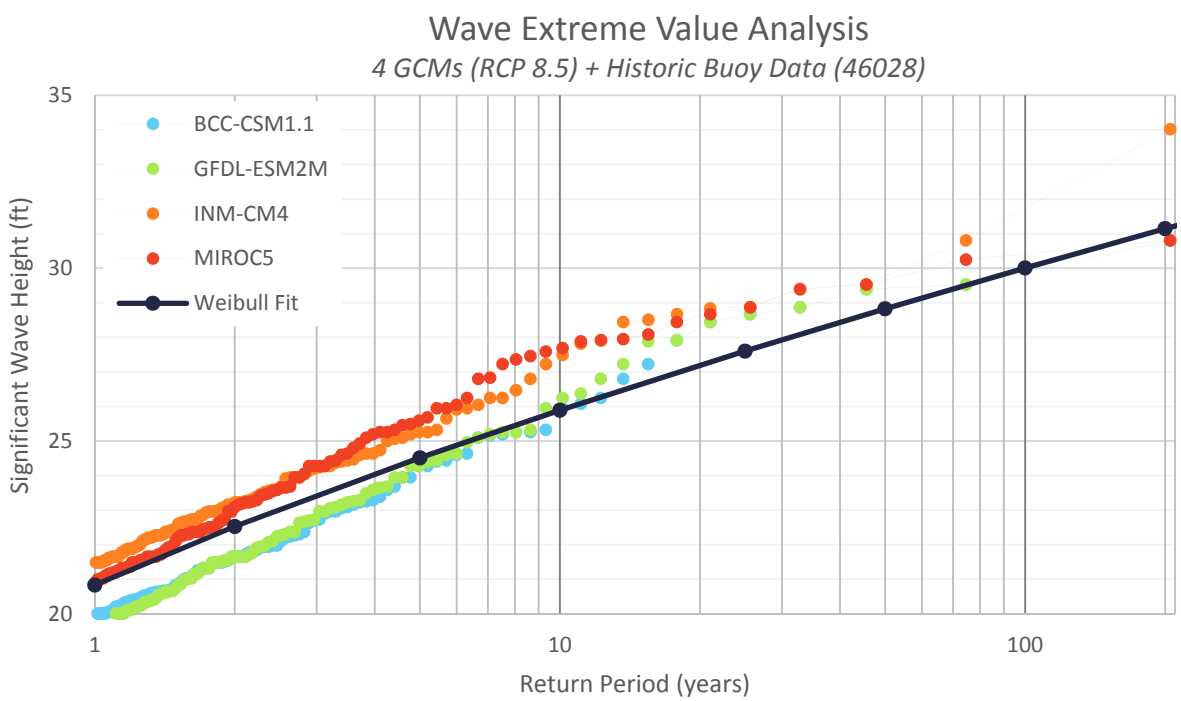


FIGURE 5: EXTREME WAVE RETURN PERIODS (WEIBULL FIT LINE USED FOR ANALSIS)

3.3. COASTAL TOPOGRAPHY / BATHYMETRY

The beach characteristics of the Morro Bay coastline were parameterized using five, bare-earth, light detection and ranging (LiDAR) data collected between 1997 and 2013. The flight date, source and coverage of the individual flights is shown in Table 4.

TABLE 4: LIDAR DATASETS

Survey Name	Flight Date	Source	Coverage
1997 Pre-El Nino	October 1997	NOAA/USGS/NASA	Entire Study Area
1998 Post-El Nino	April 1998	NOAA/USGS/NASA	Entire Study Area
2010 USACE NCMP Lidar	August 2010	JALBTCX, USACE	Entire Study Area
2011 PG&E: Los Osos, CA	March 2011	PG&E	Only south of Morro Rock
2013 PG&E: San Simeon, CA	February 2013	PG&E	Only north of Morro Rock
2013 California Topobathy Merge	February 2014	Hybrid Sources (published by NOAA)	Entire Study Area

Topographic data was used to create representative beach profiles for eight reaches within the City, as shown in Figure 6. The reaches were delineated based on similar characteristics such as foreshore slope and dune toe. An example of beach profile change between the topographic data sources used for this study is shown in Figure 7.

The XX DEM was used for mapping inundation hazards within the bay. The

The XX

FIGURE 6: STUDY SHORELINE REACHS (BOUNDED BY ORANGE LINES)

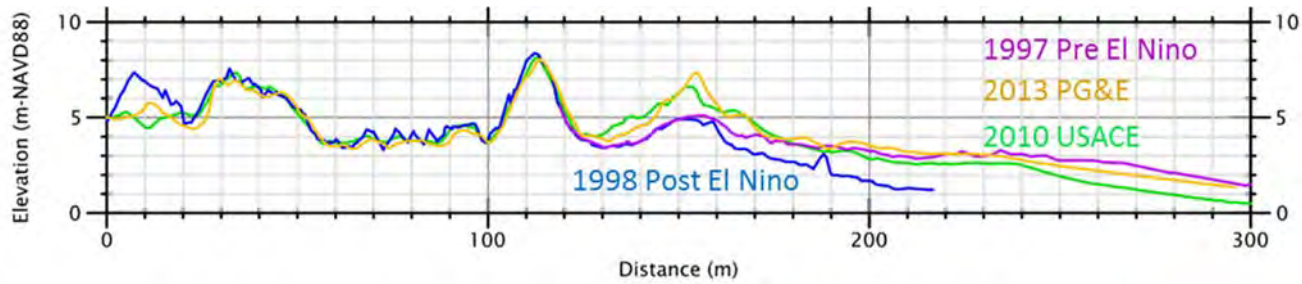


FIGURE 7: BEACH TRANSECT WITHIN MORRO BAY HIGH SCHOOL REACH

3.4. COASTAL STRUCTURES

Coastal structures in the City includes three coastal protection structures (i.e., seawalls and revetment), a harbor entrance channel jetty system and numerous shoreline protection structures (i.e., bulkhead walls and rip rap) along the bay waterfront. The location of these structures is shown in Figure 8. The modeling assumed that coastal structures were not present as a worst-case scenario. A “hold the line” scenario would result in modeled hazards stopping at these structures. It is anticipated that these coastal structures would be overwhelmed at some point in the future. The potential overwhelming of these structures are discussed qualitatively elsewhere.

Bay waterfront structures crest elevations (as determined by the topobathy merge LiDAR dataset) were analyzed relative to projected water levels to determine if overtopping would occur. No structural evaluation of the structures was conducted relative to these projected water levels.

FIGURE 8: SHORE PROTECTION IN MORRO BAY

4. COASTAL SEA LEVEL RISE HAZARD ANALYSIS

4.1. INUNDATION HAZARD ZONES

Methods used to determine coastal and bay inundation zones are described in this section.

4.1.1. Coastal Inundation Hazard Zone

A widely accepted method for quantifying shoreline response associated with sea level rise is referred to as the modified Bruun Rule (Rosati, Dean, Walton 2013). The method, or rule, assumes that as mean sea level rises, the beach profile and the foredune is able to adjust upwards and landward as sediment is conserved across the profile (Figure 9).

The modified Bruun Rule does not explicitly account for local sediment sources or sinks. Some approaches for quantifying future erosion incorporate short-term shoreline change rates. However, due to the sparsity of data and the influence of harbor dredging and nourishment practices on those surveys, the short-term shoreline change rates could not reliably be calculated.

The current and projected future coastal inundation hazard zone was mapped using the mean high water (MHW) line as a proxy. Using the offshore slope of approximately 20:1 (horizontal to vertical) for Morro Bay, the beach face and foredune shifts up and back 20 ft for every foot of sea level rise. Inundation due to seasonal erosion is accounted for through use of a winter profile beach slope.

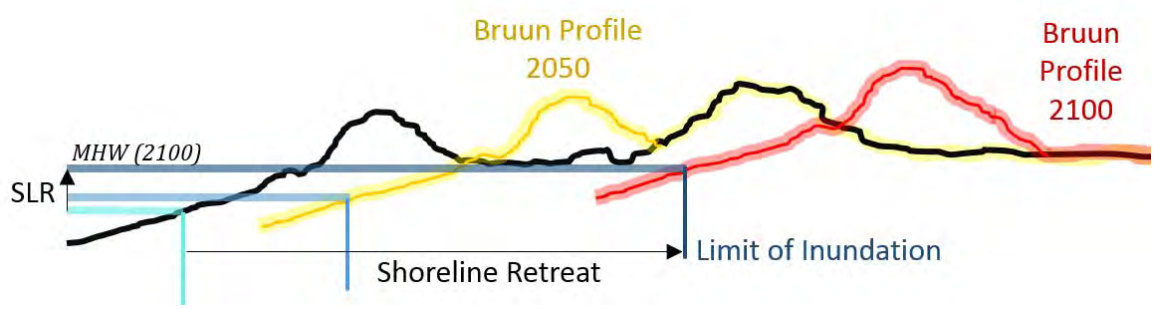


FIGURE 9: BEACH PROFILE AND INUNDATION HAZARD ZONE ADJUSTMENT ACCORDING TO THE BRUUN RULE

4.1.2. Bay Inundation Hazard Zone

Mapping of the inundation hazard zone within the bay was determined using a "bathtub" model approach. The bathtub approach compares the elevation of future tidal water levels to existing grades. For this analysis, the 2009-2011 TopoBathy merge LiDAR dataset was compared to a tidal elevation of mean higher high water (MHHW) in combination with sea level rise. The combined water levels within the bay for the inundation hazard zone were as follows:

- Year 2030 – 6.25 ft NAVD88
- Year 2050 – 7.25 ft NAVD88
- Year 2100 – 10.75 ft NAVD88

Note that the accuracy of these hazard zones are contingent on the quality of the topographic data in these areas.

4.2. DUNE EROSION HAZARD ZONE

The dune erosion hazard zone was mapped using simple geometric model referred to as the Komar method (Komar 1999). This model is a commonly used tool for estimating dune erosion on the swell-dominated U.S. West Coast and is recommend by FEMA (Heberger et al. 2009, Revell et al 2011, FEMA 2015). The method assumes that the dune toe elevation erodes following the upper beach slope until it reaches the wave run-up elevation (Figure 10). The method requires the use of a "most likely winter profile". In general, a winter profile is one in which the flat sandy berm (towel space) has migrated offshore to form sand bars. Winter profiles for this study were constructed using the dune features of the PG&E LiDAR datasets and upper-beach slopes measured from the post-El Niño LiDAR surveys. For the dune-backed beaches in Morro Bay, the dune toe is typically found at elevations of 11 to 12 ft NAVD88 with a typical winter beach slope of 3.5% to 4.5%.

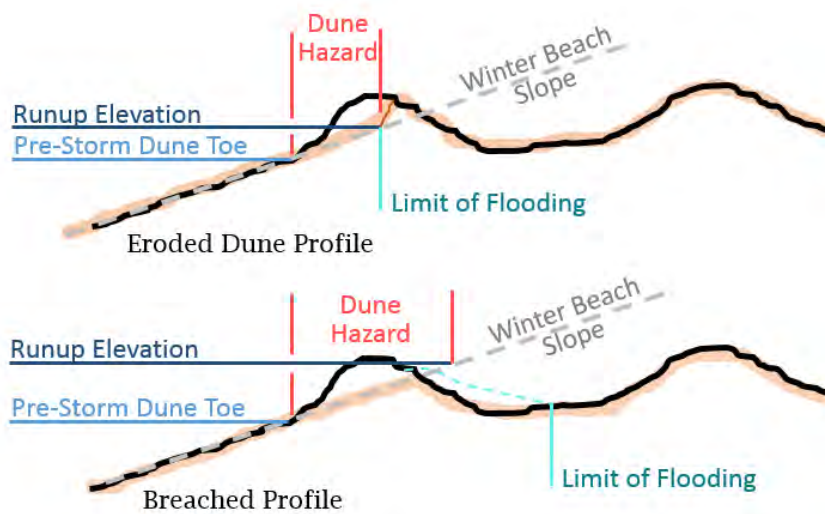


FIGURE 10: SCHEMATIC SHOWING THE MECHANICS OF KOMAR DUNE EROSION METHOD

4.3. COASTAL FLOOD HAZARD ZONE

The coastal flood hazard zone was estimated to be the limits of wave run-up on the eroded beach profile. Wave run-up is the condition of waves breaking on the beach and water "running up" the beach face and/or beachfront structure. Wave run-up extends farther landward than the "still water" level. Wave run-up is a function of wave conditions, which, in turn, are based on storm events, shoreline geometry and still water levels. The landward extents of the still water and run-up elevations (i.e., the intersection of these elevations onto the beach) are based on the profile of the beach face. Wave run-up was calculated using an empirical run-up equation (Stockdon et al. 2006) for this study. The equation was forced with an extreme wave event, as discussed above.

The wave run-up elevation is the combination of tide, SLA, storm surge, and the 2% wave run-up height (Figure 11). On the open-water Western U.S., wave run-up is often the largest of these components. The run-up height for the study area was estimated using a Monte Carlo methodology where the water level, wave constituents, and beach slope are input into the Stockton, et al. (2006) empirical run-up equation. This equation is commonly used to estimate run-up on sandy beaches along the Western U.S. shorelines. The equation is defined as follows:

$$R_{2\%} = 1.1\left(0.35\,\beta_f (H_0 L_0)^{1/2} + \frac{\left[H_0 L_0\left(0.563\,\beta_f^2 + 0.004\right)\right]^{1/2}}{2}\right)$$

Where $R_{2\%}$ is the run-up point reached or exceeded by only 2% of all waves, H_0 is offshore significant wave height, L_0 is offshore significant wavelength and β_f is beach slope. The $R_{2\%}$ run-up level is a common metric for quantifying the maximum elevation inundated during a storm event.

The limit of coastal flooding is tied to the results of the dune erosion analysis and depends on whether the foredune is large enough to withhold the storm or breaches (Figure 1 and Figure 10). A breach is identified if the calculated dune erosion distance was located at an elevation less than the wave run-up elevation. For breaching conditions, the overwash distance was limited to a couple hundred feet for natural surfaces but allowed to expand further for paved and declined overflow pathways. Mapping of the overwash flood hazard required engineering judgement and is highly dependent on the conditions of the back beach.

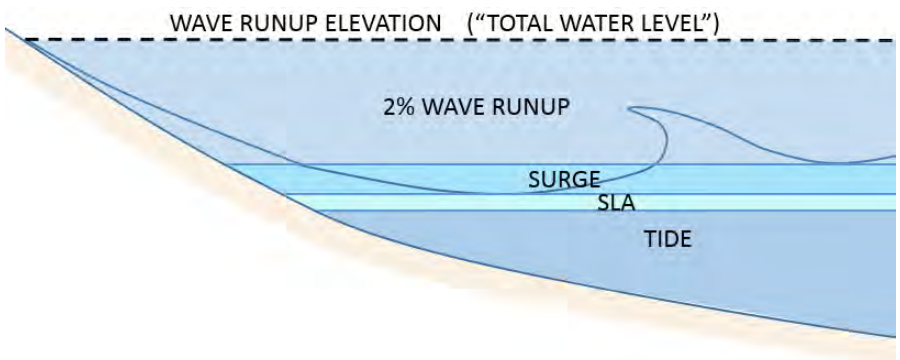


FIGURE 11: COMPONENTS OF WAVE RUN-UP ELEVATION

4.4. BLUFF EROSION HAZARD ZONE

A segment of coastline near the northern city limits consists of a sand and rocky beach backed by coastal bluffs. The shoreline response and dune erosion estimates indicate these bluffs will experience more frequent wave action at the bluff toe as sea levels rise. The increased intensity and extent of wave action at the bluff toe will result in episodic bluff erosion when large waves coincide with high water levels.

Revell et al. (2011) provides a method for predicting future bluff erosion hazards that increases historic erosion rates based on the relative increase in time that the total water level (TWL) exceeds the bluff toe elevation. The study provided state-wide average and maximum bluff erosion rates for a 4.6 ft (1.4 m) sea level rise scenario. In San Luis Obispo County the average cliff erosion was about 50 ft (15 m) with a maximum of 640 ft (195 m). For the region near our study location the bluff retreat for this sea level rise scenario was about 130 ft (40 m). Estimates for the bluff erosion hazard zones for each sea level rise scenario are depicted as a distance landward from the approximate top of bluff. There is a large uncertainty in these estimates due to unknowns associated with geologic make up of these bluffs and the alongshore variability around the adjacent headland. More detailed geological investigation and run-up analysis would be required to develop parcel-specific estimates of bluff erosion and how the hazard will change with sea level rise.

4.5. FLUVIAL FLOOD HAZARD ZONE

Sea level rise can influence flooding along rivers that discharge into tidal waters. 1-D HEC-RAS steady state modeling and analyses were performed to assess the influence of sea level rise during a 100-year

fluvial flood at the most significant rivers that discharge to tidal waters in the City (i.e., Chorro Creek and Morro Creek). These creeks were selected for modeling based on the size of their 100-year flood flow discharge and location. Model results were used to assess the extent of sea level rise influence on upstream water surface elevations in the river.

4.5.1. Model Setup

1-D HEC-RAS models were created for Chorro Creek and Morro Creek. Geographic data from the 2013 NOAA Coastal California TopoBathy Merge Project was compiled in ArcMap 10.1 using the HEC-GeoRAS extension. The data was then exported to HEC-RAS to create the model. The river centerlines were drawn using contour data and aerial imagery. Cross-sections were drawn balancing span length and a perpendicular alignment with the main channel and geographic features. Flow centerlines were also drawn for the left and right floodplain to provide downstream cross-section distance.

Roughness factors (Manning's "n") used in the model were obtained from a range of values specified in the FEMA Flood Insurance Study (FEMA FIS 2012). Roughness factors for Chorro Creek ranged from a channel "n" of 0.015-0.040 and an overbank "n" of 0.045-0.100. Roughness factors for Morro Creek ranged from a channel "n" of 0.015-0.080 and an overbank "n" of 0.045-0.100.

The model developed for Chorro Creek had 36 cross-sections, covering approximately 2 miles of the river extending upstream of the South Bay Boulevard Bridge and downstream to the river outlet into Morro Bay, the model layout is shown in Figure 12. The model developed for Morro Creek has 24 cross-sections, covering approximately 0.5 miles of the river with the upstream end just east of Cabrillo Highway and extending downstream to the river outlet into the Pacific Ocean. The model layout for Morro Creek is shown in Figure 13.

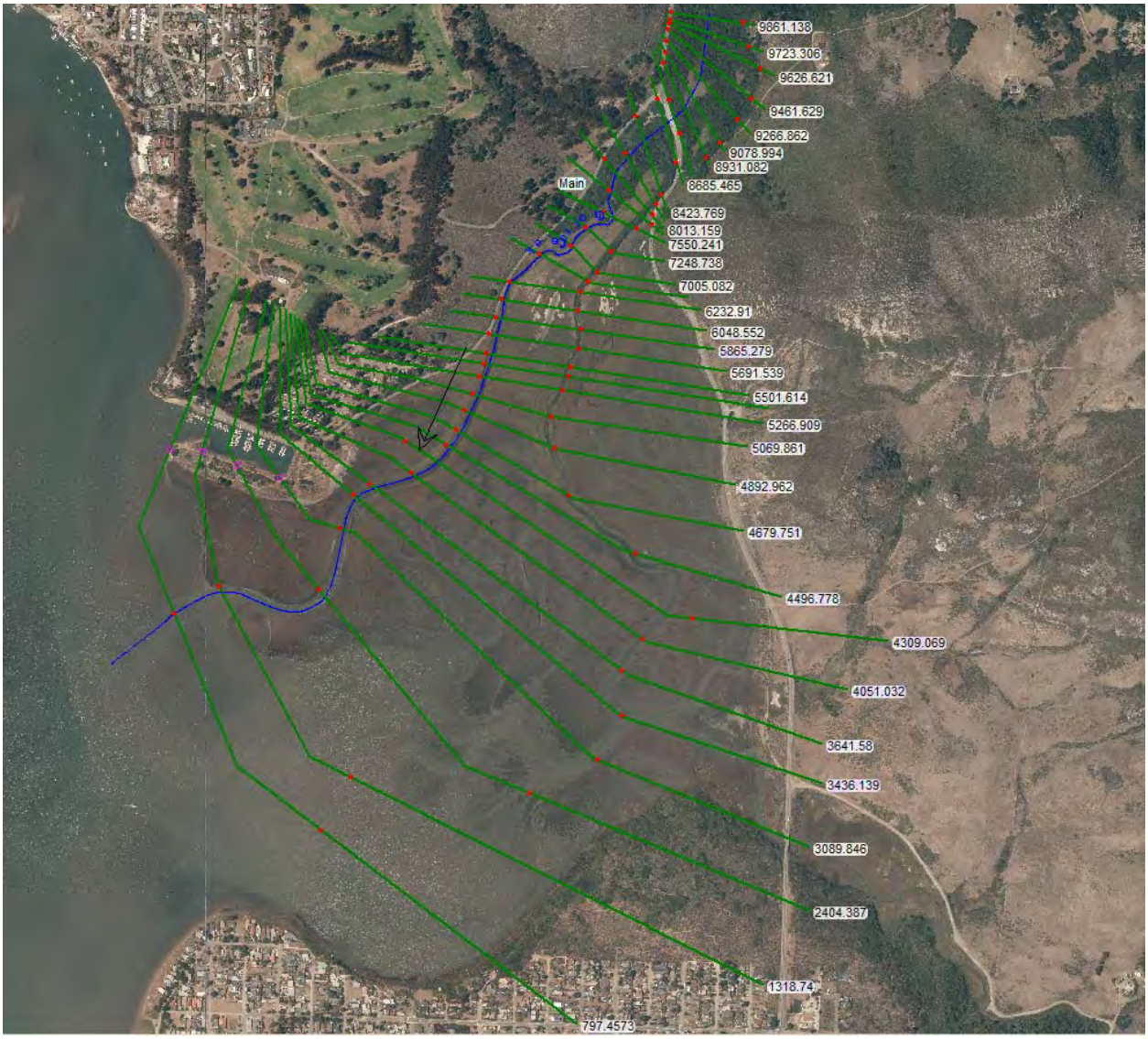


FIGURE 12: HEC-RAS MODEL LAYOUT FOR CHORRO CREEK

FIGURE 13: HEC-RAS MODEL LAYOUT FOR MORRO CREEK

4.5.2. Model Boundary Conditions

The upstream boundary for each model is controlled by the 100-year flood peak discharge. A 100-year flood has a one percent change of occurring in any given year. The 100-year flood peak discharge was obtained from the FEMA FIS (2012) and is 18,900 cfs for Chorro Creek and 11,800 cfs for Morro Creek.

The downstream boundary for both models is controlled by the tidal water surface elevation. The NOAA tidal gage closest to Morro Bay is located at Port San Luis, California (NOAA Station No.: 9412110). Mean higher high water (MHHW) was selected as the baseline tidal datum for the sea level rise modeling effort. The downstream model boundary assumes still water conditions where sea level rise scenarios were added to MHHW (i.e., 5.24 ft), as summarized in Table 5 below.

TABLE 5: DOWNSTREAM MODEL BOUNDARY CONDITIONS

Time Horizon	SLR Projection (ft)	Still Water Surface Elevation (ft, NAVD 88)
Current MHHW	0	5.24
2030	1.0	6.24
2050	2.0	7.24
2100	5.5	10.74

4.5.3. Chorro Creek

Steady state model runs were performed for Chorro Creek with current and projected sea level conditions during a 100-year flood. Model results under the 100-year flood and MHHW sea level condition were agreeable with water surface elevations shown on the FEMA FIRM map number 06079C1027G, panel 1027 of 2050 (2012). Additional model runs were performed for the projected sea level rise scenarios and results are summarized in Table 6 below.

TABLE 6: CHORRO CREEK MODELING SUMMARY

Time Horizon	Upper Range SLR (ft)	100-year Fluvial Flood (cfs)	Limit of Upstream Influence (HEC-RAS X-Section No.)
Current MHHW	0	18,900	N/A
2030	1.0	18,900	4496
2050	2.0	18,900	5501
2100	5.5	18,900	7808

These results show the water surface elevation migrating upstream with increased sea level rise, this is to be expected for a wide and flat wetland area with subcritical flow during a flood event. As shown in Figure 14, a modest increase is seen in the water surface elevation in the immediate vicinity of the downstream boundary and the flood flow profile interface. The increase in water surface elevation is localized and does not extend upstream of the downstream boundary and flood flow profile interface (where the tidal water surface elevation meets the flood water surface elevation); therefore, the influence of sea level rise was not found to result in the backup of flood waters in Chorro Creek. The influence of sea level rise on Chorro Creek is limited to the extent of tidal inundation and is not expected to increase the limits of fluvial flooding during an extreme event. Thus, no additional fluvial flood hazards as a result of sea level rise are anticipated at Chorro Creek.

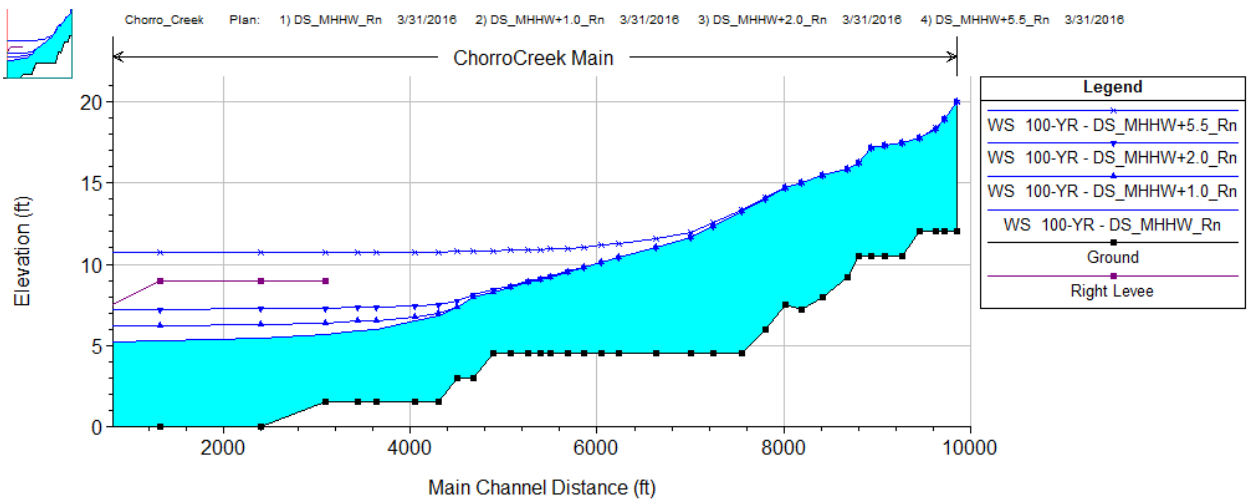


FIGURE 14: CHORRO CREEK WATER SURFACE PROFILE.

4.5.4. Morro Creek

Steady state model runs were performed for Morro Creek using the same downstream boundary as Chorro Creek during a 100-year flood. Model results under the 100-year flood and MHHW sea level condition were agreeable with water surface elevations shown on the FEMA FIRM map number 06079C0813G, panel 813 of 2050 (2012). Additional model runs were performed for the projected sea level rise scenarios.

Model results indicate that a supercritical flow regime develops during the 100-year fluvial flood in the downstream reach of Morro Creek. Supercritical flow develops as a result of the contraction created by Morro Dunes RV Park to the north and the berm to the south, this flow regime continues until the flood flow passes through the dunes and onto the beach. Sea level rise does not increase fluvial flooding in Morro Creek; due to the supercritical flow regime, tidal velocities are not able to overcome the fluvial flood

velocity. As shown in Figure 15 below, sea level rise does not result in floodwater backup and does not increase upstream water surface elevations in Morro Creek.

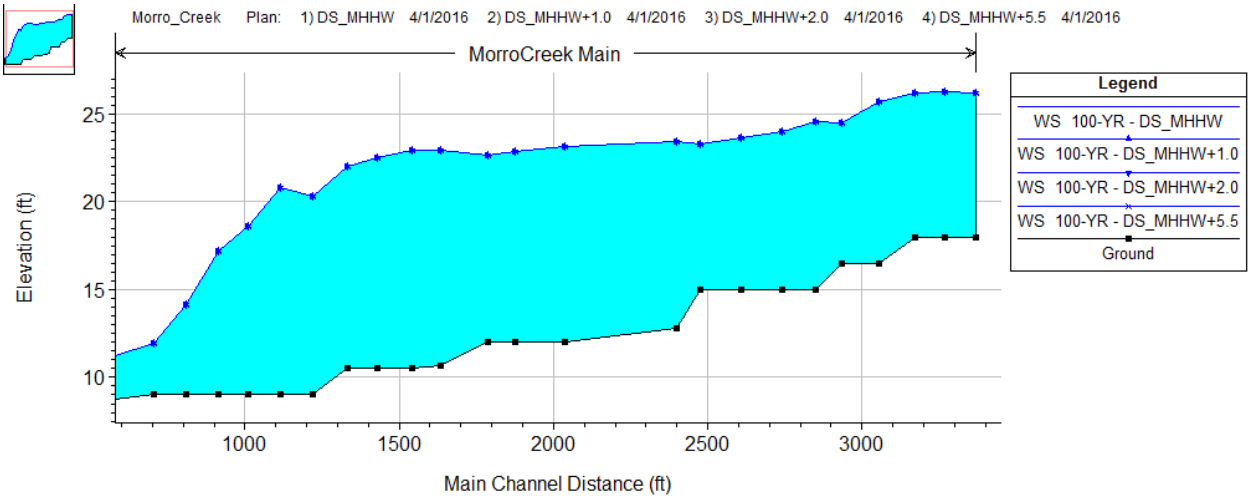


FIGURE 15: MORRO CREEK WATER SURFACE PROFILE

Water surface elevations listed on the FEMA FIRM (2012) should be used for planning purposes upstream of the Beach. No additional fluvial flood hazards as a result of sea level rise are anticipated at Morro Creek.

4.5.5. Other Creeks

Three additional creeks in the city of Morro Bay outlet into the ocean: Toro Creek, Unnamed Creek (Alva Paul Creek), and Noname Creek. The influence of sea level rise in these creeks is expected to be similar to that at Chorro Creek and Morro Creek. Sea level rise is not expected to backup floodwaters and increase fluvial flooding resulting from these creeks. The creeks outlet onto the beach and are subject to tidal inundation and wave run-up. Thus, no additional fluvial flood hazards as a result of sea level rise are anticipated.

5. REFERENCES

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Appendix B: Sea Level Rise Hazard Figures

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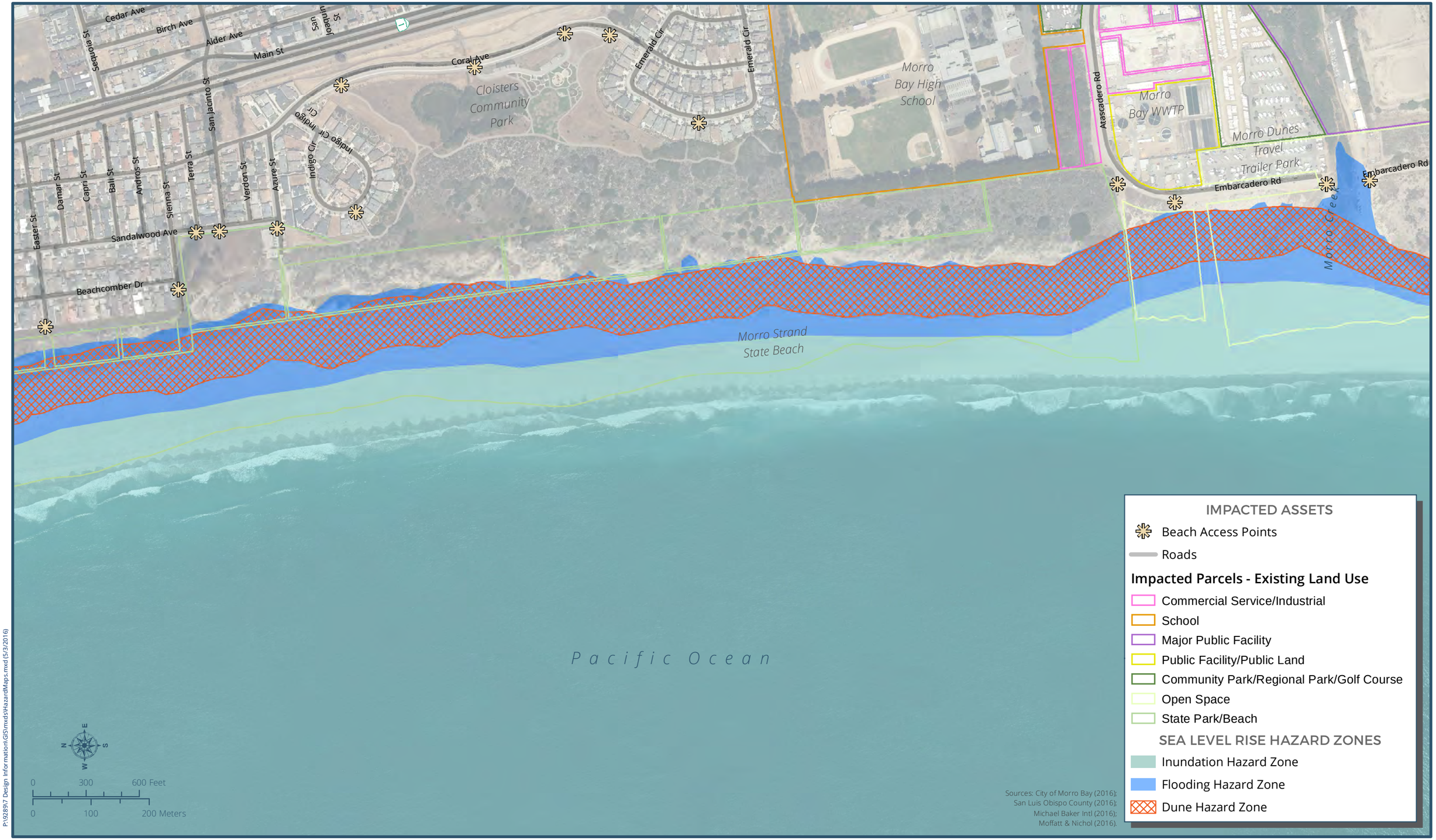
Plan MORRO BAY

YEAR 2030 SEA LEVEL RISE HAZARDS

Plate 1 of 5



Plan MORRO BAY

YEAR 2030 SEA LEVEL RISE HAZARDS

Plate 2 of 5

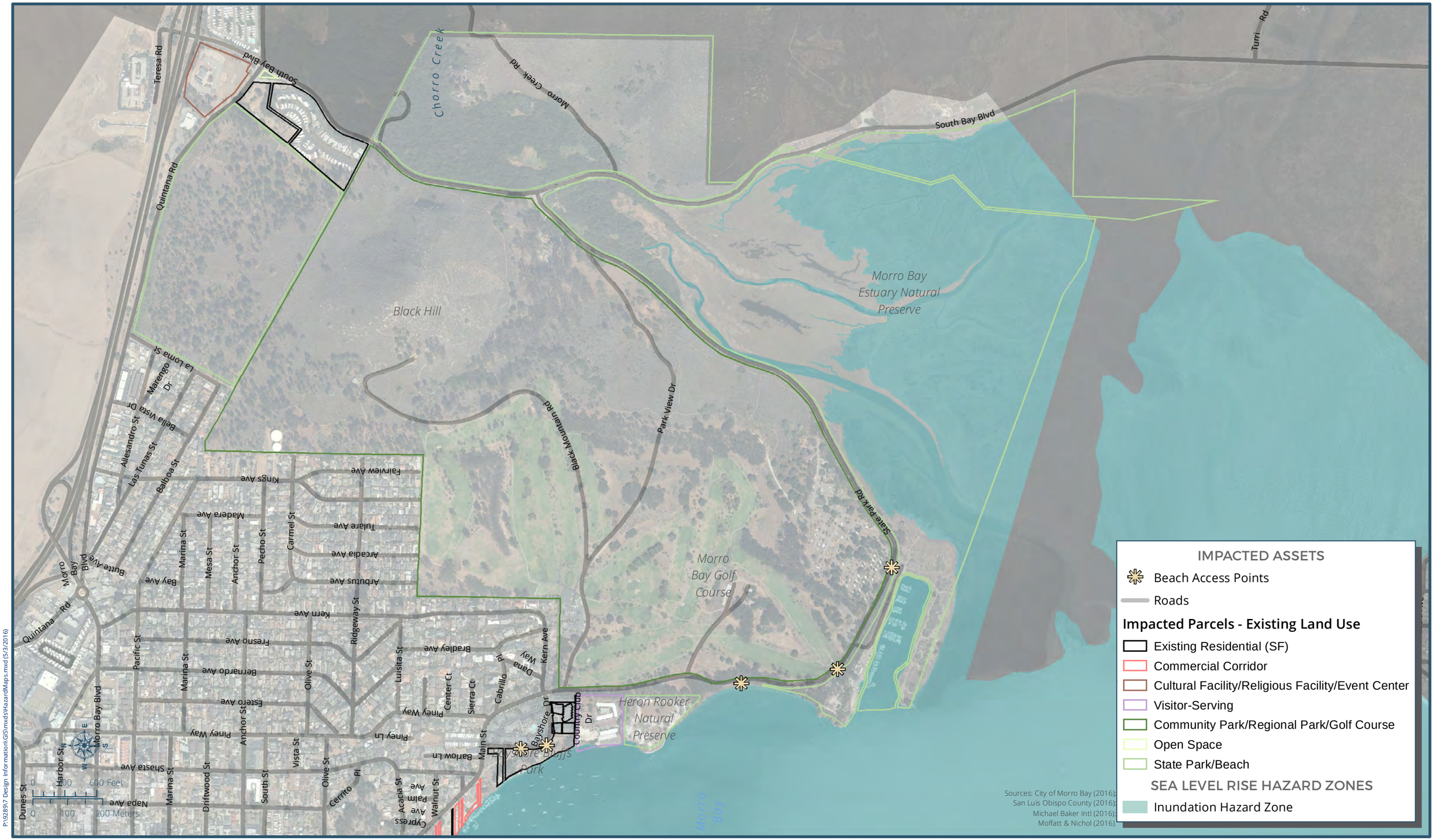
Plan MORRO BAY

YEAR 2030 SEA LEVEL RISE HAZARDS

Plate 3 of 5

Plan MORRO BAY

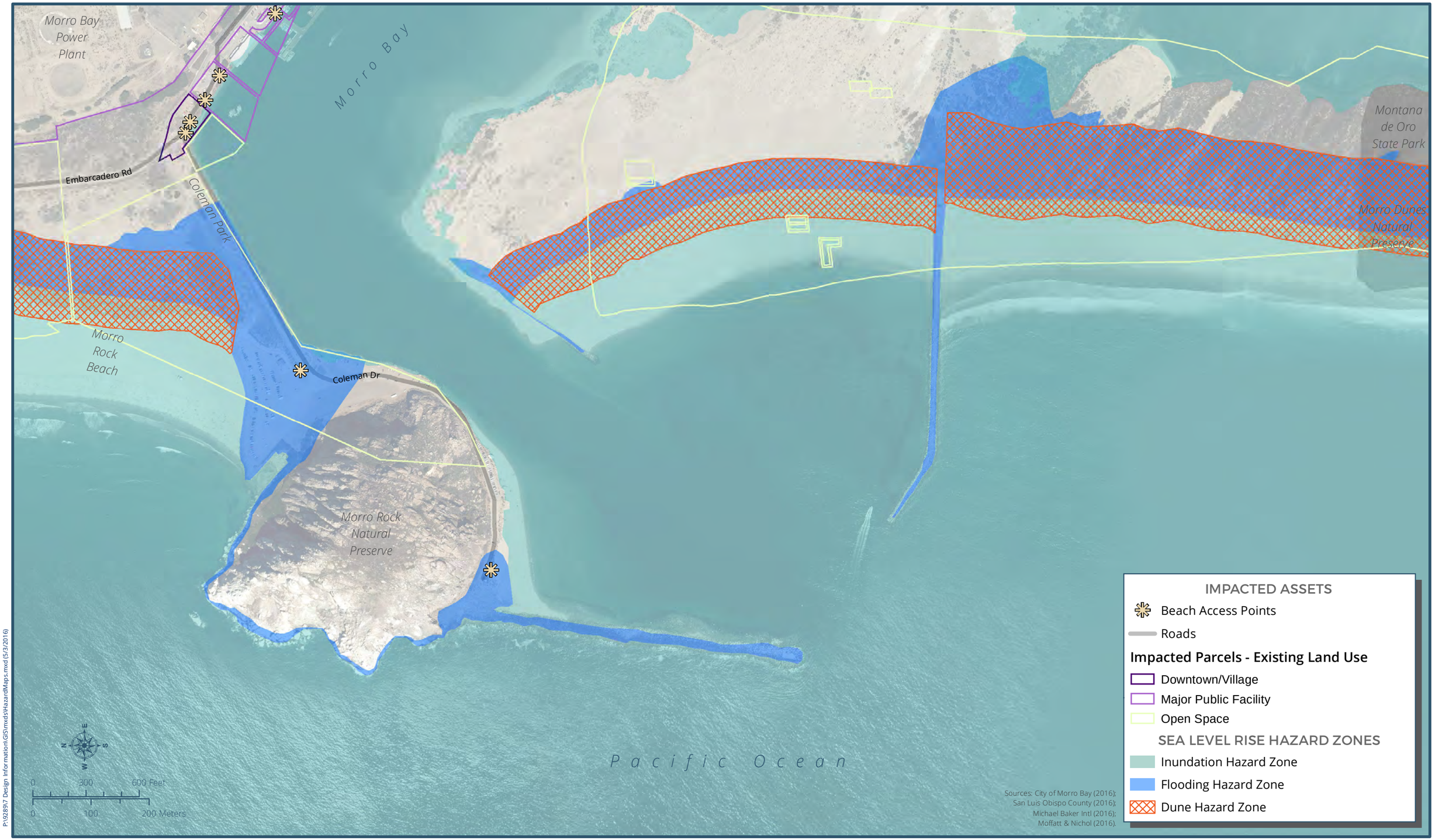
YEAR 2030 SEA LEVEL RISE HAZARDS



Plan MORRO BAY

YEAR 2030 SEA LEVEL RISE HAZARDS

Plate 5 of 5



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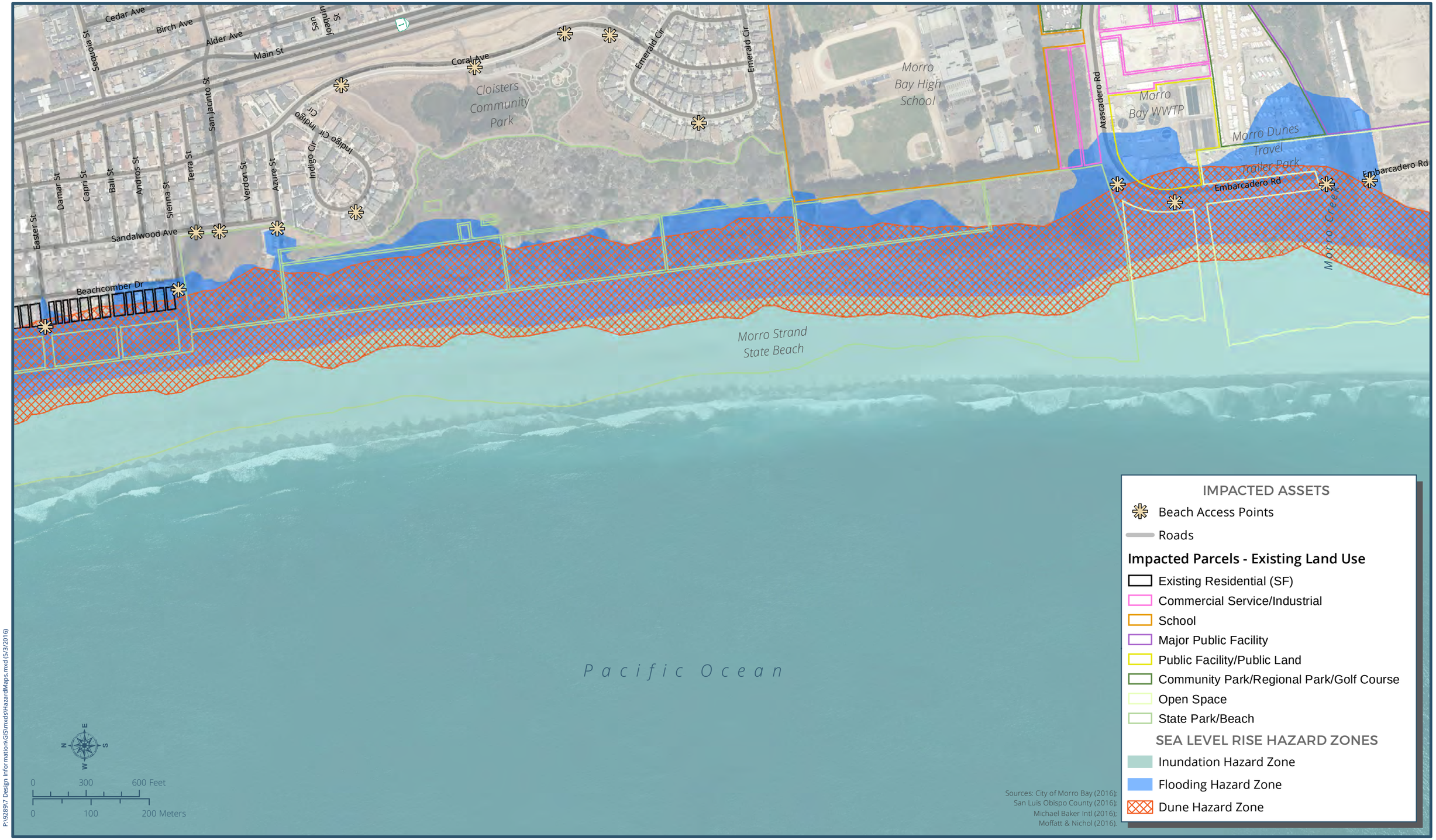
Plan MORRO BAY

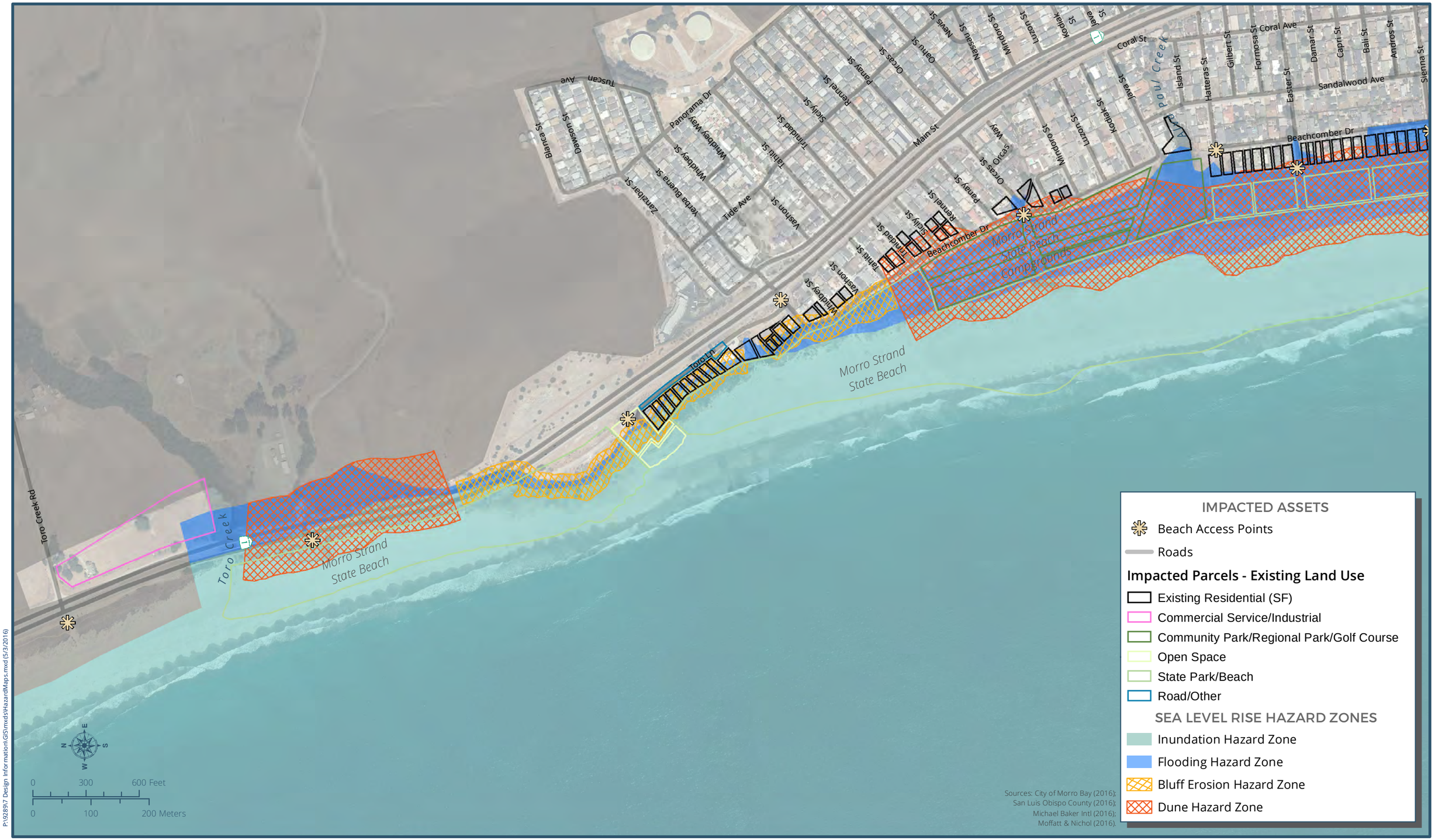
YEAR 2100 SEA LEVEL RISE HAZARDS

Plate 1 of 5



Plan MORRO BAY

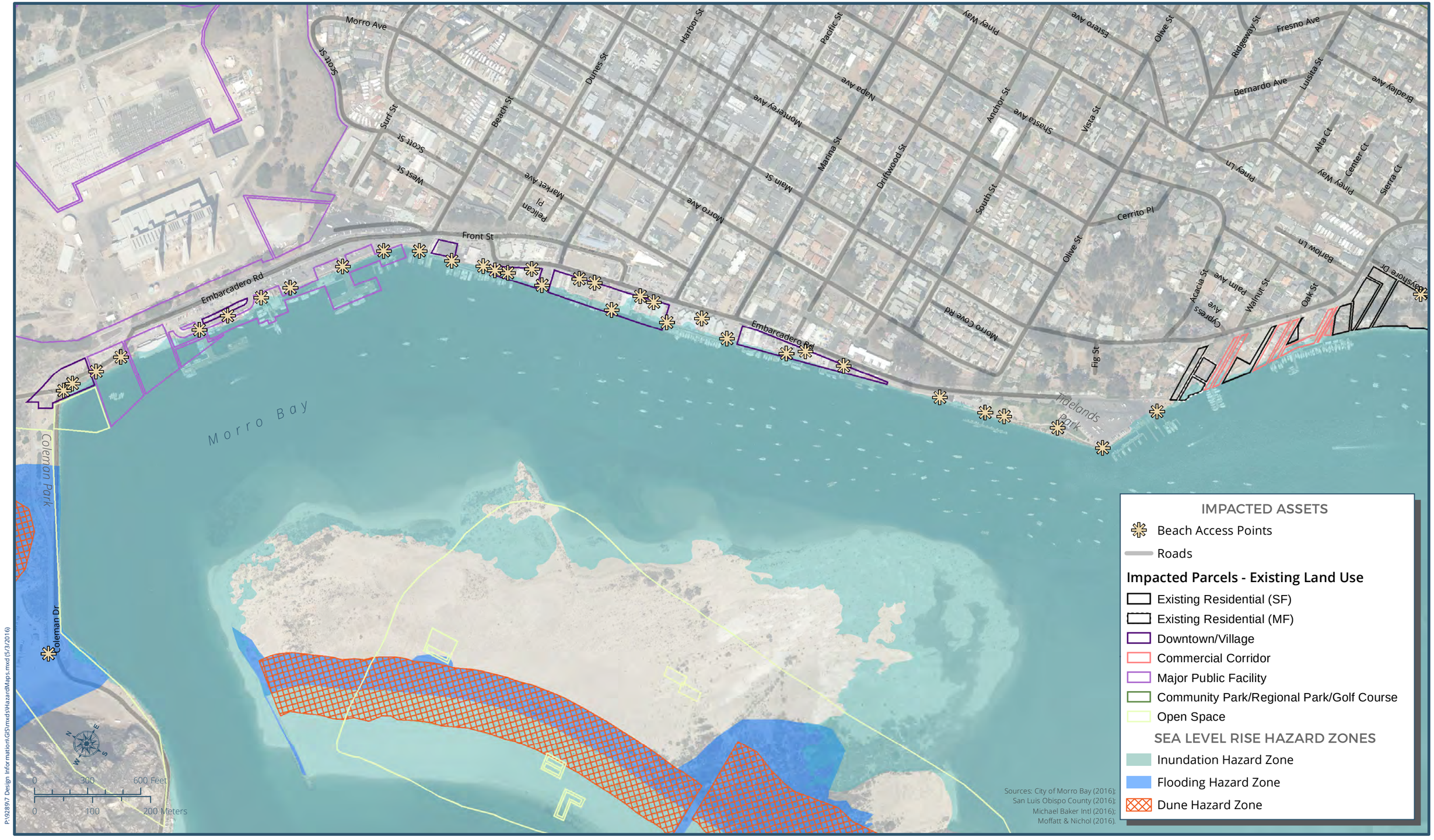
YEAR 2100 SEA LEVEL RISE HAZARDS



Plan MORRO BAY

YEAR 2100 SEA LEVEL RISE HAZARDS

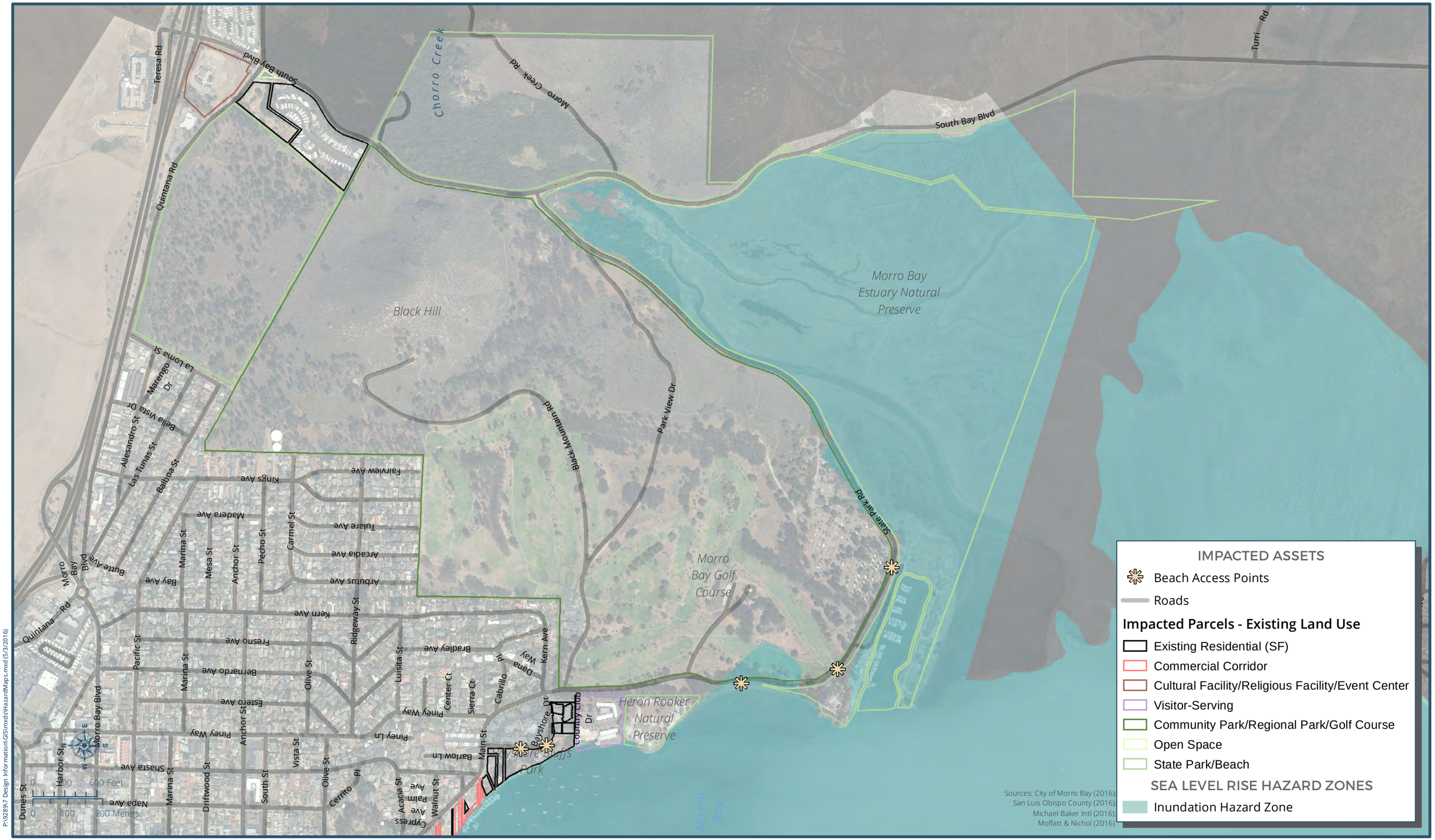
Plate 3 of 5



Plan MORRO BAY

YEAR 2100 SEA LEVEL RISE HAZARDS

Plate 4 of 5



Plan MORRO BAY

YEAR 2100 SEA LEVEL RISE HAZARDS

Plate 5 of 5

Appendix C: Noise Measurement Data

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L(60)	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5	60.5
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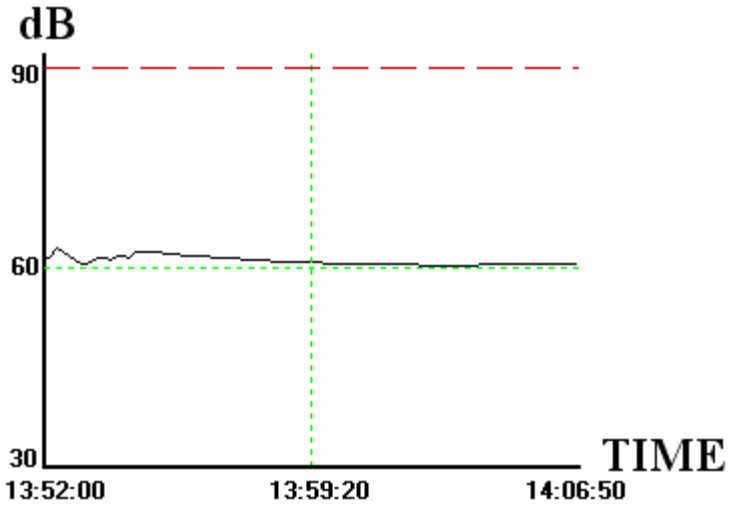
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L(60)	55.6	55.6	55.6	55.6	55.6	55.6	55.6	55.6	55.6
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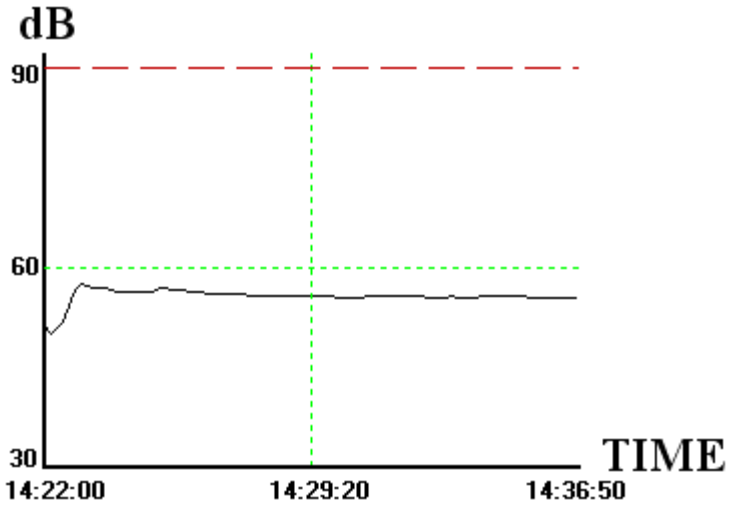
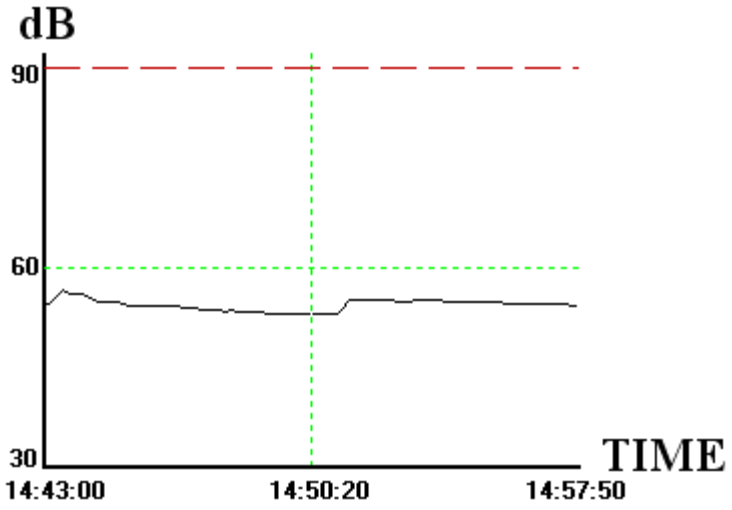
L(80)	55.5	55.5	55.5	55.5	55.5	55.5	55.4	55.4	55.4
L(90)	55.4	55.4	55.4	54.1	51.8	51.1	51.0	49.9	49.9


dB
90
60
30
TIME
14:22:00
14:29:20
14:36:50

Date Time=04/06/16 14:43:00
Sampling Time=10
Measurement 3
Record Num= 90
Leq Value=54.3 SEL Value=83.8
MAX Value=77.6
MIN Value=44.9
Freq Weighting=A Time Weighting=Fast
54.1,14:43:00,
54.7,14:43:10,
55.7,14:43:20,
56.6,14:43:30,
56.1,14:43:40,
55.9,14:43:50,
56.0,14:44:00,
55.6,14:44:10,
55.2,14:44:20,
54.8,14:44:30,
54.9,14:44:40,
54.8,14:44:50,
54.8,14:45:00,
54.6,14:45:10,
54.3,14:45:20,
54.2,14:45:30,
54.1,14:45:40,
54.2,14:45:50,
54.3,14:46:00,
54.2,14:46:10,
54.1,14:46:20,
54.1,14:46:30,
54.1,14:46:40,
54.0,14:46:50,
53.9,14:47:00,
53.8,14:47:10,
53.7,14:47:20,
53.7,14:47:30,
53.6,14:47:40,
53.5,14:47:50,
53.4,14:48:00,
53.5,14:48:10,
53.4,14:48:20,
53.4,14:48:30,
53.3,14:48:40,
53.2,14:48:50,
53.2,14:49:00,
53.1,14:49:10,
53.0,14:49:20,
53.0,14:49:30,
52.9,14:49:40,
52.9,14:49:50,
52.9,14:50:00,
52.9,14:50:10,
53.1,14:50:20,
53.1,14:50:30,
53.0,14:50:40,
52.9,14:50:50,
52.9,14:51:00,
52.9,14:51:10,
54.0,14:51:20,
55.0,14:51:30,
55.2,14:51:40,
55.2,14:51:50,
55.2,14:52:00,
55.1,14:52:10,
55.1,14:52:20,
55.0,14:52:30,
55.0,14:52:40,
54.9,14:52:50,
54.9,14:53:00,
54.9,14:53:10,
55.0,14:53:20,
55.0,14:53:30,
55.0,14:53:40,
55.0,14:53:50,
55.0,14:54:00,
54.9,14:54:10,
54.9,14:54:20,
54.9,14:54:30,
54.9,14:54:40,
54.9,14:54:50,

54.8,14:55:00,
54.8,14:55:10,
54.7,14:55:20,
54.7,14:55:30,
54.7,14:55:40,
54.6,14:55:50,
54.6,14:56:00,
54.6,14:56:10,
54.6,14:56:20,
54.5,14:56:30,
54.5,14:56:40,
54.4,14:56:50,
54.4,14:57:00,
54.4,14:57:10,
54.4,14:57:20,
54.4,14:57:30,
54.3,14:57:40,
54.3,14:57:50,

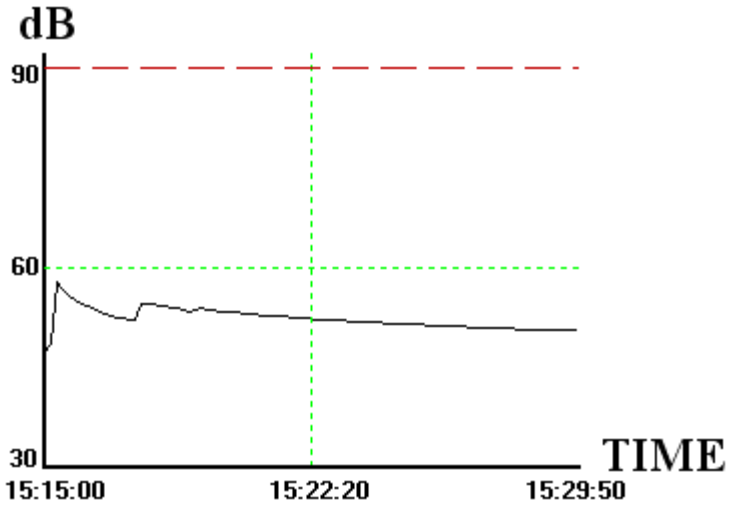
Ln	1	2	3	4	5	6	7	8	9
L(00)	56.6	56.1	56.0	55.9	55.7	55.6	55.2	55.2	55.2
L(10)	55.2	55.1	55.1	55.0	55.0	55.0	55.0	55.0	55.0
L(20)	55.0	55.0	54.9	54.9	54.9	54.9	54.9	54.9	54.9
L(30)	54.9	54.8	54.8	54.8	54.8	54.8	54.8	54.7	54.7
L(40)	54.7	54.6	54.6	54.6	54.6	54.6	54.6	54.5	54.5
L(50)	54.4	54.4	54.4	54.4	54.4	54.3	54.3	54.3	54.3
L(60)	54.2	54.2	54.1	54.1	54.1	54.1	54.1	54.1	54.0
L(70)	53.9	53.8	53.7	53.7	53.6	53.5	53.5	53.5	53.4
L(80)	53.4	53.3	53.2	53.2	53.1	53.1	53.1	53.1	53.0
L(90)	53.0	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9


dB
90
60
30
TIME
14:43:00
14:50:20
14:57:50

Date Time=04/06/16 15:15:00
Sampling Time=10
Measurement 4
Record Num= 90
Leq Value=50.7 SEL Value=80.2
MAX Value=71.9
MIN Value=41.6
Freq Weighting=A Time Weighting=Fast
47.4,15:15:00,
48.6,15:15:10,
57.8,15:15:20,
56.7,15:15:30,
55.8,15:15:40,
55.0,15:15:50,
54.4,15:16:00,
54.1,15:16:10,
53.8,15:16:20,
53.4,15:16:30,
53.1,15:16:40,
52.8,15:16:50,
52.5,15:17:00,
52.3,15:17:10,
52.2,15:17:20,
52.1,15:17:30,
54.6,15:17:40,
54.4,15:17:50,
54.4,15:18:00,
54.2,15:18:10,
54.1,15:18:20,
53.9,15:18:30,
53.8,15:18:40,
53.6,15:18:50,
53.4,15:19:00,
53.5,15:19:10,
53.8,15:19:20,
53.7,15:19:30,
53.5,15:19:40,
53.4,15:19:50,
53.3,15:20:00,
53.3,15:20:10,
53.2,15:20:20,
53.1,15:20:30,
53.0,15:20:40,
52.9,15:20:50,
52.8,15:21:00,
52.8,15:21:10,
52.7,15:21:20,
52.6,15:21:30,
52.6,15:21:40,
52.5,15:21:50,
52.4,15:22:00,
52.4,15:22:10,
52.3,15:22:20,
52.2,15:22:30,
52.2,15:22:40,
52.1,15:22:50,
52.1,15:23:00,
52.0,15:23:10,
52.0,15:23:20,
51.9,15:23:30,
51.9,15:23:40,
51.9,15:23:50,
51.8,15:24:00,
51.7,15:24:10,
51.7,15:24:20,
51.6,15:24:30,
51.6,15:24:40,
51.5,15:24:50,
51.5,15:25:00,
51.4,15:25:10,
51.4,15:25:20,
51.4,15:25:30,
51.3,15:25:40,
51.3,15:25:50,
51.2,15:26:00,
51.2,15:26:10,
51.1,15:26:20,
51.1,15:26:30,
51.1,15:26:40,
51.0,15:26:50,

51.0,15:27:00,
51.0,15:27:10,
50.9,15:27:20,
50.9,15:27:30,
50.8,15:27:40,
50.8,15:27:50,
50.8,15:28:00,
50.7,15:28:10,
50.7,15:28:20,
50.7,15:28:30,
50.6,15:28:40,
50.6,15:28:50,
50.6,15:29:00,
50.6,15:29:10,
50.6,15:29:20,
50.7,15:29:30,
50.7,15:29:40,
50.7,15:29:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	57.8	56.7	55.8	55.0	54.6	54.4	54.4	54.4	54.2
L(10)	54.1	54.1	53.9	53.8	53.8	53.8	53.7	53.6	53.5
L(20)	53.4	53.4	53.4	53.4	53.3	53.3	53.2	53.1	53.1
L(30)	52.9	52.8	52.8	52.8	52.8	52.7	52.6	52.6	52.5
L(40)	52.4	52.4	52.3	52.3	52.3	52.2	52.2	52.2	52.1
L(50)	52.1	52.0	52.0	51.9	51.9	51.9	51.9	51.8	51.7
L(60)	51.6	51.6	51.5	51.5	51.4	51.4	51.4	51.4	51.3
L(70)	51.2	51.2	51.1	51.1	51.1	51.0	51.0	51.0	51.0
L(80)	50.9	50.8	50.8	50.8	50.7	50.7	50.7	50.7	50.7
L(90)	50.7	50.6	50.6	50.6	50.6	50.6	48.6	47.4	47.4

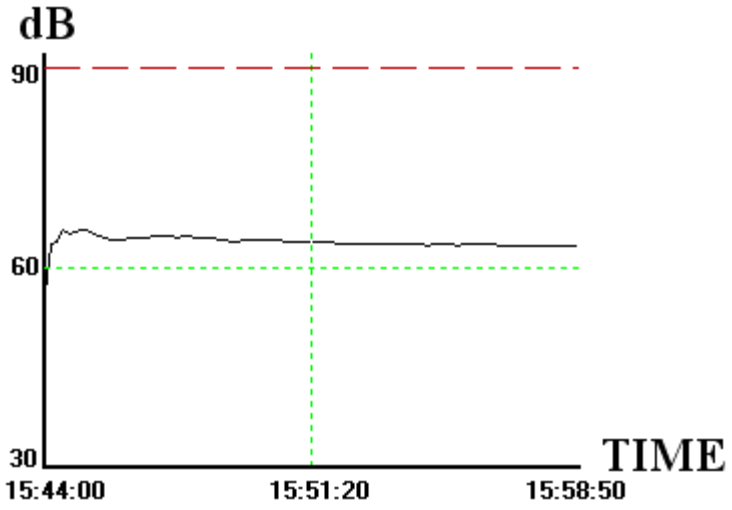

dB
90
60
30
TIME
15:15:00
15:22:20
15:29:50

Measurement 5

Date Time=04/06/16 15:44:00
Sampling Time=10
Record Num= 90
Leq Value=63.2 SEL Value=92.8
MAX Value=73.6
MIN Value=45.9
Freq Weighting=A Time Weighting=Fast
56.0,15:44:00,
63.5,15:44:10,
63.8,15:44:20,
65.7,15:44:30,
65.1,15:44:40,
65.2,15:44:50,
65.7,15:45:00,
65.5,15:45:10,
65.1,15:45:20,
64.8,15:45:30,
64.5,15:45:40,
64.2,15:45:50,
64.2,15:46:00,
64.2,15:46:10,
64.4,15:46:20,
64.5,15:46:30,
64.5,15:46:40,
64.5,15:46:50,
64.8,15:47:00,
64.8,15:47:10,
64.7,15:47:20,
64.7,15:47:30,
64.5,15:47:40,
64.6,15:47:50,
64.6,15:48:00,
64.5,15:48:10,
64.4,15:48:20,
64.4,15:48:30,
64.3,15:48:40,
64.2,15:48:50,
64.1,15:49:00,
63.9,15:49:10,
63.9,15:49:20,
64.0,15:49:30,
64.0,15:49:40,
64.0,15:49:50,
64.0,15:50:00,
64.1,15:50:10,
64.1,15:50:20,
64.0,15:50:30,
63.9,15:50:40,
63.9,15:50:50,
63.9,15:51:00,
63.9,15:51:10,
63.8,15:51:20,
63.8,15:51:30,
63.8,15:51:40,
63.7,15:51:50,
63.7,15:52:00,
63.6,15:52:10,
63.5,15:52:20,
63.5,15:52:30,
63.5,15:52:40,
63.4,15:52:50,
63.4,15:53:00,
63.5,15:53:10,
63.5,15:53:20,
63.5,15:53:30,
63.5,15:53:40,
63.5,15:53:50,
63.5,15:54:00,
63.4,15:54:10,
63.4,15:54:20,
63.4,15:54:30,
63.3,15:54:40,
63.4,15:54:50,
63.4,15:55:00,
63.4,15:55:10,
63.4,15:55:20,
63.3,15:55:30,
63.4,15:55:40,
63.4,15:55:50,

63.4,15:56:00,
63.4,15:56:10,
63.4,15:56:20,
63.4,15:56:30,
63.3,15:56:40,
63.3,15:56:50,
63.2,15:57:00,
63.3,15:57:10,
63.3,15:57:20,
63.3,15:57:30,
63.3,15:57:40,
63.2,15:57:50,
63.2,15:58:00,
63.2,15:58:10,
63.2,15:58:20,
63.3,15:58:30,
63.2,15:58:40,
63.2,15:58:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	65.7	65.7	65.5	65.2	65.1	65.1	64.8	64.8	64.8
L(10)	64.7	64.7	64.6	64.6	64.5	64.5	64.5	64.5	64.5
L(20)	64.4	64.4	64.4	64.4	64.3	64.2	64.2	64.2	64.2
L(30)	64.1	64.1	64.1	64.0	64.0	64.0	64.0	64.0	63.9
L(40)	63.9	63.9	63.9	63.9	63.9	63.8	63.8	63.8	63.8
L(50)	63.7	63.6	63.5	63.5	63.5	63.5	63.5	63.5	63.5
L(60)	63.5	63.5	63.5	63.4	63.4	63.4	63.4	63.4	63.4
L(70)	63.4	63.4	63.4	63.4	63.4	63.4	63.4	63.4	63.4
L(80)	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3
L(90)	63.2	63.2	63.2	63.2	63.2	63.2	63.2	56.0	56.0

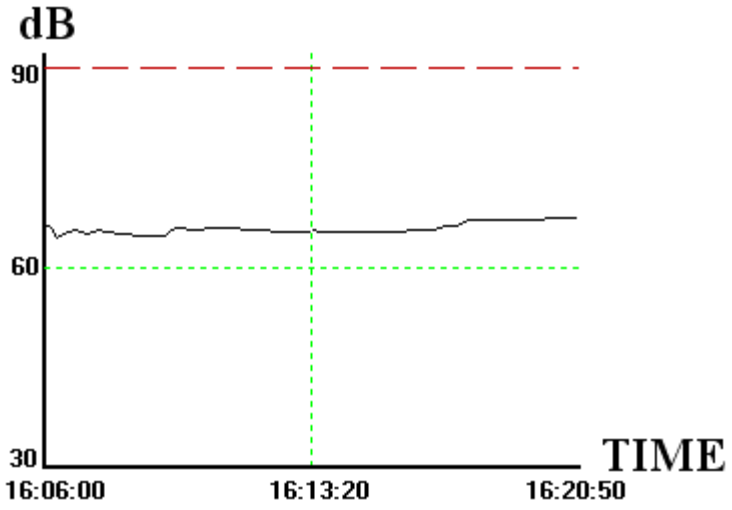

dB
90
60
30
TIME
15:44:00
15:51:20
15:58:50

Measurement 6

Date Time=04/06/16 16:06:00
Sampling Time=10
Record Num= 90
Leq Value=67.6 SEL Value=97.1
MAX Value=86.2
MIN Value=50.2
Freq Weighting=A Time Weighting=Fast
66.5,16:06:00,
65.8,16:06:10,
64.3,16:06:20,
64.9,16:06:30,
65.4,16:06:40,
65.6,16:06:50,
65.2,16:07:00,
65.0,16:07:10,
65.2,16:07:20,
65.5,16:07:30,
65.4,16:07:40,
65.2,16:07:50,
65.1,16:08:00,
65.0,16:08:10,
64.9,16:08:20,
64.8,16:08:30,
64.8,16:08:40,
64.7,16:08:50,
64.8,16:09:00,
64.7,16:09:10,
64.7,16:09:20,
65.7,16:09:30,
65.8,16:09:40,
65.8,16:09:50,
65.7,16:10:00,
65.7,16:10:10,
65.7,16:10:20,
65.9,16:10:30,
65.9,16:10:40,
65.8,16:10:50,
65.8,16:11:00,
65.8,16:11:10,
65.8,16:11:20,
65.7,16:11:30,
65.6,16:11:40,
65.6,16:11:50,
65.6,16:12:00,
65.5,16:12:10,
65.4,16:12:20,
65.3,16:12:30,
65.4,16:12:40,
65.4,16:12:50,
65.4,16:13:00,
65.4,16:13:10,
65.3,16:13:20,
65.5,16:13:30,
65.4,16:13:40,
65.4,16:13:50,
65.4,16:14:00,
65.4,16:14:10,
65.3,16:14:20,
65.3,16:14:30,
65.2,16:14:40,
65.2,16:14:50,
65.2,16:15:00,
65.3,16:15:10,
65.3,16:15:20,
65.3,16:15:30,
65.3,16:15:40,
65.3,16:15:50,
65.4,16:16:00,
65.6,16:16:10,
65.6,16:16:20,
65.6,16:16:30,
65.5,16:16:40,
65.6,16:16:50,
66.0,16:17:00,
66.1,16:17:10,
66.2,16:17:20,
66.2,16:17:30,
66.8,16:17:40,
67.2,16:17:50,

67.2,16:18:00,
67.1,16:18:10,
67.1,16:18:20,
67.1,16:18:30,
67.1,16:18:40,
67.1,16:18:50,
67.0,16:19:00,
67.0,16:19:10,
67.0,16:19:20,
67.0,16:19:30,
67.0,16:19:40,
67.0,16:19:50,
67.3,16:20:00,
67.5,16:20:10,
67.5,16:20:20,
67.5,16:20:30,
67.5,16:20:40,
67.5,16:20:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	67.5	67.5	67.5	67.5	67.5	67.3	67.2	67.2	67.1
L(10)	67.1	67.1	67.1	67.1	67.0	67.0	67.0	67.0	67.0
L(20)	66.8	66.8	66.5	66.2	66.2	66.1	66.0	65.9	65.9
L(30)	65.8	65.8	65.8	65.8	65.8	65.8	65.8	65.7	65.7
L(40)	65.7	65.7	65.6	65.6	65.6	65.6	65.6	65.6	65.6
L(50)	65.6	65.5	65.5	65.5	65.5	65.5	65.4	65.4	65.4
L(60)	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4
L(70)	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3
L(80)	65.2	65.2	65.2	65.2	65.2	65.1	65.0	65.0	65.0
L(90)	64.9	64.8	64.8	64.8	64.7	64.7	64.7	64.3	64.3


dB
90
60
30
TIME
16:06:00
16:13:20
16:20:50

Measurement 7

Date Time=04/06/16 16:32:00
Sampling Time=10
Record Num= 90
Leq Value=67.6 SEL Value=97.2
MAX Value=76.9
MIN Value=45.0
Freq Weighting=A Time Weighting=Fast
66.0,16:32:00,
67.0,16:32:10,
67.8,16:32:20,
67.7,16:32:30,
68.7,16:32:40,
69.0,16:32:50,
68.7,16:33:00,
68.3,16:33:10,
67.9,16:33:20,
67.6,16:33:30,
68.3,16:33:40,
68.1,16:33:50,
67.9,16:34:00,
68.1,16:34:10,
68.4,16:34:20,
68.2,16:34:30,
68.3,16:34:40,
68.2,16:34:50,
68.1,16:35:00,
68.1,16:35:10,
67.9,16:35:20,
67.7,16:35:30,
67.6,16:35:40,
67.5,16:35:50,
67.6,16:36:00,
67.8,16:36:10,
67.8,16:36:20,
67.9,16:36:30,
67.8,16:36:40,
67.7,16:36:50,
67.8,16:37:00,
67.8,16:37:10,
67.8,16:37:20,
67.8,16:37:30,
67.6,16:37:40,
67.6,16:37:50,
67.6,16:38:00,
67.6,16:38:10,
67.6,16:38:20,
67.5,16:38:30,
67.7,16:38:40,
67.7,16:38:50,
67.7,16:39:00,
67.7,16:39:10,
67.7,16:39:20,
67.7,16:39:30,
67.7,16:39:40,
67.7,16:39:50,
67.7,16:40:00,
67.7,16:40:10,
67.6,16:40:20,
67.6,16:40:30,
67.6,16:40:40,
67.6,16:40:50,
67.6,16:41:00,
67.6,16:41:10,
67.5,16:41:20,
67.6,16:41:30,
67.6,16:41:40,
67.6,16:41:50,
67.7,16:42:00,
67.8,16:42:10,
67.8,16:42:20,
67.8,16:42:30,
67.8,16:42:40,
67.8,16:42:50,
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67.8,16:44:10,
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67.7,16:44:40,
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67.7,16:45:10,
67.7,16:45:20,
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67.6,16:45:40,
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67.7,16:46:30,
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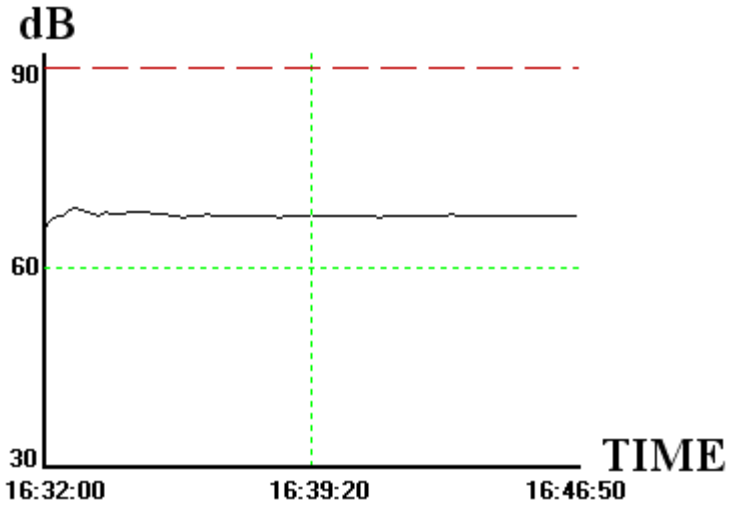
67.6,16:46:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	69.0	68.7	68.7	68.4	68.3	68.3	68.3	68.2	68.2
L(10)	68.1	68.1	68.1	68.1	67.9	67.9	67.9	67.9	67.9
L(20)	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8
L(30)	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8
L(40)	67.8	67.8	67.8	67.8	67.8	67.8	67.7	67.7	67.7
L(50)	67.7	67.7	67.7	67.7	67.7	67.7	67.7	67.7	67.7
L(60)	67.7	67.7	67.7	67.7	67.7	67.7	67.7	67.6	67.6
L(70)	67.6	67.6	67.6	67.6	67.6	67.6	67.6	67.6	67.6
L(80)	67.6	67.6	67.6	67.6	67.6	67.6	67.6	67.6	67.6
L(90)	67.6	67.6	67.6	67.5	67.5	67.5	67.0	66.0	66.0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90
60
30
TIME
16:32:00
16:39:20
16:46:50

Date Time=04/06/16 16:57:00
Sampling Time=10

Measurement 8

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MAX Value=89.4
MIN Value=50.9
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73.0,16:57:10,
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70.5,16:59:00,
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71.0,16:59:20,
70.9,16:59:30,
71.0,16:59:40,
70.9,16:59:50,
70.8,17:00:00,
71.1,17:00:10,
71.1,17:00:20,
71.0,17:00:30,
71.0,17:00:40,
70.9,17:00:50,
71.0,17:01:00,
71.0,17:01:10,
70.9,17:01:20,
70.8,17:01:30,
70.8,17:01:40,
70.8,17:01:50,
70.8,17:02:00,
70.9,17:02:10,
70.9,17:02:20,
70.8,17:02:30,
70.8,17:02:40,
70.7,17:02:50,
71.3,17:03:00,
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71.3,17:03:30,
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71.2,17:06:50,
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71.0,17:08:40,
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71.2,17:10:50,
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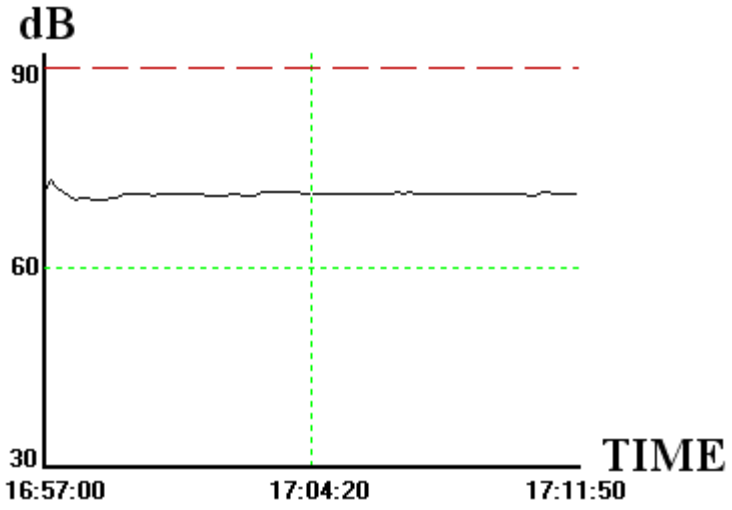
71.1,17:11:10,
71.1,17:11:20,
71.1,17:11:30,
71.1,17:11:40,
71.1,17:11:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	73.0	71.8	71.7	71.4	71.4	71.4	71.3	71.3	71.3
L(10)	71.2	71.2	71.2	71.2	71.2	71.2	71.1	71.1	71.1
L(20)	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1
L(30)	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1
L(40)	71.1	71.1	71.0	71.0	71.0	71.0	71.0	71.0	71.0
L(50)	71.0	71.0	71.0	71.0	71.0	71.0	71.0	71.0	71.0
L(60)	71.0	71.0	71.0	71.0	70.9	70.9	70.9	70.9	70.9
L(70)	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.8
L(80)	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.7
L(90)	70.5	70.5	70.4	70.3	70.1	70.1	70.1	70.0	70.0


dB
90
60
30
TIME
16:57:00
17:04:20
17:11:50

Date Time=04/06/16 17:20:00
Sampling Time=10
Measurement 9
Record Num= 90
Leq Value=72.0 SEL Value=101.5
MAX Value=83.1
MIN Value=45.6
Freq Weighting=A Time Weighting=Fast
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70.7,17:20:10,
72.8,17:20:20,
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72.1,17:20:50,
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71.8,17:21:10,
72.1,17:21:20,
71.8,17:21:30,
71.6,17:21:40,
71.3,17:21:50,
71.7,17:22:00,
71.9,17:22:10,
71.9,17:22:20,
71.8,17:22:30,
71.6,17:22:40,
71.4,17:22:50,
71.2,17:23:00,
71.3,17:23:10,
71.4,17:23:20,
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71.4,17:23:40,
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71.4,17:24:10,
71.4,17:24:20,
71.3,17:24:30,
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71.3,17:25:10,
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71.4,17:25:40,
71.3,17:25:50,
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71.5,17:26:20,
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71.6,17:26:50,
71.5,17:27:00,
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71.6,17:27:20,
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71.8,17:32:00,
71.9,17:32:10,
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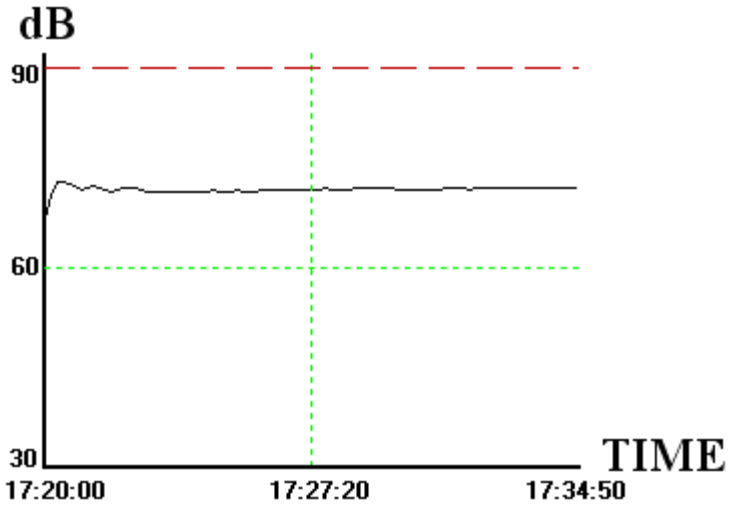
72.0,17:34:10,
71.9,17:34:20,
71.9,17:34:30,
72.0,17:34:40,
72.0,17:34:50,

Ln	1	2	3	4	5	6	7	8	9
L(00)	72.8	72.8	72.5	72.1	72.1	72.0	72.0	72.0	72.0
L(10)	72.0	72.0	71.9	71.9	71.9	71.9	71.9	71.9	71.9
L(20)	71.9	71.9	71.9	71.9	71.9	71.8	71.8	71.8	71.8
L(30)	71.8	71.8	71.8	71.8	71.8	71.8	71.8	71.8	71.8
L(40)	71.8	71.8	71.8	71.8	71.7	71.7	71.7	71.7	71.7
L(50)	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.6
L(60)	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6
L(70)	71.5	71.5	71.5	71.5	71.5	71.5	71.5	71.4	71.4
L(80)	71.4	71.4	71.4	71.4	71.4	71.4	71.3	71.3	71.3
L(90)	71.3	71.3	71.3	71.3	71.3	71.2	70.7	67.2	67.2


dB
90
60
30
TIME
17:20:00
17:27:20
17:34:50

Environmental Review Main (/programs/environmental-review/)

DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the Day/Night Noise Level Calculator Electronic Assessment Tool Overview (https://onecpd.info/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/).

Guidelines

- To display the Road and/or Rail DNL calculator(s), click on the "Add Road Source" and/or "Add Rail Source" button(s) below.
- All Road and Rail input values must be positive non-decimal numbers.
- All Road and/or Rail DNL value(s) must be calculated separately before calculating the Site DNL.
- All checkboxes that apply must be checked for vehicles and trains in the tables' headers.
- **Note #1:** Tooltips, containing field specific information, have been added in this tool and may be accessed by hovering over all the respective data fields (site identification, roadway and railway assessment, DNL calculation results, roadway and railway input variables) with the mouse.
- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	Morro Bay
Record Date	05/13/2016
User's Name	Rincon Consultants, Inc.

Road # 1 Name:	**Embarcadero - North of Beach Street**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	5018	158	106

Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	60	45	65
Calculate Road #1 DNL	66.2	Reset	

Road # 2 Name: **Embarcadero - North of Pacific Street**

Road #2

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	2537	80	53
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	57	42	62
Calculate Road #2 DNL	63.2	Reset	

Road # 3 Name: **Embarcadero - South of Pacific Street**

Road #3

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	2121	67	45
	15	15	15

Night Fraction of ADT

Road Gradient (%)			2
Vehicle DNL	56.2	41.2	61.3
Calculate Road #3 DNL	62.5	Reset	

Road # 4 Name: **Morro Bay Boulevard - West of Quintana Road**

Road #4

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	11270	356	237
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	63.5	48.5	68.5
Calculate Road #4 DNL	69.7	Reset	

Road # 5 Name: **Main Street - South of Radcliff Drive**

Road #5

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	25	25	25
Average Daily Trips (ADT)	8459	267	178

Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	60.7	45.7	67.2
Calculate Road #5 DNL	68.1	Reset	

Road # 6 Name: **State Route 41 - East of Main Street**

Road #6

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	40	40	40
Average Daily Trips (ADT)	9862	311	208
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	65.4	50.4	67.9
Calculate Road #6 DNL	69.9	Reset	

Road # 7 Name: **Highway 1 - South of State Route 41**

Road #7

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	65	65	65
Average Daily Trips (ADT)	23085	729	486
Night Fraction of ADT	15	15	15

Road Gradient (%)			2
Vehicle DNL	73.3	58.3	73.9
Calculate Road #7 DNL	76.7	Reset	

Road # 8 Name: **Highway 1 - North of State Route 41**

Road #8

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	50	50	50
Distance to Stop Sign			
Average Speed	65	65	65
Average Daily Trips (ADT)	18620	588	392
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	72.4	57.4	72.9
Calculate Road #8 DNL	75.7	Reset	

Add Road Source | Add Rail Source

Airport Noise Level

Loud Impulse Sounds? ○ Yes ◉ No

Combined DNL for all Road and Rail sources **80.7**

Combined DNL including Airport **N/A**

Site DNL with Loud Impulse Sound

Calculate

Mitigation Options

If your site DNL is in Excess of 65 decibels, your options are:

- **No Action Alternative**: Cancel the project at this location
- **Other Reasonable Alternatives**: Choose an alternate site
- **Mitigation**
    - Contact your Field or Regional Environmental Officer (https://www.onecpd.info/programs/environmental-review/hud-environmental-staff-contacts/)
    - Increase mitigation in the building walls (only effective if no outdoor, noise sensitive areas)
    - Reconfigure the site plan to increase the distance between the noise source and noise-sensitive uses
    - Incorporate natural or man-made barriers. See *The Noise Guidebook (https://www.onecpd.info/resource/313/hud-noise-guidebook/)*
    - Construct noise barrier. See the Barrier Performance Module (https://onecpd.info/programs/environmental-review/bpm-calculator/)

Tools and Guidance

Day/Night Noise Level Assessment Tool User Guide (https://www.onecpd.info/resource/3822/day-night-noise-level-assessment-tool-user-guide/)

Day/Night Noise Level Assessment Tool Flowcharts (https://www.onecpd.info/resource/3823/day-night-noise-level-assessment-tool-flowcharts/)

Appendix D: Circulation Data

Appendix D: Circulation Technical Data

Appendix D1: LOS Thresholds

Level of Service Thresholds							
Signalized Intersections[1]		Stop Sign Controlled Intersections[2]		Two-Way Stop Sign Controlled[3]		Pedestrian, Bicycle, and Transit Modes[4]	
Control Delay (seconds/vehicle)	Level of Service	Control Delay (seconds/vehicle)	Level of Service	Control Delay (seconds/vehicle)	Level of Service	LOS Score	Level of Service
≤ 10	A	≤ 10	A	≤ 5	A	≤ 2.00	A
> 10 - 20	B	> 10 - 15	B	> 5 - 10	B	> 2.00-2.75	B
> 20 - 35	C	> 15 - 25	C	> 10 - 20	C	> 2.75-3.50	C
> 35 - 55	D	> 25 - 35	D	> 20 - 30	D	> 3.50-4.25	D
> 55 - 80	E	> 35 - 50	E	> 30 - 45	E	> 4.25-5.00	E
> 80	F	> 50	F	> 45	F	> 5.00	F

1. Source: Exhibit 18-4 of the 2010 *Highway Capacity Manual*.
2. Source: Exhibits 19-1 and 20-2 of the 2010 Highway Capacity Manual.
3. Source: Exhibits 19-2 of the 2010 Highway Capacity Manual.
4. Source: Exhibit 16-5 and 16-6 of the 2010 Highway Capacity Manual, assuming 60 ft^2/p for pedestrian mode.

Appendix D2: Traffic Counts

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

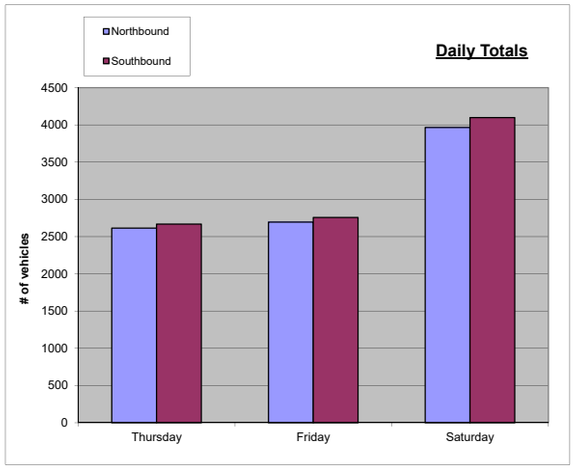
800-975-6938 Phone/Fax
www.metrotrafficdata.com

Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 1
Road Name Embarcadero
Nearest Cross St North of Beach
Survey Date 3/17/16 thru 3/19/16
Latitude 35.369308°
Longitude -120.854688°
Peak Day Thursday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	2	1	13	16	5
1:00 AM	2	2	6	10	3
2:00 AM	1	2	2	5	2
3:00 AM	2	0	5	7	2
4:00 AM	3	6	10	19	6
5:00 AM	8	19	25	52	17
6:00 AM	78	88	112	278	93
7:00 AM	125	162	221	508	169
8:00 AM	255	247	352	854	285
9:00 AM	302	338	481	1121	374
10:00 AM	390	410	626	1426	475
11:00 AM	420	499	658	1577	526
12:00 PM	531	488	731	1750	583
1:00 PM	511	524	806	1841	614
2:00 PM	499	465	711	1675	558
3:00 PM	474	492	679	1645	548
4:00 PM	448	471	674	1593	531
5:00 PM	402	432	666	1500	500
6:00 PM	384	353	623	1360	453
7:00 PM	274	220	353	847	282
8:00 PM	94	122	125	341	114
9:00 PM	59	57	79	195	65
10:00 PM	14	27	39	80	27
11:00 PM	4	26	65	95	32
Total	5282	5451	8062	18795	6265
Percentages	28.10%	29.00%	42.89%	100.00%	33.33%

	Thursday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	0	0	0	1	0	1	0	0	1	2
1:00 AM	0	0	1	0	1	0	0	1	0	1	2
2:00 AM	0	0	1	0	1	0	0	0	0	0	1
3:00 AM	0	0	0	0	0	1	0	0	1	2	2
4:00 AM	1	1	0	0	2	0	1	0	0	1	3
5:00 AM	1	0	1	3	5	0	0	1	2	3	8
6:00 AM	6	6	22	25	59	2	1	3	13	19	78
7:00 AM	16	23	19	13	71	7	14	17	16	54	125
8:00 AM	36	38	36	46	156	20	14	36	29	99	255
9:00 AM	31	38	50	54	173	29	21	31	48	129	302
10:00 AM	46	53	49	54	202	50	46	47	45	188	390
11:00 AM	58	67	38	57	220	55	45	46	54	200	420
12:00 PM	66	78	68	71	283	49	62	72	65	248	531
1:00 PM	68	52	50	59	229	73	64	73	72	282	511
2:00 PM	66	53	53	64	236	74	60	65	64	263	499
3:00 PM	61	62	49	64	236	68	69	51	50	238	474
4:00 PM	50	45	61	62	218	69	62	46	53	230	448
5:00 PM	55	57	53	46	211	48	50	55	38	191	402
6:00 PM	45	56	42	34	177	51	55	44	57	207	384
7:00 PM	27	21	19	10	77	53	66	50	28	197	274
8:00 PM	11	10	3	9	33	19	13	17	12	61	94
9:00 PM	7	4	2	1	14	22	7	10	6	45	59
10:00 PM	2	0	2	2	6	4	0	1	3	8	14
11:00 PM	0	1	2	0	3	0	0	1	0	1	4
12:00 AM	49.5%				2614	50.5%				2668	
	5282										

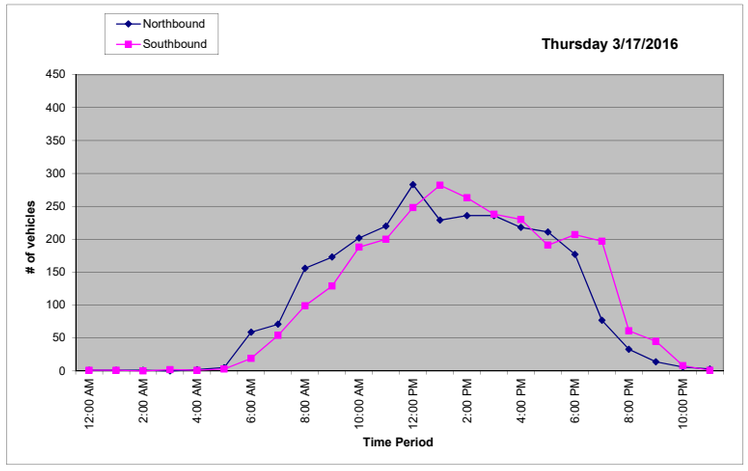
AM Peak Hr 11:00 am to 12:00 pm AM Peak 420 AM PHF 0.929204
PM Peak Hr 12:15 pm to 1:15 pm PM Peak 557 PM PHF 0.987589

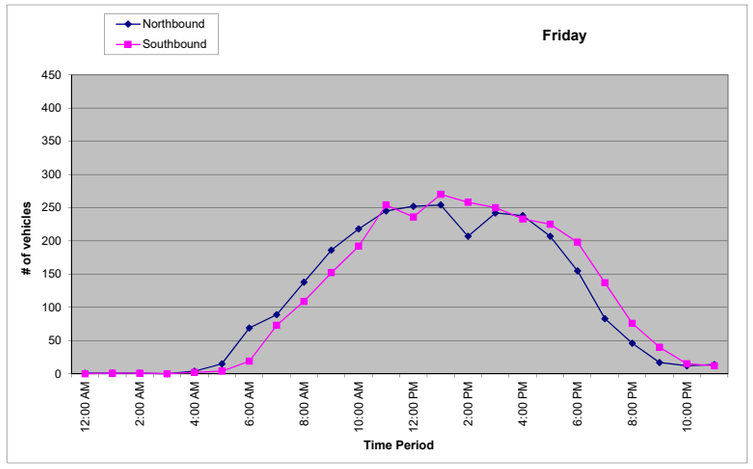
	Friday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	0	0	0	1	0	0	0	0	0	1
1:00 AM	0	0	1	0	1	0	0	0	1	1	2
2:00 AM	1	0	0	0	1	0	1	0	0	1	2
3:00 AM	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	1	3	0	4	0	1	1	0	2	6
5:00 AM	0	1	4	10	15	1	0	1	2	4	19
6:00 AM	10	20	17	22	69	2	6	6	5	19	88
7:00 AM	12	20	27	30	89	15	14	13	31	73	162
8:00 AM	36	19	47	36	138	15	33	20	41	109	247
9:00 AM	44	47	40	55	186	31	50	36	35	152	338
10:00 AM	48	53	54	63	218	36	34	67	55	192	410
11:00 AM	58	54	68	65	245	70	51	64	69	254	499
12:00 PM	77	55	60	60	252	45	62	57	72	236	488
1:00 PM	54	64	60	76	254	67	66	69	68	270	524
2:00 PM	51	54	58	44	207	70	60	67	61	258	465
3:00 PM	64	58	57	63	242	55	72	62	61	250	492
4:00 PM	69	57	60	52	238	80	58	52	43	233	471
5:00 PM	52	55	55	45	207	63	48	61	53	225	432
6:00 PM	42	42	37	34	155	48	56	48	46	198	353
7:00 PM	26	22	19	16	83	41	34	32	30	137	220
8:00 PM	11	13	16	6	46	31	14	19	12	76	122
9:00 PM	5	5	3	4	17	16	9	8	7	40	57
10:00 PM	6	3	2	1	12	6	6	1	2	15	27
11:00 PM	3	5	5	1	14	6	1	4	1	12	26
Total	49.4%				2694	50.6%				2757	
	5451										

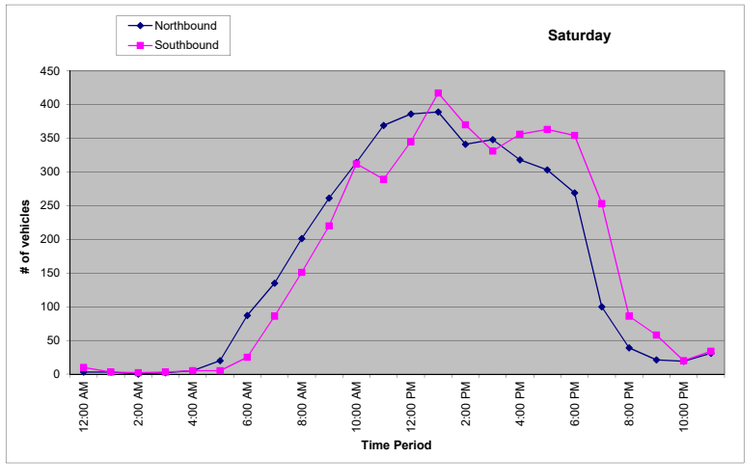
AM Peak Hr 11:00 am to 12:00 pm AM Peak 499 AM PHF 0.93097
PM Peak Hr 1:15 pm to 2:15 pm PM Peak 524 PM PHF 0.909722

	Saturday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	1	1	0	3	3	3	3	1	10	13
1:00 AM	0	0	2	1	3	0	1	0	2	3	6
2:00 AM	0	0	0	0	0	0	0	1	1	2	2
3:00 AM	1	1	0	0	2	0	1	0	2	3	5
4:00 AM	1	2	0	2	5	1	0	1	3	5	10
5:00 AM	4	4	7	5	20	4	0	1	0	5	25
6:00 AM	12	19	26	30	87	3	11	3	8	25	112
7:00 AM	37	29	32	37	135	20	19	29	18	86	221
8:00 AM	46	36	69	50	201	33	33	32	53	151	352
9:00 AM	63	53	66	79	261	42	48	73	57	220	481
10:00 AM	71	79	92	72	314	84	87	76	65	312	626
11:00 AM	75	104	99	91	369	65	80	69	75	289	658
12:00 PM	109	91	92	94	386	72	76	102	95	345	731
1:00 PM	86	116	92	95	389	102	108	103	104	417	806
2:00 PM	94	85	83	79	341	78	95	106	91	370	711
3:00 PM	85	104	77	82	348	88	98	70	75	331	679
4:00 PM	75	76	86	81	318	84	94	81	97	356	674
5:00 PM	75	75	70	83	303	98	83	89	93	363	666
6:00 PM	94	64	67	44	269	77	95	86	96	354	623
7:00 PM	36	23	25	16	100	82	65	59	47	253	353
8:00 PM	9	12	11	7	39	33	22	18	13	86	125
9:00 PM	6	7	1	7	21	21	15	14	8	58	79
10:00 PM	2	10	3	4	19	7	4	6	3	20	39
11:00 PM	1	2	14	14	31	3	3	14	14	34	65
Total	49.2%				3964	50.8%				4098	
	8062										

AM Peak Hr 11:00 am to 12:00 pm AM Peak 658 AM PHF 0.894022
PM Peak Hr 1:00 pm to 2:00 pm PM Peak 806 PM PHF 0.899554







Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
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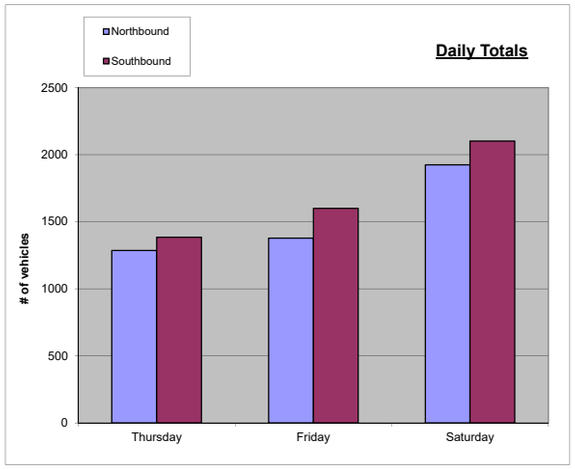
Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 2
Road Name Embarcadero
Nearest Cross St North of Pacific
Survey Date 3/17/16 thru 3/19/16
Latitude 35.365286°
Longitude -120.853058°
Peak Day Thursday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	7	7	9	23	8
1:00 AM	0	2	3	5	2
2:00 AM	2	3	5	10	3
3:00 AM	1	2	3	6	2
4:00 AM	2	4	5	11	4
5:00 AM	7	6	6	19	6
6:00 AM	23	22	24	69	23
7:00 AM	58	53	50	161	54
8:00 AM	111	119	121	351	117
9:00 AM	139	161	202	502	167
10:00 AM	194	193	250	637	212
11:00 AM	205	212	291	708	236
12:00 PM	233	221	354	808	269
1:00 PM	220	228	425	873	291
2:00 PM	226	250	347	823	274
3:00 PM	212	240	301	753	251
4:00 PM	206	256	324	786	262
5:00 PM	201	248	330	779	260
6:00 PM	235	222	324	781	260
7:00 PM	180	201	273	654	218
8:00 PM	82	154	162	398	133
9:00 PM	71	86	115	272	91
10:00 PM	42	60	67	169	56
11:00 PM	13	28	36	77	26
Total	2670	2978	4027	9675	3225
Percentages	27.60%	30.78%	41.62%	100.00%	33.33%

	Thursday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	0	0	0	1	1	1	2	2	1	6	7
1:00 AM	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	1	0	1	0	2	0	0	0	0	0	2
3:00 AM	0	1	0	0	1	0	0	0	0	0	1
4:00 AM	1	0	1	0	2	0	0	0	0	0	2
5:00 AM	1	0	1	1	3	1	0	3	0	4	7
6:00 AM	2	2	6	5	15	1	3	0	4	8	23
7:00 AM	7	7	9	8	31	4	6	9	8	27	58
8:00 AM	13	12	19	11	55	16	12	13	15	56	111
9:00 AM	15	21	22	21	79	12	14	10	24	60	139
10:00 AM	17	21	26	28	92	22	22	29	29	102	194
11:00 AM	28	22	22	23	95	33	30	23	24	110	205
12:00 PM	28	31	24	37	120	14	32	37	30	113	233
1:00 PM	28	23	17	23	91	36	35	32	26	129	220
2:00 PM	27	37	25	29	118	33	42	13	20	108	226
3:00 PM	17	33	23	24	97	28	37	26	24	115	212
4:00 PM	25	35	18	28	106	20	39	19	22	100	206
5:00 PM	37	21	20	26	104	26	22	21	28	97	201
6:00 PM	28	29	33	25	115	30	27	28	35	120	235
7:00 PM	16	30	14	18	78	30	34	18	20	102	180
8:00 PM	15	12	4	7	38	9	10	14	11	44	82
9:00 PM	5	7	10	5	27	14	8	12	10	44	71
10:00 PM	4	3	3	3	13	6	7	7	9	29	42
11:00 PM	2	1	0	0	3	1	2	3	4	10	13
12:00 AM	48.2%				1286	51.8%				1384	
	2670										

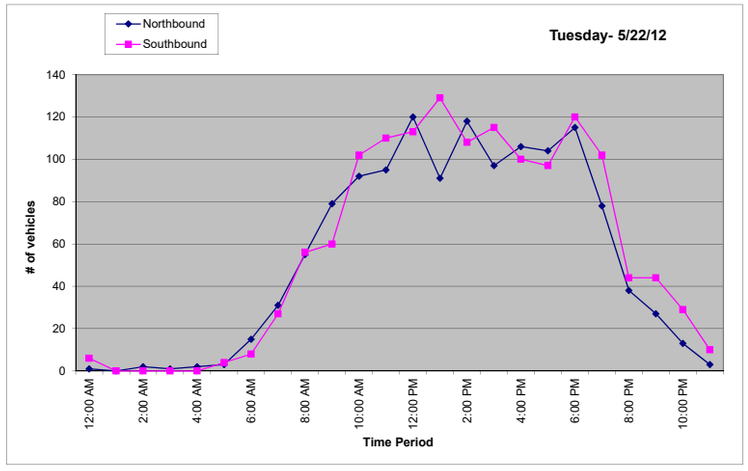
AM Peak Hr 10:30 am to 11:30 am — AM Peak 225 — AM PHF 0.922131
PM Peak Hr 6:00 pm to 7:00 pm — PM Peak 235 — PM PHF 0.963115

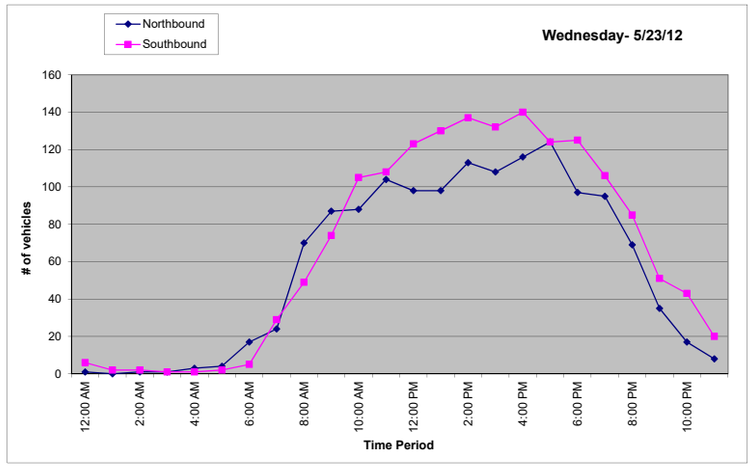
	Friday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	0	0	0	1	0	3	3	0	6	7
1:00 AM	0	0	0	0	0	1	1	0	0	2	2
2:00 AM	1	0	0	0	1	1	0	1	0	2	3
3:00 AM	1	0	0	0	1	1	0	0	0	1	2
4:00 AM	0	0	1	2	3	0	0	1	0	1	4
5:00 AM	1	1	1	1	4	0	0	1	1	2	6
6:00 AM	4	0	4	9	17	0	0	1	4	5	22
7:00 AM	4	4	3	13	24	8	3	9	9	29	53
8:00 AM	11	14	12	33	70	9	10	15	15	49	119
9:00 AM	22	20	15	30	87	17	17	19	21	74	161
10:00 AM	25	15	22	26	88	22	30	17	36	105	193
11:00 AM	18	29	28	29	104	27	33	26	22	108	212
12:00 PM	30	16	31	21	98	33	28	33	29	123	221
1:00 PM	21	18	29	30	98	35	30	35	30	130	228
2:00 PM	35	22	30	26	113	39	36	28	34	137	250
3:00 PM	23	30	23	32	108	32	37	31	32	132	240
4:00 PM	24	20	36	36	116	41	28	38	33	140	256
5:00 PM	33	26	32	33	124	35	31	30	28	124	248
6:00 PM	22	22	30	23	97	31	36	30	28	125	222
7:00 PM	26	19	32	18	95	31	23	27	25	106	201
8:00 PM	24	17	12	16	69	21	23	13	28	85	154
9:00 PM	10	8	10	7	35	16	15	8	12	51	86
10:00 PM	4	4	4	5	17	16	12	9	6	43	60
11:00 PM	3	2	2	1	8	5	6	7	2	20	28
Total	46.3%				1378	53.7%				1600	
	2978										

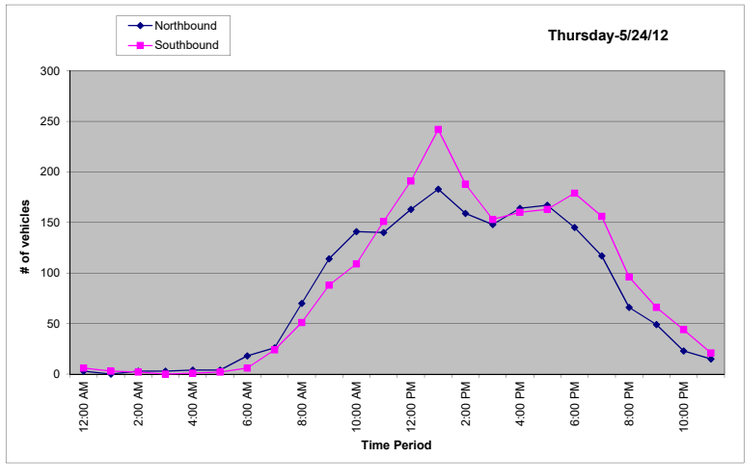
AM Peak Hr 10:45 am to 11:45 am — AM Peak 223 — AM PHF 0.899194
PM Peak Hr 4:30 pm to 5:30 pm — PM Peak 268 — PM PHF 0.905405

	Saturday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	0	2	0	1	3	4	1	1	0	6	9
1:00 AM	0	0	0	0	0	1	0	0	2	3	3
2:00 AM	2	0	0	1	3	1	0	1	0	2	5
3:00 AM	0	0	1	2	3	0	0	0	0	0	3
4:00 AM	2	1	1	0	4	0	0	1	0	1	5
5:00 AM	2	0	0	2	4	0	0	0	2	2	6
6:00 AM	2	3	4	9	18	1	1	2	2	6	24
7:00 AM	4	7	5	10	26	3	6	5	10	24	50
8:00 AM	16	19	16	19	70	8	11	15	17	51	121
9:00 AM	28	22	34	30	114	20	17	24	27	88	202
10:00 AM	32	47	29	33	141	35	20	30	24	109	250
11:00 AM	39	28	40	33	140	44	38	34	35	151	291
12:00 PM	30	40	42	51	163	56	39	52	44	191	354
1:00 PM	50	45	44	44	183	58	71	63	50	242	425
2:00 PM	42	50	34	33	159	48	48	48	44	188	347
3:00 PM	34	31	41	42	148	46	35	32	40	153	301
4:00 PM	45	43	30	46	164	41	35	33	51	160	324
5:00 PM	38	46	41	42	167	37	51	38	37	163	330
6:00 PM	31	43	36	35	145	35	50	38	56	179	324
7:00 PM	40	26	24	27	117	37	47	36	36	156	273
8:00 PM	16	23	17	10	66	27	29	19	21	96	162
9:00 PM	11	17	12	9	49	13	16	18	19	66	115
10:00 PM	10	6	2	5	23	14	10	11	9	44	67
11:00 PM	4	6	1	4	15	10	3	4	4	21	36
Total	47.8%				1925	52.2%				2102	
	4027										

AM Peak Hr 11:00 am to 12:00 pm — AM Peak 291 — AM PHF 0.876506
PM Peak Hr 0:45 pm to 1:45 pm — PM Peak 426 — PM PHF 0.918103







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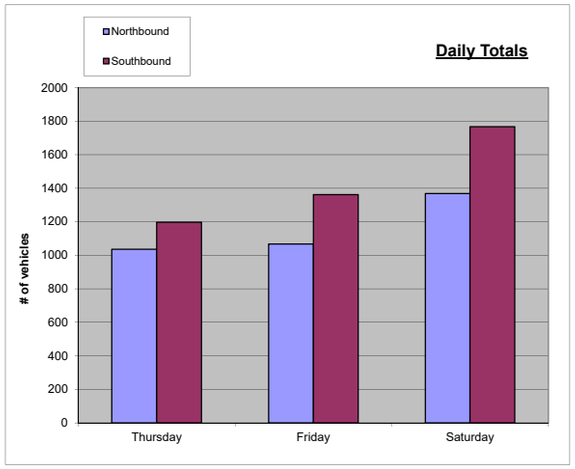
Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 3
Road Name Embarcadero
Nearest Cross St South of Pacific
Survey Date 3/17/16 thru 3/19/16
Latitude 35.364623°
Longitude -120.852858°
Peak Day Thursday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	1	7	7	15	5
1:00 AM	7	1	1	9	3
2:00 AM	2	4	4	10	3
3:00 AM	0	2	1	3	1
4:00 AM	1	2	4	7	2
5:00 AM	5	5	4	14	5
6:00 AM	22	23	22	67	22
7:00 AM	49	47	65	161	54
8:00 AM	100	103	108	311	104
9:00 AM	126	136	158	420	140
10:00 AM	170	149	213	532	177
11:00 AM	169	176	235	580	193
12:00 PM	202	206	241	649	216
1:00 PM	209	192	323	724	241
2:00 PM	195	197	269	661	220
3:00 PM	161	199	249	609	203
4:00 PM	171	185	247	603	201
5:00 PM	151	190	274	615	205
6:00 PM	195	210	238	643	214
7:00 PM	150	165	197	512	171
8:00 PM	71	109	125	305	102
9:00 PM	52	55	79	186	62
10:00 PM	17	41	38	96	32
11:00 PM	7	25	33	65	22
Total	2233	2429	3135	7797	2599
Percentages	28.64%	31.15%	40.21%	100.00%	33.33%

	Thursday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	0	0	0	0	0	1	0	0	0	1	1
1:00 AM	4	0	0	0	4	3	0	0	0	3	7
2:00 AM	0	1	1	0	2	0	0	0	0	0	2
3:00 AM	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	1	1	0	0	0	0	0	1
5:00 AM	1	0	0	1	2	0	0	2	1	3	5
6:00 AM	2	4	3	3	12	3	2	2	3	10	22
7:00 AM	6	6	6	6	24	3	6	8	8	25	49
8:00 AM	10	9	21	15	55	7	13	9	16	45	100
9:00 AM	10	18	15	18	61	11	15	15	24	65	126
10:00 AM	19	23	22	18	82	17	18	28	25	88	170
11:00 AM	18	27	14	19	78	25	26	17	23	91	169
12:00 PM	21	21	17	29	88	26	26	39	23	114	202
1:00 PM	23	20	11	25	79	39	38	30	23	130	209
2:00 PM	23	23	23	25	94	24	34	26	17	101	195
3:00 PM	15	21	21	22	79	17	32	17	16	82	161
4:00 PM	14	20	29	19	82	12	36	24	17	89	171
5:00 PM	20	17	12	19	68	23	23	10	27	83	151
6:00 PM	16	21	20	24	81	37	32	24	21	114	195
7:00 PM	19	23	14	17	73	22	25	11	19	77	150
8:00 PM	16	16	3	3	38	11	9	8	5	33	71
9:00 PM	9	8	6	2	25	9	7	5	6	27	52
10:00 PM	4	1	1	1	7	4	0	4	2	10	17
11:00 PM	1	0	0	0	1	3	2	0	1	6	7
12:00 AM	46.4%				1036	53.6%				1197	
	2233										

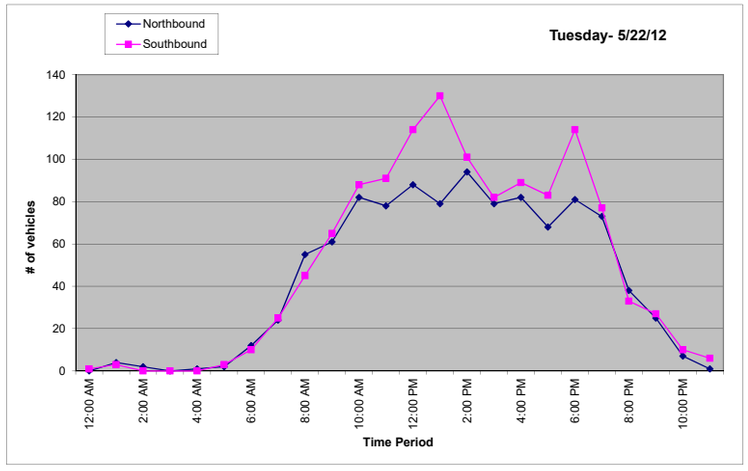
AM Peak Hr 10:30 am to 11:30 am — AM Peak 189 — AM PHF 0.891509
PM Peak Hr 0:30 pm to 1:30 pm — PM Peak 228 — PM PHF 0.919355

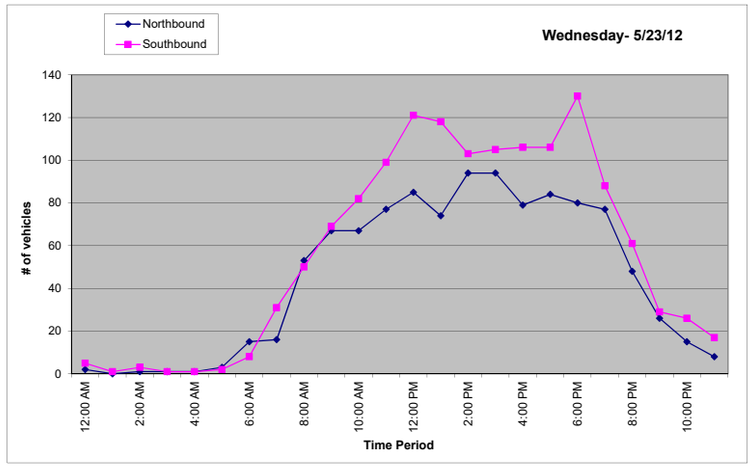
	Friday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	0	1	0	1	2	0	2	2	1	5	7
1:00 AM	0	0	0	0	0	0	1	0	0	1	1
2:00 AM	1	0	0	0	1	1	1	1	0	3	4
3:00 AM	1	0	0	0	1	1	0	0	0	1	2
4:00 AM	0	0	0	1	1	0	0	1	0	1	2
5:00 AM	0	1	1	1	3	0	0	1	1	2	5
6:00 AM	2	1	5	7	15	0	1	2	5	8	23
7:00 AM	1	5	3	7	16	8	3	7	13	31	47
8:00 AM	12	11	12	18	53	11	12	13	14	50	103
9:00 AM	17	17	11	22	67	17	17	15	20	69	136
10:00 AM	14	13	18	22	67	25	16	23	18	82	149
11:00 AM	19	21	20	17	77	23	18	28	30	99	176
12:00 PM	24	20	23	18	85	33	24	36	28	121	206
1:00 PM	19	12	26	17	74	31	32	29	26	118	192
2:00 PM	26	23	22	23	94	38	29	14	22	103	197
3:00 PM	28	25	13	28	94	23	30	23	29	105	199
4:00 PM	12	16	23	28	79	24	26	26	30	106	185
5:00 PM	23	16	20	25	84	28	23	27	28	106	190
6:00 PM	15	27	21	17	80	37	33	29	31	130	210
7:00 PM	27	11	26	13	77	22	19	24	23	88	165
8:00 PM	15	11	10	12	48	12	22	10	17	61	109
9:00 PM	8	6	6	6	26	12	8	4	5	29	55
10:00 PM	3	3	3	6	15	6	5	7	8	26	41
11:00 PM	4	2	1	1	8	5	5	2	5	17	25
Total	43.9%				1067	56.1%				1362	
	2429										

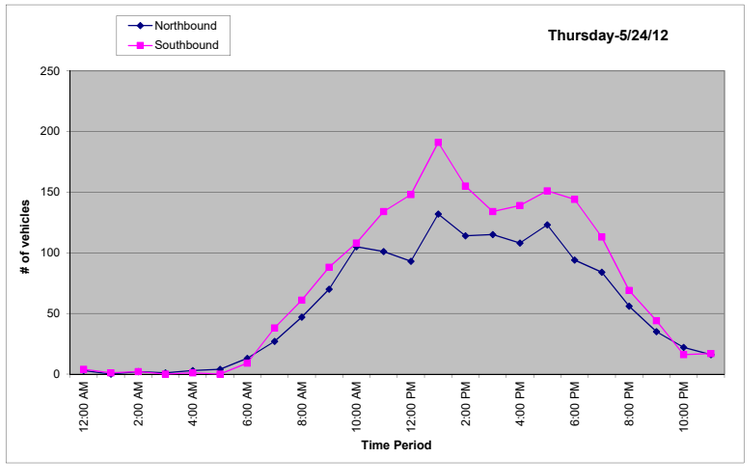
AM Peak Hr 11:00 am to 12:00 pm — AM Peak 176 — AM PHF 0.916667
PM Peak Hr 5:45 pm to 6:45 pm — PM Peak 215 — PM PHF 0.895833

	Saturday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	2	0	0	1	3	2	0	2	0	4	7
1:00 AM	0	0	0	0	0	1	0	0	0	1	1
2:00 AM	1	0	0	1	2	1	0	1	0	2	4
3:00 AM	0	0	0	1	1	0	0	0	0	0	1
4:00 AM	0	1	2	0	3	0	0	1	0	1	4
5:00 AM	1	1	0	2	4	0	0	0	0	0	4
6:00 AM	2	2	3	6	13	1	3	2	3	9	22
7:00 AM	4	6	5	12	27	9	9	7	13	38	65
8:00 AM	11	9	13	14	47	13	12	14	22	61	108
9:00 AM	16	15	23	16	70	15	18	28	27	88	158
10:00 AM	27	26	24	28	105	30	29	27	22	108	213
11:00 AM	25	18	28	30	101	37	30	39	28	134	235
12:00 PM	19	28	21	25	93	44	37	41	26	148	241
1:00 PM	36	41	31	24	132	42	51	53	45	191	323
2:00 PM	28	35	28	23	114	31	58	46	20	155	269
3:00 PM	24	26	31	34	115	41	38	27	28	134	249
4:00 PM	31	29	23	25	108	37	35	27	40	139	247
5:00 PM	30	33	35	25	123	31	51	38	31	151	274
6:00 PM	18	25	28	23	94	30	43	33	38	144	238
7:00 PM	29	23	16	16	84	36	34	25	18	113	197
8:00 PM	17	17	15	7	56	22	15	18	14	69	125
9:00 PM	13	13	6	3	35	10	15	11	8	44	79
10:00 PM	7	6	1	8	22	3	5	2	6	16	38
11:00 PM	4	7	0	5	16	4	8	3	2	17	33
Total	43.6%				1368	56.4%				1767	
	3135										

AM Peak Hr 11:00 am to 12:00 pm — AM Peak 235 — AM PHF 0.876866
PM Peak Hr 1:00 pm to 2:00 pm — PM Peak 323 — PM PHF 0.877717







Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
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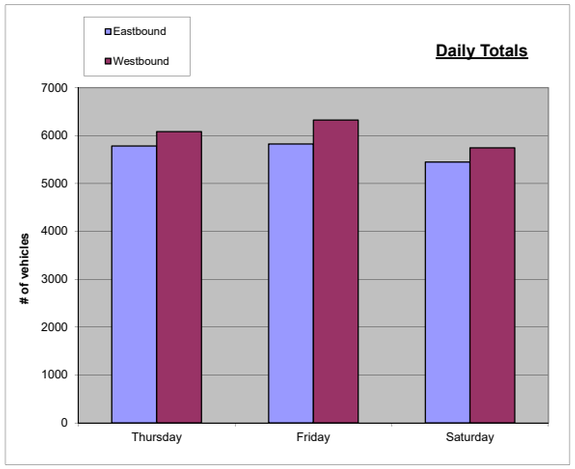
Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 4
Road Name Morro Bay Boulevard
Nearest Cross St West of Quintana
Survey Date 3/17/16 thru 3/19/16
Latitude 35.366221°
Longitude -120.841508°
Peak Day Wednesday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	32	37	31	100	33
1:00 AM	12	9	19	40	13
2:00 AM	12	8	12	32	11
3:00 AM	15	13	21	49	16
4:00 AM	30	34	32	96	32
5:00 AM	70	93	71	234	78
6:00 AM	226	287	168	681	227
7:00 AM	541	600	353	1494	498
8:00 AM	721	738	586	2045	682
9:00 AM	742	757	784	2283	761
10:00 AM	863	899	807	2569	856
11:00 AM	852	886	904	2642	881
12:00 PM	943	968	972	2883	961
1:00 PM	882	912	993	2787	929
2:00 PM	938	1039	902	2879	960
3:00 PM	1006	1073	928	3007	1002
4:00 PM	1000	998	963	2961	987
5:00 PM	953	917	702	2572	857
6:00 PM	661	619	617	1897	632
7:00 PM	479	444	457	1380	460
8:00 PM	373	298	359	1030	343
9:00 PM	275	262	253	790	263
10:00 PM	160	175	158	493	164
11:00 PM	78	81	99	258	86
Total	11864	12147	11191	35202	11734
Percentages	33.70%	34.51%	31.79%	100.00%	33.33%

	Thursday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	2	4	8	4	18	5	3	5	1	14	32
1:00 AM	3	1	0	1	5	0	1	6	0	7	12
2:00 AM	1	1	1	1	4	2	4	2	0	8	12
3:00 AM	5	4	1	0	10	2	1	0	2	5	15
4:00 AM	7	7	5	5	24	0	2	2	2	6	30
5:00 AM	11	13	9	17	50	1	5	7	7	20	70
6:00 AM	20	22	53	55	150	14	8	26	28	76	226
7:00 AM	54	83	83	111	331	34	56	44	76	210	541
8:00 AM	108	92	97	60	357	67	109	90	98	364	721
9:00 AM	91	93	96	93	373	90	85	95	99	369	742
10:00 AM	114	114	113	100	441	103	112	106	101	422	863
11:00 AM	89	94	89	125	397	108	97	112	138	455	852
12:00 PM	108	104	119	115	446	124	113	130	130	497	943
1:00 PM	113	109	120	111	453	114	112	103	100	429	882
2:00 PM	112	103	117	122	454	117	120	108	139	484	938
3:00 PM	115	111	109	121	456	134	155	118	143	550	1006
4:00 PM	104	85	131	121	441	137	146	140	136	559	1000
5:00 PM	130	103	109	69	411	146	135	139	122	542	953
6:00 PM	85	70	72	69	296	105	87	87	86	365	661
7:00 PM	72	54	62	43	231	71	72	57	48	248	479
8:00 PM	46	51	49	41	187	57	35	51	43	186	373
9:00 PM	52	43	29	26	150	28	38	31	28	125	275
10:00 PM	15	22	16	9	62	26	23	24	25	98	160
11:00 PM	15	10	4	6	35	17	9	9	8	43	78
12:00 AM	48.7%				5782	51.3%				6082	
	11864										

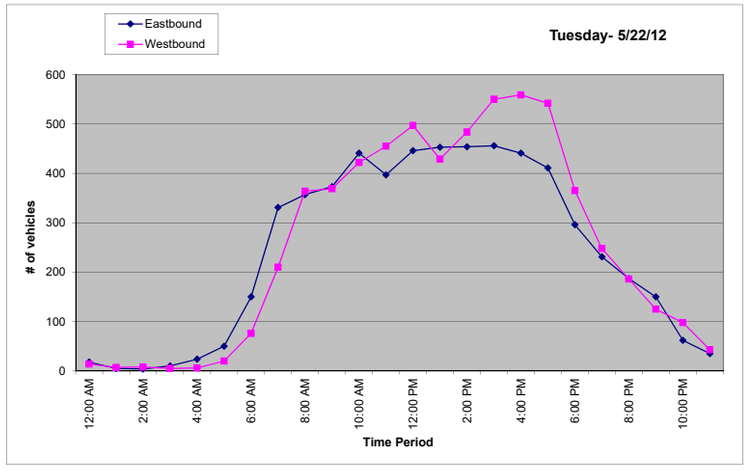
AM Peak Hr 10:00 am to 11:00 am — AM Peak 863 — AM PHF 0.954646
PM Peak Hr 3:45 pm to 4:45 pm — PM Peak 1007 — PM PHF 0.928967

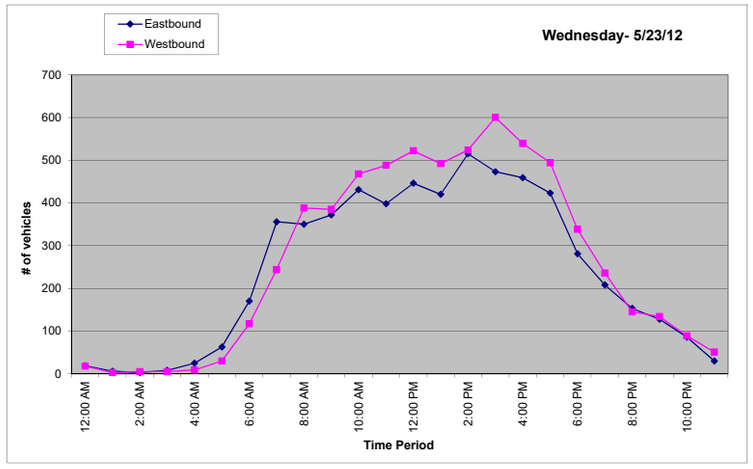
	Friday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	6	4	2	7	19	5	9	2	2	18	37
1:00 AM	4	1	1	0	6	1	0	1	1	3	9
2:00 AM	3	0	0	0	3	3	1	1	0	5	8
3:00 AM	2	3	0	3	8	1	2	2	0	5	13
4:00 AM	5	5	4	11	25	2	1	5	1	9	34
5:00 AM	14	18	16	15	63	4	9	6	11	30	93
6:00 AM	24	41	47	58	170	21	14	47	35	117	287
7:00 AM	75	80	95	106	356	59	46	67	72	244	600
8:00 AM	94	81	77	98	350	89	89	114	96	388	738
9:00 AM	109	84	77	102	372	86	83	109	107	385	757
10:00 AM	111	105	96	119	431	111	105	135	117	468	899
11:00 AM	93	90	101	114	398	94	119	137	138	488	886
12:00 PM	100	107	128	111	446	123	138	136	125	522	968
1:00 PM	99	95	110	116	420	104	130	135	123	492	912
2:00 PM	126	136	127	126	515	113	146	125	140	524	1039
3:00 PM	112	121	123	117	473	138	145	150	167	600	1073
4:00 PM	113	105	105	136	459	142	132	134	131	539	998
5:00 PM	116	113	94	100	423	144	147	100	103	494	917
6:00 PM	77	61	75	68	281	83	100	84	71	338	619
7:00 PM	53	53	58	44	208	69	68	46	53	236	444
8:00 PM	38	46	32	37	153	43	38	27	37	145	298
9:00 PM	29	26	38	35	128	33	36	27	38	134	262
10:00 PM	30	16	25	15	86	24	29	19	17	89	175
11:00 PM	9	11	3	7	30	21	11	11	8	51	81
Total	47.9%				5823	52.1%				6324	
	12147										

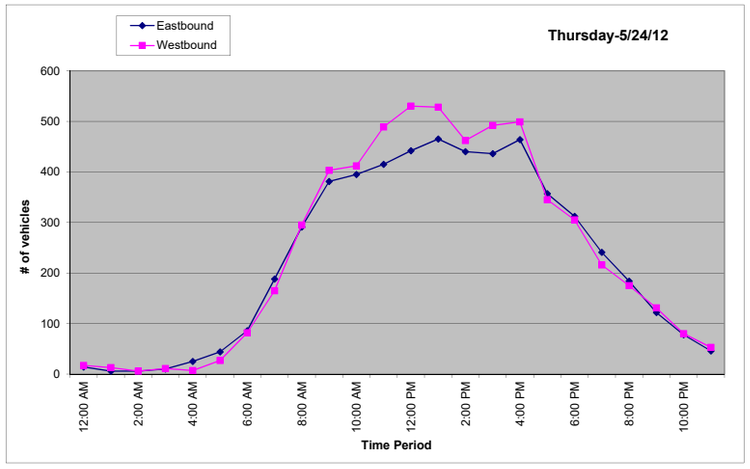
AM Peak Hr 10:00 am to 11:00 am — AM Peak 899 — AM PHF 0.952331
PM Peak Hr 3:15 pm to 4:15 pm — PM Peak 1078 — PM PHF 0.948944

	Saturday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	3	4	5	2	14	6	3	2	6	17	31
1:00 AM	5	0	1	0	6	3	4	4	2	13	19
2:00 AM	0	1	1	4	6	0	1	1	4	6	12
3:00 AM	4	1	2	3	10	3	2	3	3	11	21
4:00 AM	5	6	5	9	25	1	1	2	3	7	32
5:00 AM	11	13	7	13	44	5	6	7	9	27	71
6:00 AM	18	18	19	31	86	12	18	21	31	82	168
7:00 AM	41	42	61	44	188	33	32	55	45	165	353
8:00 AM	67	71	84	69	291	52	82	84	77	295	586
9:00 AM	92	93	96	100	381	82	104	119	98	403	784
10:00 AM	96	100	105	94	395	95	121	83	113	412	807
11:00 AM	114	80	106	115	415	105	134	134	116	489	904
12:00 PM	109	105	109	119	442	127	137	133	133	530	972
1:00 PM	124	98	141	102	465	132	124	138	134	528	993
2:00 PM	104	102	123	111	440	104	123	111	124	462	902
3:00 PM	109	111	107	109	436	138	124	123	107	492	928
4:00 PM	116	133	116	99	464	146	143	97	113	499	963
5:00 PM	90	88	85	94	357	86	80	88	91	345	702
6:00 PM	97	76	65	74	312	85	86	65	69	305	617
7:00 PM	75	59	54	53	241	62	62	48	44	216	457
8:00 PM	41	58	38	47	184	49	46	40	40	175	359
9:00 PM	41	28	33	20	122	38	41	25	27	131	253
10:00 PM	25	20	17	16	78	24	21	13	22	80	158
11:00 PM	9	9	14	14	46	12	13	14	14	53	99
Total	48.7%				5448	51.3%				5743	
	11191										

AM Peak Hr 11:00 am to 12:00 pm — AM Peak 904 — AM PHF 0.941667
PM Peak Hr 0:45 pm to 1:45 pm — PM Peak 1009 — PM PHF 0.904122







Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

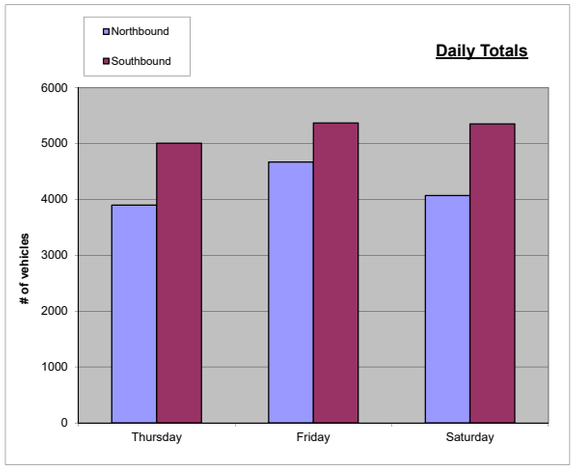
800-975-6938 Phone/Fax
www.metrotrafficdata.com

Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 5
Road Name Main Street
Nearest Cross St South of Radcliff
Survey Date 3/17/16 thru 3/19/16
Latitude 35.373754°
Longitude -120.851466°
Peak Day Wednesday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	16	10	14	**40**	**13**
1:00 AM	5	5	6	**16**	**5**
2:00 AM	9	2	8	**19**	**6**
3:00 AM	4	3	6	**13**	**4**
4:00 AM	17	11	3	**31**	**10**
5:00 AM	40	46	22	**108**	**36**
6:00 AM	139	146	114	**399**	**133**
7:00 AM	280	273	249	**802**	**267**
8:00 AM	448	360	493	**1301**	**434**
9:00 AM	516	480	667	**1663**	**554**
10:00 AM	697	671	813	**2181**	**727**
11:00 AM	841	969	992	**2802**	**934**
12:00 PM	990	980	1067	**3037**	**1012**
1:00 PM	919	950	1052	**2921**	**974**
2:00 PM	893	1046	914	**2853**	**951**
3:00 PM	869	993	842	**2704**	**901**
4:00 PM	791	997	713	**2501**	**834**
5:00 PM	578	870	538	**1986**	**662**
6:00 PM	379	468	332	**1179**	**393**
7:00 PM	213	313	243	**769**	**256**
8:00 PM	99	177	124	**400**	**133**
9:00 PM	69	168	86	**323**	**108**
10:00 PM	57	78	48	**183**	**61**
11:00 PM	35	20	74	**129**	**43**
Total	**8904**	**10036**	**9420**	**28360**	**9453**
Percentages	**31.40%**	**35.39%**	**33.22%**	**100.00%**	**33.33%**

	Thursday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	0	2	0	**3**	2	5	4	2	**13**	**16**
1:00 AM	1	1	0	1	**3**	0	0	0	2	**2**	**5**
2:00 AM	2	0	0	0	**2**	1	1	1	4	**7**	**9**
3:00 AM	0	1	0	0	**1**	0	3	0	0	**3**	**4**
4:00 AM	0	0	0	2	**2**	0	4	2	9	**15**	**17**
5:00 AM	0	1	0	1	**2**	3	9	6	20	**38**	**40**
6:00 AM	0	1	0	1	**2**	21	28	39	49	**137**	**139**
7:00 AM	2	3	10	9	**24**	44	56	63	93	**256**	**280**
8:00 AM	15	10	12	25	**62**	92	84	99	111	**386**	**448**
9:00 AM	23	32	71	40	**166**	96	80	86	88	**350**	**516**
10:00 AM	72	61	122	86	**341**	90	80	79	107	**356**	**697**
11:00 AM	125	96	104	113	**438**	97	92	93	121	**403**	**841**
12:00 PM	153	109	154	158	**574**	102	99	104	111	**416**	**990**
1:00 PM	160	126	99	142	**527**	102	100	86	104	**392**	**919**
2:00 PM	128	114	139	120	**501**	96	92	95	109	**392**	**893**
3:00 PM	144	105	93	111	**453**	101	99	102	114	**416**	**869**
4:00 PM	95	60	86	97	**338**	129	88	124	112	**453**	**791**
5:00 PM	78	51	83	40	**252**	83	88	71	84	**326**	**578**
6:00 PM	61	22	33	29	**145**	72	51	53	58	**234**	**379**
7:00 PM	20	8	3	8	**39**	44	44	42	44	**174**	**213**
8:00 PM	2	2	1	0	**5**	33	23	18	20	**94**	**99**
9:00 PM	1	1	3	2	**7**	18	12	15	17	**62**	**69**
10:00 PM	7	1	0	1	**9**	13	14	11	10	**48**	**57**
11:00 PM	1	0	0	0	**1**	12	10	7	5	**34**	**35**
12:00 AM	43.8%				**3897**	56.2%				**5007**	
	8904										

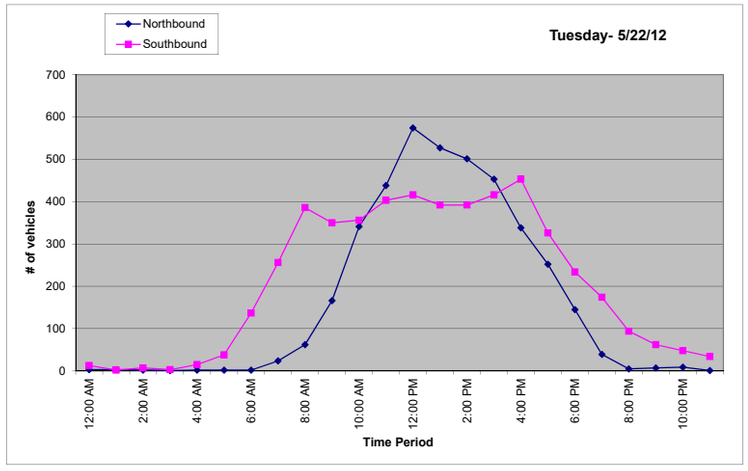
AM Peak Hr 11:00 am to 12:00 pm **AM Peak 841** **AM PHF 0.898504**
PM Peak Hr 12:30 pm to 1:30 pm **PM Peak 1015** **PM PHF 0.943309**

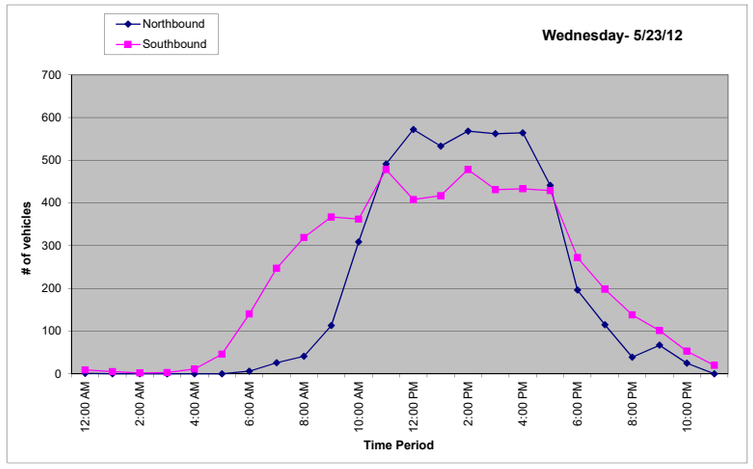
	Friday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	0	0	1	0	**1**	2	3	2	2	**9**	**10**
1:00 AM	0	0	0	0	**0**	0	2	0	3	**5**	**5**
2:00 AM	0	0	0	0	**0**	0	0	2	0	**2**	**2**
3:00 AM	0	0	0	0	**0**	1	0	1	1	**3**	**3**
4:00 AM	0	0	0	0	**0**	1	0	5	5	**11**	**11**
5:00 AM	0	0	0	0	**0**	8	9	11	18	**46**	**46**
6:00 AM	0	1	1	4	**6**	24	35	44	37	**140**	**146**
7:00 AM	4	5	4	13	**26**	40	45	76	86	**247**	**273**
8:00 AM	5	11	7	18	**41**	86	81	74	78	**319**	**360**
9:00 AM	26	23	23	41	**113**	85	80	92	110	**367**	**480**
10:00 AM	63	76	72	98	**309**	87	106	76	93	**362**	**671**
11:00 AM	92	123	143	133	**491**	98	122	137	121	**478**	**969**
12:00 PM	127	146	132	167	**572**	103	99	106	100	**408**	**980**
1:00 PM	131	141	115	146	**533**	101	112	102	102	**417**	**950**
2:00 PM	148	117	166	137	**568**	115	121	90	152	**478**	**1046**
3:00 PM	118	140	151	153	**562**	111	93	123	104	**431**	**993**
4:00 PM	144	140	130	150	**564**	106	101	120	106	**433**	**997**
5:00 PM	114	128	116	83	**441**	110	114	111	94	**429**	**870**
6:00 PM	63	52	36	45	**196**	67	73	71	61	**272**	**468**
7:00 PM	50	33	12	20	**115**	69	46	39	44	**198**	**313**
8:00 PM	11	11	6	11	**39**	39	36	31	32	**138**	**177**
9:00 PM	21	31	7	8	**67**	28	21	26	26	**101**	**168**
10:00 PM	3	14	7	1	**25**	17	12	11	13	**53**	**78**
11:00 PM	0	0	0	0	**0**	8	9	2	1	**20**	**20**
Total	46.5%				**4669**	53.5%				**5367**	
	10036										

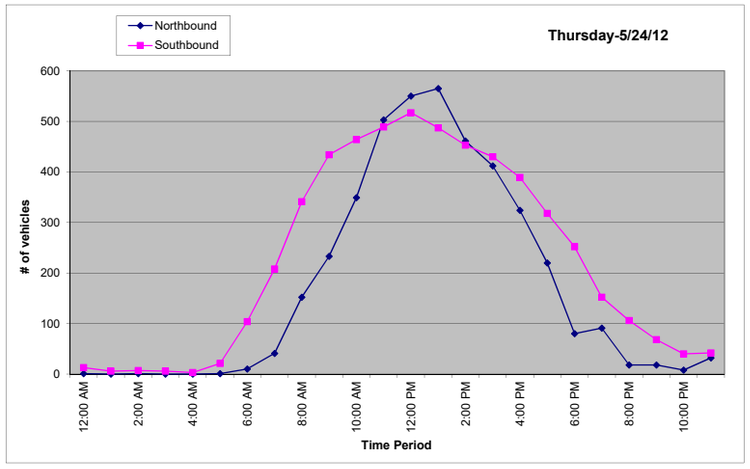
AM Peak Hr 11:00 am to 12:00 pm **AM Peak 969** **AM PHF 0.865179**
PM Peak Hr 2:00 pm to 3:00 pm **PM Peak 1046** **PM PHF 0.904844**

	Saturday										
	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	1	0	0	0	**1**	6	2	2	3	**13**	**14**
1:00 AM	0	0	0	0	**0**	3	0	2	1	**6**	**6**
2:00 AM	0	0	1	0	**1**	2	0	2	3	**7**	**8**
3:00 AM	0	0	0	0	**0**	1	3	1	1	**6**	**6**
4:00 AM	0	0	0	0	**0**	1	0	1	1	**3**	**3**
5:00 AM	0	1	0	0	**1**	7	2	6	6	**21**	**22**
6:00 AM	1	2	1	6	**10**	17	23	24	40	**104**	**114**
7:00 AM	15	3	13	10	**41**	42	49	72	45	**208**	**249**
8:00 AM	23	34	40	55	**152**	85	87	90	79	**341**	**493**
9:00 AM	28	42	63	100	**233**	101	98	106	129	**434**	**667**
10:00 AM	62	83	88	116	**349**	109	115	133	107	**464**	**813**
11:00 AM	99	127	162	115	**503**	122	130	114	123	**489**	**992**
12:00 PM	108	136	137	169	**550**	132	140	133	112	**517**	**1067**
1:00 PM	136	147	153	129	**565**	128	130	123	106	**487**	**1052**
2:00 PM	126	116	98	121	**461**	103	121	132	97	**453**	**914**
3:00 PM	89	113	103	107	**412**	117	102	112	99	**430**	**842**
4:00 PM	81	77	103	63	**324**	99	105	80	105	**389**	**713**
5:00 PM	100	49	33	38	**220**	80	71	90	77	**318**	**538**
6:00 PM	40	34	4	2	**80**	79	74	54	45	**252**	**332**
7:00 PM	57	30	4	0	**91**	42	39	42	29	**152**	**243**
8:00 PM	8	2	5	3	**18**	27	29	21	29	**106**	**124**
9:00 PM	10	8	0	0	**18**	21	16	13	18	**68**	**86**
10:00 PM	0	1	4	3	**8**	12	11	9	8	**40**	**48**
11:00 PM	1	3	14	14	**32**	7	7	14	14	**42**	**74**
Total	43.2%				**4070**	56.8%				**5350**	
	9420										

AM Peak Hr 11:00 am to 12:00 pm **AM Peak 992** **AM PHF 0.898551**
PM Peak Hr 12:45 pm to 1:45 pm **PM Peak 1098** **PM PHF 0.976868**







Metro Traffic Data Inc.
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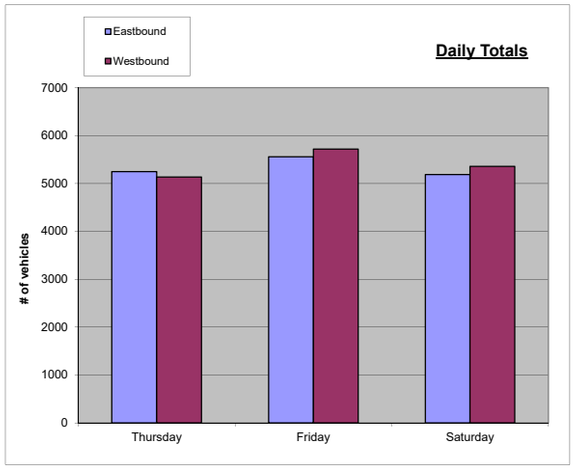
Report Prepared For:

Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

3 Day Volume Count Report

Location No. 6
Road Name SR 41
Nearest Cross St East of Main Street
Survey Date 3/17/16 thru 3/19/16
Latitude 35.381116°
Longitude -120.852670°
Peak Day Wednesday
Number of Lanes 2
Comments



SUMMARY					
Hour	17-Thu	18-Fri	19-Sat	Total	ADT
12:00 AM	34	28	41	103	34
1:00 AM	16	23	31	70	23
2:00 AM	15	18	30	63	21
3:00 AM	12	13	17	42	14
4:00 AM	40	35	39	114	38
5:00 AM	87	134	88	309	103
6:00 AM	309	390	210	909	303
7:00 AM	674	664	375	1713	571
8:00 AM	714	642	564	1920	640
9:00 AM	610	640	714	1964	655
10:00 AM	670	711	828	2209	736
11:00 AM	697	802	937	2436	812
12:00 PM	713	793	941	2447	816
1:00 PM	755	795	939	2489	830
2:00 PM	754	917	863	2534	845
3:00 PM	873	916	841	2630	877
4:00 PM	916	962	836	2714	905
5:00 PM	849	910	680	2439	813
6:00 PM	558	595	528	1681	560
7:00 PM	388	462	340	1190	397
8:00 PM	299	311	244	854	285
9:00 PM	204	236	193	633	211
10:00 PM	123	175	154	452	151
11:00 PM	71	100	108	279	93
Total	10381	11272	10541	32194	10731
Percentages	32.25%	35.01%	32.74%	100.00%	33.33%

	Thursday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	3	4	6	3	16	9	4	5	0	18	34
1:00 AM	2	3	0	2	7	2	1	4	2	9	16
2:00 AM	1	5	1	2	9	1	0	3	2	6	15
3:00 AM	0	3	3	0	6	1	3	1	1	6	12
4:00 AM	2	4	4	5	15	2	6	9	8	25	40
5:00 AM	7	12	17	12	48	7	5	13	14	39	87
6:00 AM	28	44	44	44	160	24	28	61	36	149	309
7:00 AM	63	82	93	84	322	60	82	80	130	352	674
8:00 AM	95	75	66	71	307	118	81	106	102	407	714
9:00 AM	63	59	82	79	283	91	62	84	90	327	610
10:00 AM	81	85	79	83	328	93	76	88	85	342	670
11:00 AM	84	76	79	81	320	94	92	92	99	377	697
12:00 PM	87	79	110	88	364	85	90	83	91	349	713
1:00 PM	90	86	89	106	371	84	103	87	110	384	755
2:00 PM	105	87	100	77	369	81	91	95	118	385	754
3:00 PM	104	130	130	114	478	89	96	103	107	395	873
4:00 PM	115	119	105	134	473	115	106	102	120	443	916
5:00 PM	135	102	129	90	456	94	97	96	106	393	849
6:00 PM	72	74	82	68	296	70	62	66	64	262	558
7:00 PM	70	66	58	39	233	46	37	36	36	155	388
8:00 PM	52	53	37	35	177	33	37	24	28	122	299
9:00 PM	29	34	20	27	110	33	20	24	17	94	204
10:00 PM	17	21	17	12	67	8	16	14	18	56	123
11:00 PM	8	10	6	9	33	13	9	11	5	38	71
12:00 AM	50.6%				5248	49.4%				5133	
	10381										

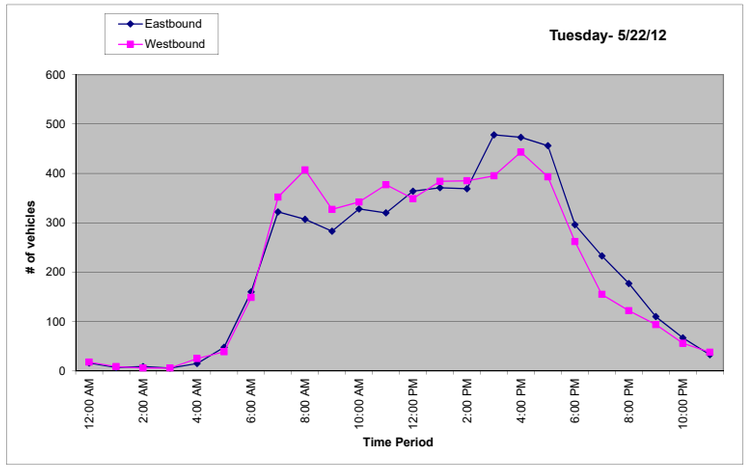
AM Peak Hr 7:15 am to 8:15 am — AM Peak 764 — AM PHF 0.892523
PM Peak Hr 4:00 pm to 5:00 pm — PM Peak 916 — PM PHF 0.901575

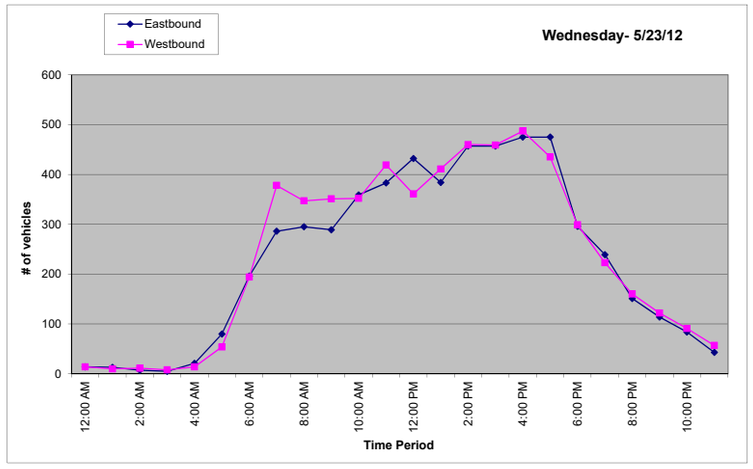
	Friday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	2	4	5	3	14	5	4	3	2	14	28
1:00 AM	5	3	2	3	13	3	2	3	2	10	23
2:00 AM	3	2	1	1	7	3	3	3	2	11	18
3:00 AM	1	1	2	1	5	5	0	2	1	8	13
4:00 AM	5	3	4	9	21	2	6	5	1	14	35
5:00 AM	15	23	12	30	80	6	8	17	23	54	134
6:00 AM	44	37	53	62	196	29	49	64	52	194	390
7:00 AM	69	76	82	59	286	76	85	113	104	378	664
8:00 AM	78	85	66	66	295	92	94	75	86	347	642
9:00 AM	78	76	70	65	289	106	70	88	87	351	640
10:00 AM	70	77	114	98	359	96	81	92	83	352	711
11:00 AM	101	98	94	90	383	99	100	123	97	419	802
12:00 PM	103	109	114	106	432	68	105	96	92	361	793
1:00 PM	107	78	107	92	384	97	107	113	94	411	795
2:00 PM	131	92	121	113	457	111	142	98	109	460	917
3:00 PM	110	117	117	113	457	114	115	110	120	459	916
4:00 PM	127	135	111	102	475	134	105	119	129	487	962
5:00 PM	143	110	120	102	475	108	108	120	99	435	910
6:00 PM	77	83	71	65	296	87	73	72	67	299	595
7:00 PM	69	55	49	66	239	63	62	45	53	223	462
8:00 PM	43	38	34	36	151	33	40	43	44	160	311
9:00 PM	26	28	32	28	114	32	27	22	41	122	236
10:00 PM	29	19	17	19	84	21	31	19	20	91	175
11:00 PM	14	11	13	5	43	19	14	11	13	57	100
Total	49.3%				5555	50.7%				5717	
	11272										

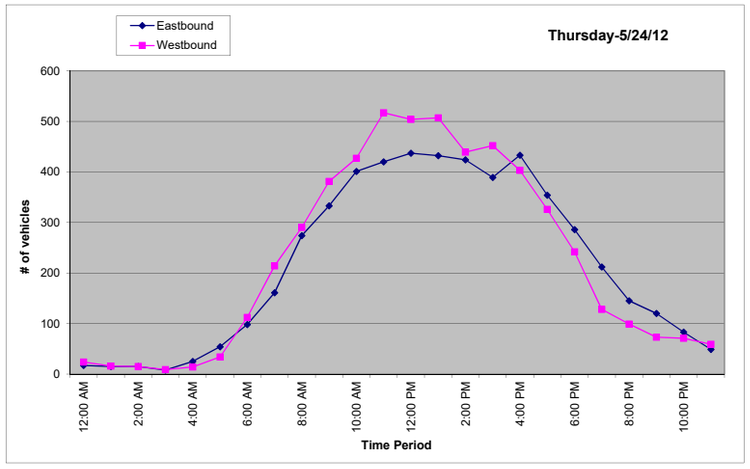
AM Peak Hr 11:00 am to 12:00 pm — AM Peak 802 — AM PHF 0.923963
PM Peak Hr 3:45 pm to 4:45 pm — PM Peak 964 — PM PHF 0.923372

	Saturday										
	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Totals
12:00 AM	6	6	4	1	17	8	6	6	4	24	41
1:00 AM	1	9	4	1	15	2	6	3	5	16	31
2:00 AM	3	5	6	1	15	2	4	2	7	15	30
3:00 AM	2	0	2	4	8	2	2	3	2	9	17
4:00 AM	6	4	10	5	25	2	5	1	6	14	39
5:00 AM	7	10	18	19	54	4	10	9	11	34	88
6:00 AM	21	27	26	24	98	22	29	21	40	112	210
7:00 AM	38	38	39	46	161	46	48	55	65	214	375
8:00 AM	59	65	72	78	274	60	78	73	79	290	564
9:00 AM	86	72	79	96	333	96	95	90	100	381	714
10:00 AM	102	92	98	109	401	109	89	122	107	427	828
11:00 AM	98	109	114	99	420	122	126	122	147	517	937
12:00 PM	115	110	101	111	437	148	133	118	105	504	941
1:00 PM	95	104	111	122	432	132	134	126	115	507	939
2:00 PM	90	108	112	114	424	95	118	138	88	439	863
3:00 PM	99	101	97	92	389	130	92	104	126	452	841
4:00 PM	108	111	108	106	433	110	100	88	105	403	836
5:00 PM	81	88	95	90	354	78	81	70	97	326	680
6:00 PM	75	79	68	64	286	75	64	61	42	242	528
7:00 PM	75	54	39	44	212	28	27	34	39	128	340
8:00 PM	42	42	34	27	145	27	34	18	20	99	244
9:00 PM	28	28	35	29	120	19	21	14	19	73	193
10:00 PM	29	16	14	24	83	22	20	20	9	71	154
11:00 PM	10	11	14	14	49	16	15	14	14	59	108
Total	49.2%				5185	50.8%				5356	
	10541										

AM Peak Hr 11:00 am to 12:00 pm — AM Peak 937 — AM PHF 0.952236
PM Peak Hr 12:00 pm to 1:00 pm — PM Peak 941 — PM PHF 0.894487







Metro Traffic Data Inc.
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Hanford, CA 93230

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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

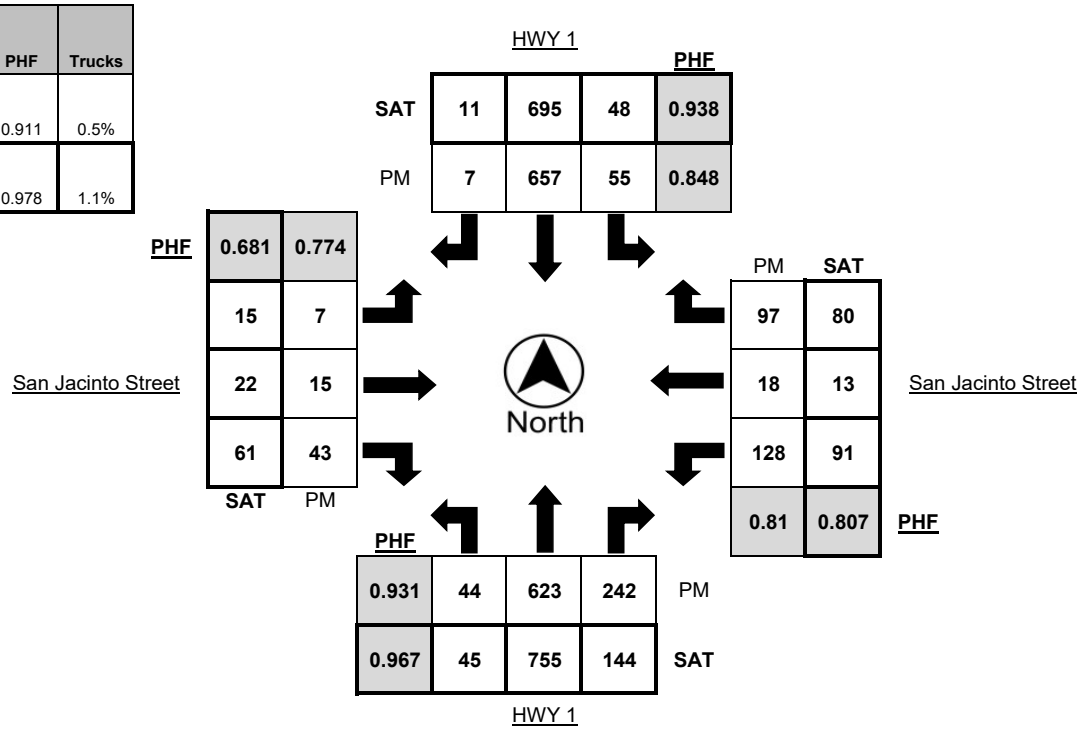
LOCATION HWY 1 @ San Jacinto Street
LATITUDE 35.393811°
COUNTY San Luis Obispo
LONGITUDE -120.860556°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	14	146	48	4	18	136	0	0	5	7	9	0	25	4	29	2
4:15 PM - 4:30 PM	14	154	61	3	19	190	3	0	3	2	10	0	35	8	32	0
4:30 PM - 4:45 PM	7	157	52	0	9	156	0	0	1	2	10	2	30	3	17	2
4:45 PM - 5:00 PM	12	162	70	0	10	170	2	0	1	6	9	0	33	4	24	0
5:00 PM - 5:15 PM	11	150	59	3	17	141	2	0	2	5	14	0	30	3	24	0
5:15 PM - 5:30 PM	6	162	61	0	13	157	0	0	1	3	14	1	27	6	12	0
5:30 PM - 5:45 PM	17	160	52	0	18	134	3	0	0	3	19	2	28	3	14	0
5:45 PM - 6:00 PM	11	148	47	3	13	130	2	0	0	3	8	0	24	3	14	0
TOTAL	**92**	**1239**	**450**	**13**	**117**	**1214**	**12**	**0**	**13**	**31**	**93**	**5**	**232**	**34**	**166**	**4**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	13	184	31	0	15	161	1	0	3	9	17	0	23	12	11	0
11:15 AM - 11:30 AM	11	185	36	0	13	150	4	0	1	8	16	0	33	3	13	0
11:30 AM - 11:45 AM	17	179	28	2	15	162	0	1	1	3	12	0	28	6	18	1
11:45 AM - 12:00 PM	15	176	38	4	7	192	2	0	3	7	10	0	26	2	16	0
12:00 PM - 12:15 PM	13	194	37	8	10	165	2	0	6	7	23	0	17	5	16	0
12:15 PM - 12:30 PM	10	201	27	2	11	172	5	0	3	3	8	0	22	3	20	0
12:30 PM - 12:45 PM	7	184	42	2	20	166	2	4	3	5	20	0	26	3	28	2
12:45 PM - 1:00 PM	8	158	27	2	19	157	4	2	1	3	18	0	24	7	28	1
TOTAL	**94**	**1461**	**266**	**20**	**110**	**1325**	**20**	**7**	**21**	**45**	**124**	**0**	**199**	**41**	**150**	**4**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:15 PM - 5:15 PM	44	623	242	6	55	657	7	0	7	15	43	2	128	18	97	2
11:45 AM - 12:45 PM	45	755	144	16	48	695	11	4	15	22	61	0	91	13	80	2

	PHF	Trucks
PM (Weekday)	0.911	0.5%
MID (Saturday)	0.978	1.1%



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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

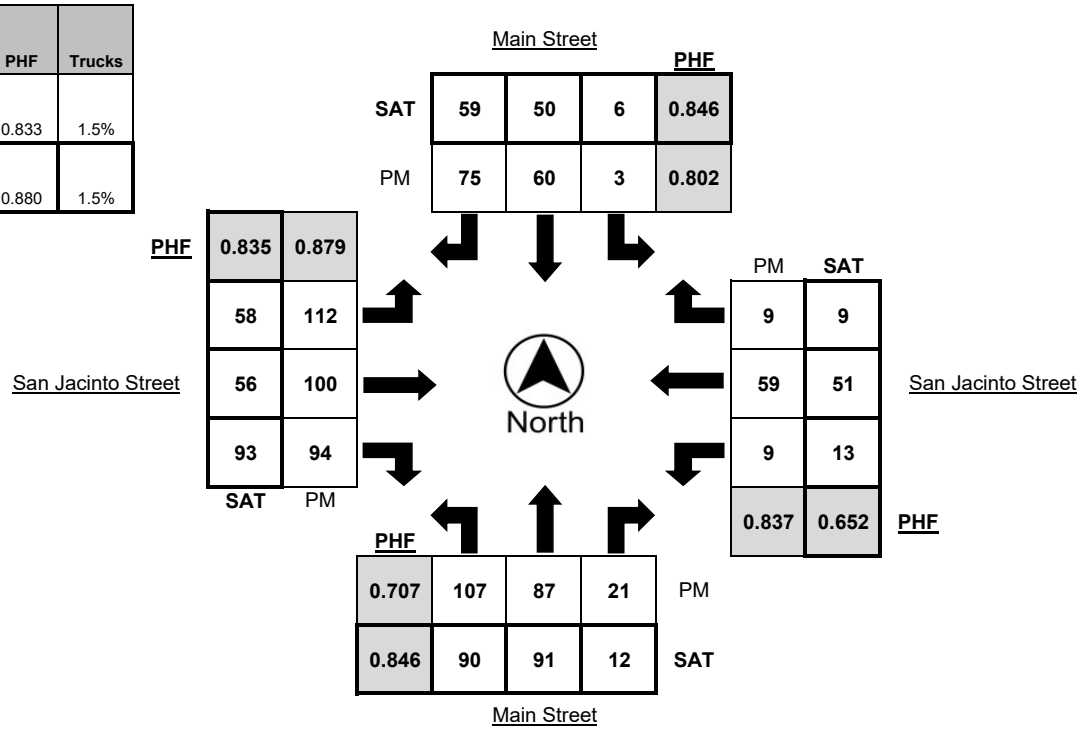
LOCATION Main Street @ San Jacinto Street
LATITUDE 35.393822°
COUNTY San Luis Obispo
LONGITUDE -120.860094°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	29	18	2	0	3	13	17	0	15	18	36	3	5	8	2	0
4:15 PM - 4:30 PM	35	34	7	2	1	19	23	1	32	23	27	3	2	16	2	1
4:30 PM - 4:45 PM	21	18	5	1	1	16	15	1	13	25	23	0	3	16	2	1
4:45 PM - 5:00 PM	23	21	2	0	0	12	19	0	38	27	22	0	1	11	1	0
5:00 PM - 5:15 PM	28	14	7	0	1	13	18	0	29	25	22	1	3	16	4	0
5:15 PM - 5:30 PM	16	21	5	0	1	18	18	0	28	22	30	1	7	16	2	0
5:30 PM - 5:45 PM	15	20	5	0	0	13	16	0	25	21	21	1	2	16	2	0
5:45 PM - 6:00 PM	18	15	5	1	0	13	13	0	20	24	22	0	4	8	2	0
TOTAL	**185**	**161**	**38**	**4**	**7**	**117**	**139**	**2**	**200**	**185**	**203**	**9**	**27**	**107**	**17**	**2**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	10	14	5	1	2	18	12	0	11	22	19	0	5	15	3	1
11:15 AM - 11:30 AM	16	16	4	0	2	15	26	0	25	10	26	1	3	15	1	0
11:30 AM - 11:45 AM	14	20	5	2	1	23	18	0	15	11	21	1	1	15	3	1
11:45 AM - 12:00 PM	22	23	1	0	0	7	15	0	22	13	16	0	3	12	4	0
12:00 PM - 12:15 PM	17	22	2	0	2	12	13	0	21	14	14	0	2	8	4	1
12:15 PM - 12:30 PM	22	27	3	0	1	12	13	0	12	15	18	1	1	12	0	0
12:30 PM - 12:45 PM	21	19	3	0	1	16	17	0	19	13	30	3	9	16	3	2
12:45 PM - 1:00 PM	30	23	4	1	2	10	16	0	6	14	31	0	1	15	2	1
TOTAL	**152**	**164**	**27**	**4**	**11**	**113**	**130**	**0**	**131**	**112**	**175**	**6**	**25**	**108**	**20**	**6**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:15 PM - 5:15 PM	107	87	21	3	3	60	75	2	112	100	94	4	9	59	9	2
12:00 PM - 1:00 PM	90	91	12	1	6	50	59	0	58	56	93	4	13	51	9	4

	PHF	Trucks
PM (Weekday)	0.833	1.5%
MID (Saturday)	0.880	1.5%



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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

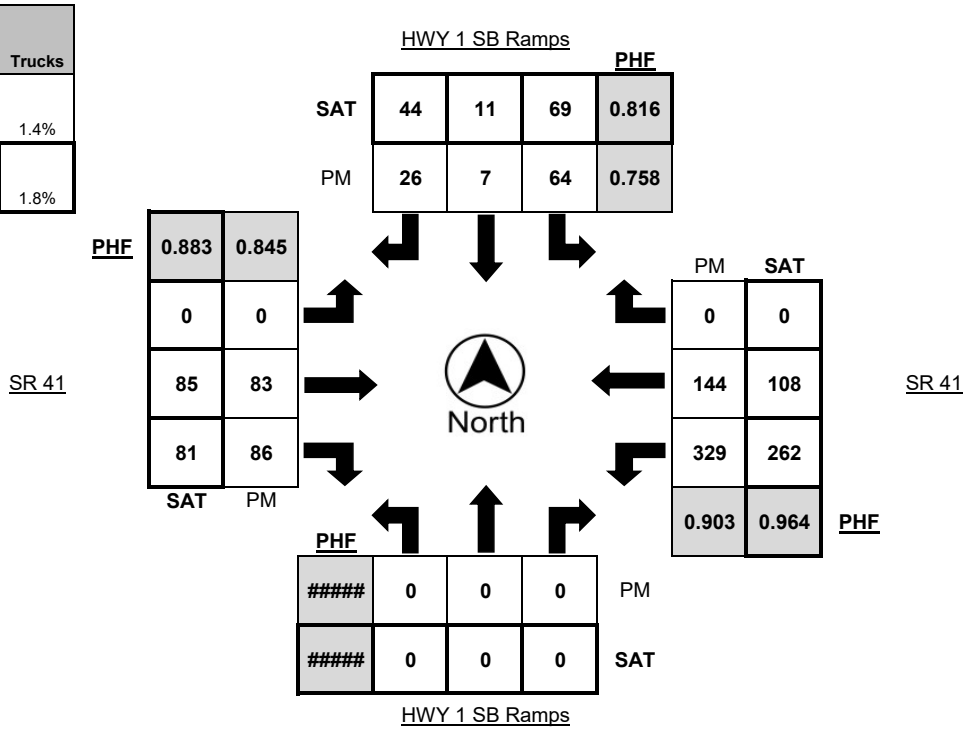
LOCATION HWY 1 SB Ramps @ SR 41
LATITUDE 35.379964°
COUNTY San Luis Obispo
LONGITUDE -120.855947°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	0	8	4	3	0	0	14	19	1	73	29	0	6
4:15 PM - 4:30 PM	0	0	0	0	18	4	3	2	0	22	28	0	88	35	0	0
4:30 PM - 4:45 PM	0	0	0	0	16	2	8	1	0	21	20	0	60	37	0	2
4:45 PM - 5:00 PM	0	0	0	0	22	1	9	0	0	22	17	1	96	35	0	1
5:00 PM - 5:15 PM	0	0	0	0	8	0	6	0	0	18	21	0	85	37	0	3
5:15 PM - 5:30 PM	0	0	0	0	16	0	5	0	0	23	24	1	64	27	0	3
5:30 PM - 5:45 PM	0	0	0	0	22	1	8	2	0	25	30	0	68	27	0	1
5:45 PM - 6:00 PM	0	0	0	0	12	1	6	0	0	27	26	1	63	39	0	1
TOTAL	**0**	**0**	**0**	**0**	**122**	**13**	**48**	**5**	**0**	**172**	**185**	**4**	**597**	**266**	**0**	**17**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	0	0	0	0	19	3	10	0	0	34	21	3	53	28	0	1
11:15 AM - 11:30 AM	0	0	0	0	26	4	3	0	0	17	20	4	48	19	0	0
11:30 AM - 11:45 AM	0	0	0	0	16	3	5	0	0	20	15	4	44	26	0	2
11:45 AM - 12:00 PM	0	0	0	0	21	0	5	0	0	14	15	0	60	34	0	3
12:00 PM - 12:15 PM	0	0	0	0	15	0	11	0	0	21	26	1	66	28	0	1
12:15 PM - 12:30 PM	0	0	0	0	11	1	11	0	0	28	13	0	67	24	0	1
12:30 PM - 12:45 PM	0	0	0	0	25	2	11	3	0	16	22	1	60	29	0	1
12:45 PM - 1:00 PM	0	0	0	0	18	8	11	0	0	20	20	2	69	27	0	2
TOTAL	**0**	**0**	**0**	**0**	**151**	**21**	**67**	**3**	**0**	**170**	**152**	**15**	**467**	**215**	**0**	**11**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:15 PM - 5:15 PM	0	0	0	0	64	7	26	3	0	83	86	1	329	144	0	6
12:00 PM - 1:00 PM	0	0	0	0	69	11	44	3	0	85	81	4	262	108	0	5

	PHF	Trucks
PM (Weekday)	0.915	1.4%
MID (Saturday)	0.954	1.8%



Metro Traffic Data Inc.
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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

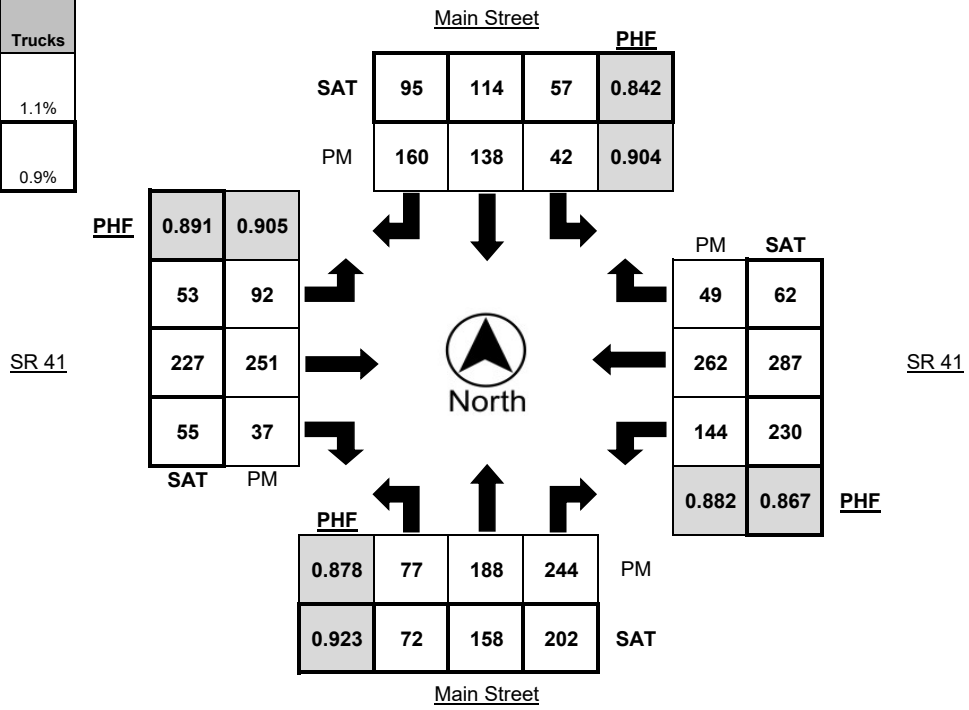
LOCATION Main Street @ SR 41
LATITUDE 35.380211°
COUNTY San Luis Obispo
LONGITUDE -120.854876°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	15	42	54	2	7	39	29	2	17	46	8	1	43	64	14	2
4:15 PM - 4:30 PM	23	59	63	0	12	35	40	1	17	64	9	3	32	67	11	1
4:30 PM - 4:45 PM	11	36	45	0	6	48	25	1	26	61	9	0	38	67	13	3
4:45 PM - 5:00 PM	19	52	59	3	12	27	41	0	22	70	13	0	45	72	12	1
5:00 PM - 5:15 PM	24	41	77	2	12	28	54	3	27	56	6	0	29	56	13	1
5:15 PM - 5:30 PM	13	50	67	1	6	31	32	0	26	51	10	0	32	62	9	1
5:30 PM - 5:45 PM	16	38	50	3	8	19	23	1	29	64	13	0	30	72	5	0
5:45 PM - 6:00 PM	13	35	43	1	10	26	26	0	31	58	19	2	29	68	9	2
TOTAL	**134**	**353**	**458**	**12**	**73**	**253**	**270**	**8**	**195**	**470**	**87**	**6**	**278**	**528**	**86**	**11**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	8	42	53	0	17	29	28	0	16	37	15	2	57	67	14	2
11:15 AM - 11:30 AM	16	37	44	2	9	36	23	0	16	48	19	0	37	56	15	4
11:30 AM - 11:45 AM	21	40	46	3	9	31	26	1	18	56	12	0	57	66	8	1
11:45 AM - 12:00 PM	19	34	47	2	8	30	31	0	19	55	14	2	53	70	9	0
12:00 PM - 12:15 PM	19	39	55	2	19	25	25	0	11	44	10	0	44	66	16	0
12:15 PM - 12:30 PM	16	44	44	1	10	18	25	1	16	62	16	0	64	71	19	0
12:30 PM - 12:45 PM	18	28	52	1	11	35	19	0	10	61	13	3	61	87	19	0
12:45 PM - 1:00 PM	19	47	51	0	17	36	26	2	16	60	16	1	61	63	8	3
TOTAL	**136**	**311**	**392**	**11**	**100**	**240**	**203**	**4**	**122**	**423**	**115**	**8**	**434**	**546**	**108**	**10**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:15 PM - 5:15 PM	77	188	244	5	42	138	160	5	92	251	37	3	144	262	49	6
12:00 PM - 1:00 PM	72	158	202	4	57	114	95	3	53	227	55	4	230	287	62	3

	PHF	Trucks
PM (Weekday)	0.948	1.1%
MID (Saturday)	0.960	0.9%



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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

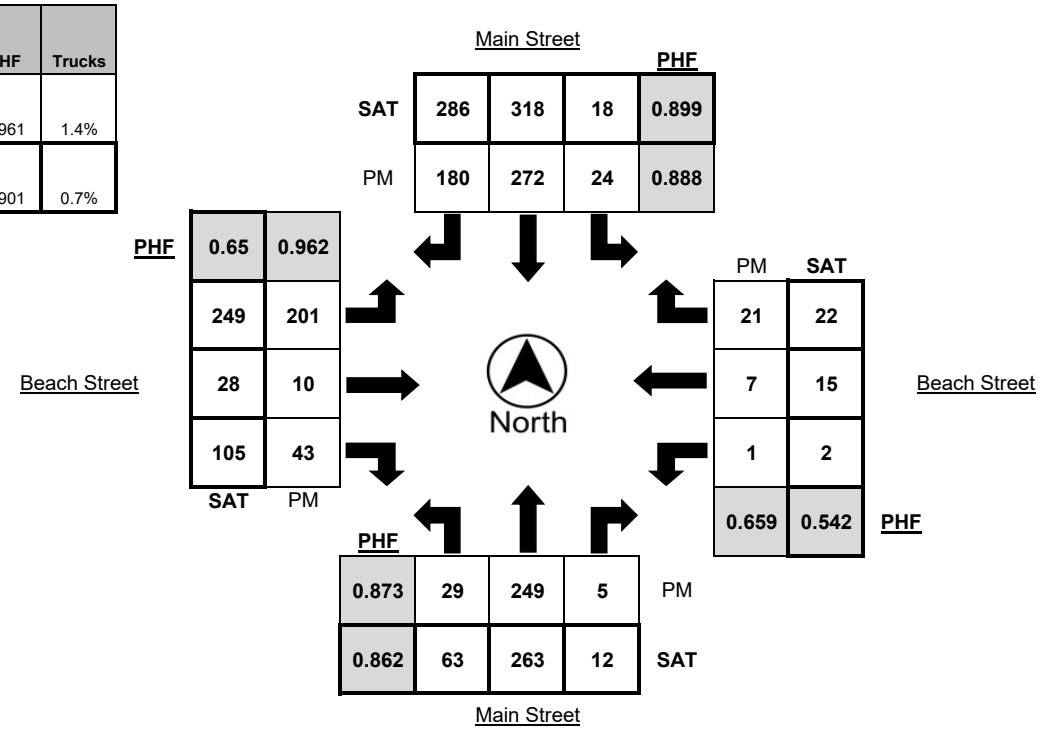
LOCATION Main Street @ Beach Street
LATITUDE 35.368778°
COUNTY San Luis Obispo
LONGITUDE -120.850038°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	7	52	0	2	14	71	49	1	56	1	9	2	0	2	1	0
4:15 PM - 4:30 PM	5	74	1	2	5	67	43	0	50	3	12	0	1	1	9	0
4:30 PM - 4:45 PM	7	55	1	1	2	66	41	2	45	2	15	1	0	3	4	0
4:45 PM - 5:00 PM	10	68	3	2	3	68	47	0	50	4	7	2	0	1	7	0
5:00 PM - 5:15 PM	14	64	1	0	2	49	32	2	45	5	10	1	1	4	7	0
5:15 PM - 5:30 PM	15	54	1	0	7	52	40	0	38	3	9	0	0	1	4	0
5:30 PM - 5:45 PM	13	45	0	0	4	62	31	0	45	3	17	3	0	2	5	0
5:45 PM - 6:00 PM	10	39	0	0	3	51	35	1	35	3	12	0	0	0	4	0
TOTAL	**81**	**451**	**7**	**7**	**40**	**486**	**318**	**6**	**364**	**24**	**91**	**9**	**2**	**14**	**41**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	18	48	4	1	4	71	73	3	52	5	21	0	1	5	9	0
11:15 AM - 11:30 AM	15	56	4	2	6	73	59	3	56	0	11	1	2	3	7	0
11:30 AM - 11:45 AM	13	60	0	2	4	72	61	0	57	5	22	1	1	0	3	0
11:45 AM - 12:00 PM	14	63	2	0	4	85	82	0	46	5	26	0	1	6	6	0
12:00 PM - 12:15 PM	17	78	3	0	3	73	67	2	55	6	22	0	0	1	4	0
12:15 PM - 12:30 PM	18	61	4	2	2	74	59	1	98	9	40	3	1	8	9	0
12:30 PM - 12:45 PM	14	61	3	1	9	86	78	0	50	8	17	1	0	0	3	0
12:45 PM - 1:00 PM	9	66	1	0	3	78	80	4	63	10	14	0	2	1	5	0
TOTAL	**118**	**493**	**21**	**8**	**35**	**612**	**559**	**13**	**477**	**48**	**173**	**6**	**8**	**24**	**46**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 5:00 PM	29	249	5	7	24	272	180	3	201	10	43	5	1	7	21	0
11:45 AM - 12:45 PM	63	263	12	3	18	318	286	3	249	28	105	4	2	15	22	0

	PHF	Trucks
PM (Weekday)	0.961	1.4%
MID (Saturday)	0.901	0.7%



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Turning Movement Report

Prepared For:
Central Coast Transportation Consulting
895 Napa Avenue, Suite A-6
Morro Bay, CA 93442

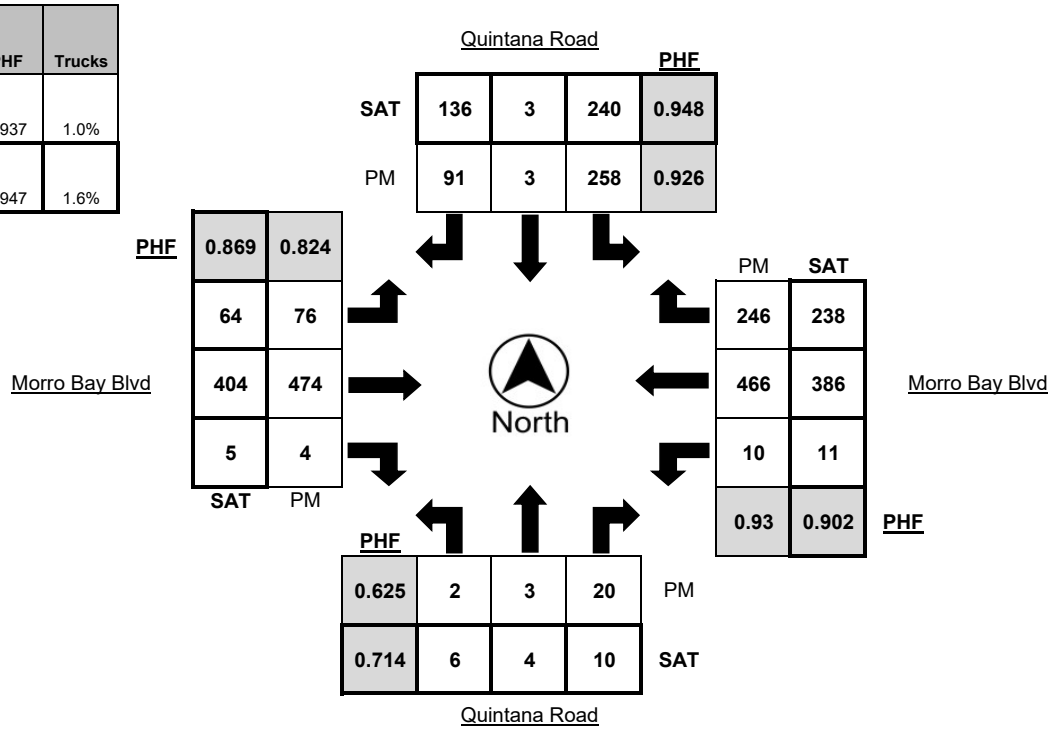
LOCATION Morro Bay Blvd @ Quintana Road
LATITUDE 35.366452°
COUNTY San Luis Obispo
LONGITUDE -120.841059°
COLLECTION DATE Thursday 3/17/16 & Saturday 3/19/16
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time (Weekday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	1	4	0	62	0	27	0	21	106	2	2	3	109	62	1
4:15 PM - 4:30 PM	1	1	8	0	69	2	24	0	20	90	0	2	3	124	67	2
4:30 PM - 4:45 PM	0	0	3	0	66	0	22	1	23	144	1	4	3	117	62	2
4:45 PM - 5:00 PM	1	1	5	0	61	1	18	0	12	134	1	0	1	116	55	3
5:00 PM - 5:15 PM	0	0	1	0	51	2	23	1	18	112	1	3	0	120	59	2
5:15 PM - 5:30 PM	2	0	2	0	63	1	25	0	9	112	0	2	1	108	78	1
5:30 PM - 5:45 PM	1	1	7	0	33	0	17	0	18	119	1	3	2	121	59	2
5:45 PM - 6:00 PM	1	1	1	0	67	0	35	1	13	85	1	0	0	104	67	2
TOTAL	**6**	**5**	**31**	**0**	**472**	**6**	**191**	**3**	**134**	**902**	**7**	**16**	**13**	**919**	**509**	**15**

	Northbound				Southbound				Eastbound				Westbound			
Time (Saturday)	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
11:00 AM - 11:15 AM	1	3	1	0	25	0	9	1	20	88	0	2	0	70	51	1
11:15 AM - 11:30 AM	2	0	4	0	74	1	30	5	19	83	0	0	0	93	55	0
11:30 AM - 11:45 AM	0	0	6	0	50	1	21	0	21	107	1	2	0	89	44	2
11:45 AM - 12:00 PM	2	0	1	1	63	0	37	4	13	76	3	1	5	101	70	1
12:00 PM - 12:15 PM	1	2	4	0	58	2	39	2	16	106	1	3	1	105	53	5
12:15 PM - 12:30 PM	2	2	2	0	54	1	33	0	19	103	0	4	1	86	47	1
12:30 PM - 12:45 PM	1	0	3	0	65	0	27	1	16	119	1	1	4	94	68	0
12:45 PM - 1:00 PM	0	0	2	0	57	0	34	1	12	86	0	0	0	108	69	0
TOTAL	**9**	**7**	**23**	**1**	**446**	**5**	**230**	**14**	**136**	**768**	**6**	**13**	**11**	**746**	**457**	**10**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 5:00 PM	2	3	20	0	258	3	91	1	76	474	4	8	10	466	246	8
11:45 AM - 12:45 PM	6	4	10	1	240	3	136	7	64	404	5	9	11	386	238	7

	PHF	Trucks
PM (Weekday)	0.937	1.0%
MID (Saturday)	0.947	1.6%



Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	5.3 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.8 MPH
Mean Speed:	20.4 MPH	Percent in Ten Mile Pace:	78.3%		
Median Speed:	20.7 MPH			15th Percentile:	15.9 MPH
Modal Speed:	22.5 MPH			90th Percentile:	26.3 MPH
				95th Percentile:	28.4 MPH

Daily Southbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	5.9 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	31.2 MPH
Mean Speed:	25.5 MPH	Percent in Ten Mile Pace:	69.3%		
Median Speed:	26.0 MPH			15th Percentile:	20.5 MPH
Modal Speed:	27.5 MPH			90th Percentile:	32.7 MPH
				95th Percentile:	34.2 MPH

Daily Southbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	6.4 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	31.1 MPH
Mean Speed:	25.0 MPH	Percent in Ten Mile Pace:	64.2%		
Median Speed:	25.6 MPH			15th Percentile:	18.9 MPH
Modal Speed:	27.5 MPH			90th Percentile:	32.7 MPH
				95th Percentile:	34.4 MPH

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	5.0 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	21.9 MPH
Mean Speed:	17.1 MPH	Percent in Ten Mile Pace:	74.6%		
Median Speed:	17.5 MPH			15th Percentile:	11.6 MPH
Modal Speed:	17.5 MPH			90th Percentile:	23.1 MPH
				95th Percentile:	24.4 MPH

Daily Northbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	7.5 MPH	Ten Mile Pace:	25 to 34 MPH	85th Percentile:	34.5 MPH
Mean Speed:	27.7 MPH	Percent in Ten Mile Pace:	59.4%		
Median Speed:	28.1 MPH			15th Percentile:	20.9 MPH
Modal Speed:	27.5 MPH			90th Percentile:	36.3 MPH
				95th Percentile:	38.8 MPH

Daily Northbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	7.4 MPH	Ten Mile Pace:	25 to 34 MPH	85th Percentile:	33.7 MPH
Mean Speed:	26.7 MPH	Percent in Ten Mile Pace:	58.1%		
Median Speed:	27.6 MPH			15th Percentile:	19.6 MPH
Modal Speed:	27.5 MPH			90th Percentile:	34.7 MPH
				95th Percentile:	37.2 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	5.4 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	23.9 MPH
Mean Speed:	18.9 MPH	Percent in Ten Mile Pace:	76.6%		
Median Speed:	18.9 MPH			15th Percentile:	14.8 MPH
Modal Speed:	17.5 MPH			90th Percentile:	24.7 MPH
				95th Percentile:	27.2 MPH

Daily Total Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	6.8 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	33.0 MPH
Mean Speed:	26.5 MPH	Percent in Ten Mile Pace:	60.9%		
Median Speed:	26.9 MPH			15th Percentile:	20.7 MPH
Modal Speed:	27.5 MPH			90th Percentile:	34.3 MPH
				95th Percentile:	36.8 MPH

Daily Total Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Kern Avenue between Anchor Street and Olive Street

Posted Speed: 25

Standard Deviation:	6.9 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	32.7 MPH
Mean Speed:	25.7 MPH	Percent in Ten Mile Pace:	57.7%		
Median Speed:	26.5 MPH			15th Percentile:	19.2 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.9 MPH
				95th Percentile:	35.5 MPH

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.3 MPH	Ten Mile Pace:	25 to 34 MPH	85th Percentile:	33.4 MPH
Mean Speed:	28.0 MPH	Percent in Ten Mile Pace:	68.6%		
Median Speed:	28.0 MPH			15th Percentile:	22.5 MPH
Modal Speed:	27.5 MPH			90th Percentile:	34.3 MPH
				95th Percentile:	36.1 MPH

Daily Southbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.5 MPH	Ten Mile Pace:	25 to 34 MPH	85th Percentile:	33.5 MPH
Mean Speed:	27.9 MPH	Percent in Ten Mile Pace:	66.3%		
Median Speed:	27.8 MPH			15th Percentile:	22.3 MPH
Modal Speed:	27.5 MPH			90th Percentile:	34.5 MPH
				95th Percentile:	37.0 MPH

Daily Southbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.5 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	33.1 MPH
Mean Speed:	27.4 MPH	Percent in Ten Mile Pace:	65.4%		
Median Speed:	27.4 MPH			15th Percentile:	21.9 MPH
Modal Speed:	27.5 MPH			90th Percentile:	34.2 MPH
				95th Percentile:	36.2 MPH

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	4.9 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	31.8 MPH
Mean Speed:	26.8 MPH	Percent in Ten Mile Pace:	70.8%		
Median Speed:	27.0 MPH			15th Percentile:	21.6 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.1 MPH
				95th Percentile:	34.3 MPH

Daily Northbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.1 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	32.0 MPH
Mean Speed:	26.8 MPH	Percent in Ten Mile Pace:	70.9%		
Median Speed:	26.9 MPH			15th Percentile:	21.6 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.3 MPH
				95th Percentile:	34.5 MPH

Daily Northbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.4 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	31.9 MPH
Mean Speed:	26.5 MPH	Percent in Ten Mile Pace:	68.8%		
Median Speed:	26.8 MPH			15th Percentile:	21.2 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.1 MPH
				95th Percentile:	34.4 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.1 MPH	Ten Mile Pace:	25 to 34 MPH	85th Percentile:	32.7 MPH
Mean Speed:	27.3 MPH	Percent in Ten Mile Pace:	67.4%		
Median Speed:	27.5 MPH			15th Percentile:	22.0 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.8 MPH
				95th Percentile:	34.8 MPH

Daily Total Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.3 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	32.7 MPH
Mean Speed:	27.3 MPH	Percent in Ten Mile Pace:	67.1%		
Median Speed:	27.3 MPH			15th Percentile:	21.9 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.9 MPH
				95th Percentile:	35.4 MPH

Daily Total Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Piney Way between South Street and Vista Street

Posted Speed: 25

Standard Deviation:	5.5 MPH	Ten Mile Pace:	20 to 29 MPH	85th Percentile:	32.5 MPH
Mean Speed:	26.9 MPH	Percent in Ten Mile Pace:	67.2%		
Median Speed:	27.1 MPH			15th Percentile:	21.5 MPH
Modal Speed:	27.5 MPH			90th Percentile:	33.7 MPH
				95th Percentile:	34.9 MPH

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.8 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	28.3 MPH
Mean Speed:	21.4 MPH	Percent in Ten Mile Pace:	56.5%		
Median Speed:	21.7 MPH			15th Percentile:	15.1 MPH
Modal Speed:	22.5 MPH			90th Percentile:	29.5 MPH
				95th Percentile:	32.2 MPH

Daily Southbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.4 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	26.6 MPH
Mean Speed:	19.9 MPH	Percent in Ten Mile Pace:	60.7%		
Median Speed:	20.2 MPH			15th Percentile:	12.9 MPH
Modal Speed:	22.5 MPH			90th Percentile:	28.0 MPH
				95th Percentile:	29.5 MPH

Daily Southbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.2 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.7 MPH
Mean Speed:	18.6 MPH	Percent in Ten Mile Pace:	63.5%		
Median Speed:	18.7 MPH			15th Percentile:	11.5 MPH
Modal Speed:	17.5 MPH			90th Percentile:	26.5 MPH
				95th Percentile:	28.7 MPH

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.0 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	27.3 MPH
Mean Speed:	21.1 MPH	Percent in Ten Mile Pace:	62.6%		
Median Speed:	21.5 MPH			15th Percentile:	15.5 MPH
Modal Speed:	22.5 MPH			90th Percentile:	28.4 MPH
				95th Percentile:	29.6 MPH

Daily Northbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.3 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	26.0 MPH
Mean Speed:	19.6 MPH	Percent in Ten Mile Pace:	62.0%		
Median Speed:	19.9 MPH			15th Percentile:	12.5 MPH
Modal Speed:	17.5 MPH			90th Percentile:	27.6 MPH
				95th Percentile:	29.3 MPH

Daily Northbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	5.8 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	25.4 MPH
Mean Speed:	19.5 MPH	Percent in Ten Mile Pace:	67.4%		
Median Speed:	19.4 MPH			15th Percentile:	14.2 MPH
Modal Speed:	17.5 MPH			90th Percentile:	27.0 MPH
				95th Percentile:	28.7 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.5 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	28.0 MPH
Mean Speed:	21.3 MPH	Percent in Ten Mile Pace:	58.9%		
Median Speed:	21.6 MPH			15th Percentile:	15.3 MPH
Modal Speed:	22.5 MPH			90th Percentile:	29.1 MPH
				95th Percentile:	31.2 MPH

Daily Total Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.4 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	26.4 MPH
Mean Speed:	19.8 MPH	Percent in Ten Mile Pace:	61.2%		
Median Speed:	20.1 MPH			15th Percentile:	12.8 MPH
Modal Speed:	22.5 MPH			90th Percentile:	27.9 MPH
				95th Percentile:	29.5 MPH

Daily Total Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Beachcomber Street between Mindoro Street and Luzon Street
Posted Speed: 25

Standard Deviation:	6.0 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	25.0 MPH
Mean Speed:	19.0 MPH	Percent in Ten Mile Pace:	65.1%		
Median Speed:	19.0 MPH			15th Percentile:	12.5 MPH
Modal Speed:	17.5 MPH			90th Percentile:	26.8 MPH
				95th Percentile:	28.7 MPH

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/17/2016

Unit ID:

Location: Greenwood Avenue between Elena Street and San Joaquin Street

Posted Speed: 25

Standard Deviation:	6.0 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	25.1 MPH
Mean Speed:	19.4 MPH	Percent in Ten Mile Pace:	66.0%		
Median Speed:	19.8 MPH			15th Percentile:	12.9 MPH
Modal Speed:	22.5 MPH			90th Percentile:	26.9 MPH
				95th Percentile:	28.8 MPH

Daily Southbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	5.7 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.7 MPH
Mean Speed:	19.3 MPH	Percent in Ten Mile Pace:	70.4%		
Median Speed:	19.4 MPH			15th Percentile:	13.9 MPH
Modal Speed:	17.5 MPH			90th Percentile:	26.2 MPH
				95th Percentile:	28.3 MPH

Daily Southbound Speeds (MPH)

Study Date: Saturday, 03/19/2016

Unit ID:

Location: Greenwood Avenue between Elena Street and San Joaquin Street

Posted Speed: 25

Standard Deviation:	6.1 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.3 MPH
Mean Speed:	18.2 MPH	Percent in Ten Mile Pace:	64.6%		
Median Speed:	18.2 MPH			15th Percentile:	11.2 MPH
Modal Speed:	17.5 MPH			90th Percentile:	25.7 MPH
				95th Percentile:	28.0 MPH

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	5.8 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	26.9 MPH
Mean Speed:	20.8 MPH	Percent in Ten Mile Pace:	65.1%		
Median Speed:	21.1 MPH			15th Percentile:	15.4 MPH
Modal Speed:	22.5 MPH			90th Percentile:	28.2 MPH
				95th Percentile:	29.4 MPH

Daily Northbound Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	5.5 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	27.0 MPH
Mean Speed:	21.4 MPH	Percent in Ten Mile Pace:	68.9%		
Median Speed:	21.5 MPH			15th Percentile:	16.2 MPH
Modal Speed:	22.5 MPH			90th Percentile:	28.2 MPH
				95th Percentile:	29.4 MPH

Daily Northbound Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	6.2 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.4 MPH
Mean Speed:	18.5 MPH	Percent in Ten Mile Pace:	64.2%		
Median Speed:	18.6 MPH			15th Percentile:	11.1 MPH
Modal Speed:	17.5 MPH			90th Percentile:	25.9 MPH
				95th Percentile:	28.4 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/17/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	6.0 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	26.3 MPH
Mean Speed:	20.2 MPH	Percent in Ten Mile Pace:	65.5%	15th Percentile:	15.0 MPH
Median Speed:	20.6 MPH			90th Percentile:	27.8 MPH
Modal Speed:	22.5 MPH			95th Percentile:	29.2 MPH

Daily Total Speeds (MPH)

Study Date: Friday, 03/18/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	5.7 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	25.9 MPH
Mean Speed:	20.3 MPH	Percent in Ten Mile Pace:	69.7%		
Median Speed:	20.4 MPH			15th Percentile:	15.4 MPH
Modal Speed:	22.5 MPH			90th Percentile:	27.5 MPH
				95th Percentile:	29.0 MPH

Daily Total Speeds (MPH)

Study Date: Saturday, 03/19/2016
Unit ID:
Location: Greenwood Avenue between Elena Street and San Joaquin Street
Posted Speed: 25

Standard Deviation:	6.1 MPH	Ten Mile Pace:	15 to 24 MPH	85th Percentile:	24.4 MPH
Mean Speed:	18.4 MPH	Percent in Ten Mile Pace:	64.4%		
Median Speed:	18.4 MPH			15th Percentile:	11.3 MPH
Modal Speed:	17.5 MPH			90th Percentile:	25.9 MPH
				95th Percentile:	28.3 MPH

Appendix D3: LOS Calculation Sheets

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	47	161	107	48	685	266	60	722	8
v/c Ratio	0.11	0.14	0.56	0.27	0.21	0.49	0.36	0.26	0.51	0.01
Control Delay	31.8	0.9	38.1	3.9	31.5	18.2	8.9	31.6	18.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	0.9	38.1	3.9	31.5	18.2	8.9	31.6	18.3	0.0
Queue Length 50th (ft)	9	0	63	0	18	127	30	23	134	0
Queue Length 95th (ft)	33	0	#173	17	53	187	87	62	199	0
Internal Link Dist (ft)	656		50			1199			1214	
Turn Bay Length (ft)		70			500		90	450		80
Base Capacity (vph)	995	935	290	393	288	1858	912	288	1858	909
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.56	0.27	0.17	0.37	0.29	0.21	0.39	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	15	43	128	18	97	44	623	242	55	657	7
Future Volume (veh/h)	7	15	43	128	18	97	44	623	242	55	657	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	8	16	47	141	20	107	48	685	266	60	722	8
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	29	59	76	196	28	199	67	1280	573	78	1300	582
Arrive On Green	0.05	0.05	0.05	0.12	0.12	0.12	0.04	0.36	0.36	0.04	0.36	0.36
Sat Flow, veh/h	617	1234	1599	1578	224	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	24	0	47	161	0	107	48	685	266	60	722	8
Grp Sat Flow(s),veh/h/ln	1850	0	1599	1802	0	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	0.7	0.0	1.6	4.8	0.0	3.5	1.5	8.6	7.2	1.9	9.1	0.2
Cycle Q Clear(g_c), s	0.7	0.0	1.6	4.8	0.0	3.5	1.5	8.6	7.2	1.9	9.1	0.2
Prop In Lane	0.33		1.00	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	88	0	76	224	0	199	67	1280	573	78	1300	582
V/C Ratio(X)	0.27	0.00	0.62	0.72	0.00	0.54	0.71	0.54	0.46	0.77	0.56	0.01
Avail Cap(c_a), veh/h	987	0	853	288	0	256	287	1843	824	287	1843	824
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	26.3	23.7	0.0	23.1	26.8	14.3	13.9	26.6	14.3	11.4
Incr Delay (d2), s/veh	1.6	0.0	7.9	6.0	0.0	2.3	13.1	0.3	0.6	15.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.9	2.8	0.0	1.7	1.0	4.2	3.3	1.2	4.5	0.1
LnGrp Delay(d),s/veh	27.5	0.0	34.1	29.7	0.0	25.4	39.9	14.7	14.5	41.6	14.6	11.4
LnGrp LOS	C		C	C		C	D	B	B	D	B	B
Approach Vol, veh/h		71			268			999			790	
Approach Delay, s/veh		31.9			28.0			15.8			16.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	26.1		8.7	8.1	26.5		13.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	9.0	29.0		30.0	9.0	29.0		9.0
Max Q Clear Time (g_c+I1), s	3.9	10.6		3.6	3.5	11.1		6.8
Green Ext Time (p_c), s	0.0	9.6		0.3	0.0	9.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	83	86	329	144	0	0	0	0	64	7	26
Future Vol, veh/h	0	83	86	329	144	0	0	0	0	64	7	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	90	93	358	157	0	0	0	0	70	8	28

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	157	0	0	184	0	0	1009	1056	157
Stage 1	-	-	-	-	-	-	872	872	-
Stage 2	-	-	-	-	-	-	137	184	-
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1429	-	-	1397	-	-	267	226	891
Stage 1	-	-	-	-	-	-	411	369	-
Stage 2	-	-	-	-	-	-	892	749	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1429	-	-	1397	-	-	192	0	891
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	0	-
Stage 1	-	-	-	-	-	-	296	0	-
Stage 2	-	-	-	-	-	-	892	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	28.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1429	-	-	1397	-	-	192	891
HCM Lane V/C Ratio	-	-	-	0.256	-	-	0.402	0.032
HCM Control Delay (s)	0	-	-	8.5	0	-	35.8	9.2
HCM Lane LOS	A	-	-	A	A	-	E	A
HCM 95th %tile Q(veh)	0	-	-	1	-	-	1.8	0.1

Intersection	
Intersection Delay, s/veh	37.6
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	92	251	37	0	144	262	49	0	77	188	244
Future Vol, veh/h	0	92	251	37	0	144	262	49	0	77	188	244
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	1	1	1	2	1	1	1	2	1	1	1
Mvmt Flow	0	97	264	39	0	152	276	52	0	81	198	257
Number of Lanes	0	0	1	0	0	1	1	0	0	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	75.8	32	26.4
HCM LOS	F	D	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	29%	0%	24%	100%	0%	23%	0%
Vol Thru, %	71%	0%	66%	0%	84%	77%	0%
Vol Right, %	0%	100%	10%	0%	16%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	244	380	144	311	180	160
LT Vol	77	0	92	144	0	42	0
Through Vol	188	0	251	0	262	138	0
RT Vol	0	244	37	0	49	0	160
Lane Flow Rate	279	257	400	152	327	189	168
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.703	0.587	1	0.396	0.8	0.496	0.402
Departure Headway (Hd)	9.074	8.23	9.046	9.403	8.792	9.415	8.6
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	402	444	404	387	416	387	423
Service Time	6.738	5.893	7.046	7.061	6.45	7.079	6.263
HCM Lane V/C Ratio	0.694	0.579	0.99	0.393	0.786	0.488	0.397
HCM Control Delay	30.5	21.9	75.8	18.1	38.4	21	16.9
HCM Lane LOS	D	C	F	C	E	C	C
HCM 95th-tile Q	5.2	3.7	12.2	1.8	7.1	2.7	1.9

Intersection				
Intersection Delay, s/veh				
Intersection LOS				

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	42	138	160
Future Vol, veh/h	0	42	138	160
Peak Hour Factor	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	1	1	1
Mvmt Flow	0	44	145	168
Number of Lanes	0	0	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	19.1
HCM LOS	C

Lane

Intersection																
Intersection Delay, s/veh	13.9															
Intersection LOS	B															

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	201	10	43	0	1	7	21	0	29	249	5	0	24	272	180
Future Vol, veh/h	0	201	10	43	0	1	7	21	0	29	249	5	0	24	272	180
Peak Hour Factor	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96
Heavy Vehicles, %	2	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1
Mvmt Flow	0	209	10	45	0	1	7	22	0	30	259	5	0	25	283	188
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	14.3	10.3	15.2	13.2
HCM LOS	B	B	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	10%	0%	95%	0%	3%	8%	0%
Vol Thru, %	90%	0%	5%	0%	24%	92%	0%
Vol Right, %	0%	100%	0%	100%	72%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	278	5	211	43	29	296	180
LT Vol	29	0	201	0	1	24	0
Through Vol	249	0	10	0	7	272	0
RT Vol	0	5	0	43	21	0	180
Lane Flow Rate	290	5	220	45	30	308	188
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.504	0.008	0.435	0.074	0.057	0.516	0.275
Departure Headway (Hd)	6.265	5.5	7.117	5.923	6.821	6.029	5.278
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	573	648	506	603	522	598	679
Service Time	4.021	3.256	4.871	3.676	4.904	3.78	3.028
HCM Lane V/C Ratio	0.506	0.008	0.435	0.075	0.057	0.515	0.277
HCM Control Delay	15.3	8.3	15.3	9.2	10.3	15.1	10
HCM Lane LOS	C	A	C	A	B	C	A
HCM 95th-tile Q	2.8	0	2.2	0.2	0.2	3	1.1

Intersection				
Intersection Delay, s/veh	12.7			
Intersection LOS	B			

Approach	EB	WB	NB	SB
Entry Lanes	1	2	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	589	769	26	374
Demand Flow Rate, veh/h	595	777	26	378
Vehicles Circulating, veh/h	291	87	868	514
Vehicles Exiting, veh/h	601	807	18	350
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.4	8.2	8.3	14.8
Approach LOS	C	A	A	B

Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.659	0.341	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	595	512	265	26	378
Cap Entry Lane, veh/h	845	1036	1036	474	676
Entry HV Adj Factor	0.990	0.990	0.989	0.999	0.989
Flow Entry, veh/h	589	507	262	26	374
Cap Entry, veh/h	836	1026	1024	474	669
V/C Ratio	0.704	0.494	0.256	0.055	0.559
Control Delay, s/veh	17.4	9.4	6.0	8.3	14.8
LOS	C	A	A	A	B
95th %tile Queue, veh	6	3	1	0	3

Summary of All Intervals

Run Number	10	3	5	6	8	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6582	6599	6563	6623	6579	6594
Vehs Exited	6600	6599	6568	6629	6586	6593
Starting Vehs	101	88	95	93	105	96
Ending Vehs	83	88	90	87	98	91
Travel Distance (mi)	2222	2230	2235	2248	2240	2235
Travel Time (hr)	96.0	96.0	98.9	97.4	96.3	96.9
Total Delay (hr)	24.5	24.4	27.1	25.0	24.4	25.1
Total Stops	4632	4617	4656	4614	4628	4630
Fuel Used (gal)	82.1	82.1	82.8	83.0	82.3	82.5

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	10	3	5	6	8	Avg
Vehs Entered	6582	6599	6563	6623	6579	6594
Vehs Exited	6600	6599	6568	6629	6586	6593
Starting Vehs	101	88	95	93	105	96
Ending Vehs	83	88	90	87	98	91
Travel Distance (mi)	2222	2230	2235	2248	2240	2235
Travel Time (hr)	96.0	96.0	98.9	97.4	96.3	96.9
Total Delay (hr)	24.5	24.4	27.1	25.0	24.4	25.1
Total Stops	4632	4617	4656	4614	4628	4630
Fuel Used (gal)	82.1	82.1	82.8	83.0	82.3	82.5

1: Highway 1 & San Jacinto St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	4.0	0.1	0.0	0.0	2.8	0.3	2.8	3.0	0.1	3.1
Total Del/Veh (s)	25.8	26.3	5.5	25.4	20.9	5.2	28.2	12.6	4.5	27.2	12.1	2.6

1: Highway 1 & San Jacinto St Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	12.7

2: Main St & San Jacinto St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	4.1	0.2	3.8	0.2	0.2	0.2	0.1	0.2	0.2
Total Del/Veh (s)	0.7	0.6	0.5	4.4	13.2	2.9	11.8	13.9	8.2	11.9	11.5	7.8

2: Main St & San Jacinto St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	6.7

3: Highway 1 SB Ramps & State Route 41 Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	4.1	0.2
Total Del/Veh (s)	0.9	0.3	4.7	3.4	10.4	12.8	2.5	4.0

4: Main St & State Route 41 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.0	0.9	1.2	3.3	0.7	0.6	0.9	0.9	3.4	0.3	0.3	0.3
Total Del/Veh (s)	17.2	18.3	14.7	9.5	16.3	11.3	12.4	14.8	8.6	18.0	18.5	13.2

4: Main St & State Route 41 Performance by movement

Movement	All
Denied Del/Veh (s)	1.3
Total Del/Veh (s)	14.3

Morro Bay Circulation
SimTraffic Performance Report
Existing PM
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5: Main St & Beach St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.3	3.8	0.1	0.1	0.1	0.2	0.3	3.6	0.5	0.7	3.4
Total Del/Veh (s)	6.4	6.7	3.3	2.2	6.3	3.4	6.9	7.3	2.9	7.1	7.5	4.1

5: Main St & Beach St Performance by movement

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	6.4

6: Morro Bay Blvd & Quintana Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.5	0.5	0.3	1.0	1.0	3.2	0.1	0.2	0.1	0.3	0.4	0.3
Total Del/Veh (s)	7.8	8.3	7.2	5.2	5.2	3.4	6.8	7.2	4.8	7.8	9.5	6.0

6: Morro Bay Blvd & Quintana Rd Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	6.4

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	12.5

Central Coast Transportation Consulting
SimTraffic Report
SimTraffic Performance Report

Intersection: 1: Highway 1 & San Jacinto St

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	55	43	70	56	70	145	108	82	77	154	113	14
Average Queue (ft)	17	18	57	28	28	72	38	28	27	68	35	1
95th Queue (ft)	44	37	81	50	62	127	88	60	59	123	83	6
Link Distance (ft)	684		53	53		1245	1245			1258	1258	
Upstream Blk Time (%)			19	1								
Queuing Penalty (veh)			23	1								
Storage Bay Dist (ft)		70			500			90	450			80
Storage Blk Time (%)	0						1	0			1	
Queuing Penalty (veh)	0						2	1			0	

Intersection: 2: Main St & San Jacinto St

Movement	EB	WB	WB	WB	NB	SB
Directions Served	LTR	L	T	R	LTR	LTR
Maximum Queue (ft)	51	22	56	12	124	104
Average Queue (ft)	9	5	18	3	56	43
95th Queue (ft)	34	20	40	9	107	78
Link Distance (ft)	53		628		952	732
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)		40		40		
Storage Blk Time (%)		0	2			
Queuing Penalty (veh)		0	0			

Intersection: 3: Highway 1 SB Ramps & State Route 41

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	R
Maximum Queue (ft)	5	101	70	29
Average Queue (ft)	0	38	30	13
95th Queue (ft)	3	75	57	34
Link Distance (ft)	671	326	749	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Morro Bay Circulation
Queuing and Blocking Report
Existing PM
5/2/2016

Intersection: 4: Main St & State Route 41

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	204	76	158	126	116	182
Average Queue (ft)	106	39	69	67	58	87
95th Queue (ft)	185	63	125	102	93	160
Link Distance (ft)	326		925	762		738
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		160			100	
Storage Blk Time (%)			0	1	0	
Queuing Penalty (veh)			0	3	1	

Intersection: 5: Main St & Beach St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	LT	R	LT	R
Maximum Queue (ft)	80	31	32	105	21	118	73
Average Queue (ft)	43	17	14	52	4	61	40
95th Queue (ft)	71	33	32	83	17	94	63
Link Distance (ft)	677		629	575		552	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		180			65		75
Storage Blk Time (%)				3		2	0
Queuing Penalty (veh)				0		3	1

Intersection: 6: Morro Bay Blvd & Quintana Rd

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	TR	LTR	LTR
Maximum Queue (ft)	182	89	40	45	130
Average Queue (ft)	69	26	4	18	59
95th Queue (ft)	139	67	22	44	109
Link Distance (ft)	768	692		189	622
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			130		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 36

Central Coast Transportation Consulting
SimTraffic Report
Queuing and Blocking Report

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	62	106	82	46	770	147	49	709	11
v/c Ratio	0.16	0.18	0.40	0.22	0.20	0.46	0.18	0.21	0.42	0.01
Control Delay	32.3	1.2	34.8	1.3	32.5	18.6	3.3	32.6	18.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	1.2	34.8	1.3	32.5	18.6	3.3	32.6	18.1	0.0
Queue Length 50th (ft)	15	0	42	0	18	148	0	19	133	0
Queue Length 95th (ft)	45	0	100	0	52	218	29	54	198	0
Internal Link Dist (ft)	656		50			1199			1214	
Turn Bay Length (ft)		70			500		90	450		80
Base Capacity (vph)	963	914	302	406	300	1934	941	300	1934	941
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.35	0.20	0.15	0.40	0.16	0.16	0.37	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	22	61	91	13	80	45	755	144	48	695	11
Future Volume (veh/h)	15	22	61	91	13	80	45	755	144	48	695	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	15	22	62	93	13	82	46	770	147	49	709	11
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	47	69	101	146	20	148	66	1336	598	68	1342	600
Arrive On Green	0.06	0.06	0.06	0.09	0.09	0.09	0.04	0.37	0.37	0.04	0.38	0.38
Sat Flow, veh/h	747	1096	1599	1581	221	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	37	0	62	106	0	82	46	770	147	49	709	11
Grp Sat Flow(s),veh/h/ln	1844	0	1599	1802	0	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	1.1	0.0	2.1	3.1	0.0	2.7	1.4	9.5	3.5	1.5	8.6	0.2
Cycle Q Clear(g_c), s	1.1	0.0	2.1	3.1	0.0	2.7	1.4	9.5	3.5	1.5	8.6	0.2
Prop In Lane	0.41		1.00	0.88		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	0	101	166	0	148	66	1336	598	68	1342	600
V/C Ratio(X)	0.32	0.00	0.61	0.64	0.00	0.56	0.70	0.58	0.25	0.72	0.53	0.02
Avail Cap(c_a), veh/h	930	0	807	292	0	259	290	1867	835	290	1867	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	25.3	24.3	0.0	24.1	26.4	13.9	12.0	26.4	13.5	10.9
Incr Delay (d2), s/veh	1.5	0.0	5.9	4.0	0.0	3.2	12.7	0.4	0.2	13.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.1	1.7	0.0	1.3	0.9	4.8	1.6	1.0	4.3	0.1
LnGrp Delay(d),s/veh	26.4	0.0	31.2	28.3	0.0	27.3	39.2	14.3	12.2	39.4	13.8	10.9
LnGrp LOS	C		C	C		C	D	B	B	D	B	B
Approach Vol, veh/h		99			188			963			769	
Approach Delay, s/veh		29.4			27.9			15.1			15.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	26.7		9.5	8.0	26.8		11.1
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	9.0	29.0		28.0	9.0	29.0		9.0
Max Q Clear Time (g_c+I1), s	3.5	11.5		4.1	3.4	10.6		5.1
Green Ext Time (p_c), s	0.0	9.2		0.4	0.0	9.5		0.3

Intersection Summary

HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	85	81	262	108	0	0	0	0	69	11	44
Future Vol, veh/h	0	85	81	262	108	0	0	0	0	69	11	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	89	85	276	114	0	0	0	0	73	12	46

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	114	0	0	175	0	0	797	840	114
Stage 1	-	-	-	-	-	-	665	665	-
Stage 2	-	-	-	-	-	-	132	175	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1475	-	-	1401	-	-	356	302	939
Stage 1	-	-	-	-	-	-	511	458	-
Stage 2	-	-	-	-	-	-	894	754	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1475	-	-	1401	-	-	281	0	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	0	-
Stage 1	-	-	-	-	-	-	404	0	-
Stage 2	-	-	-	-	-	-	894	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.8	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1475	-	-	1401	-	-	281	939
HCM Lane V/C Ratio	-	-	-	0.197	-	-	0.3	0.049
HCM Control Delay (s)	0	-	-	8.2	0	-	23.2	9
HCM Lane LOS	A	-	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0	-	-	0.7	-	-	1.2	0.2

Intersection	
Intersection Delay, s/veh	28.3
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	53	227	55	0	230	287	62	0	72	158	202
Future Vol, veh/h	0	53	227	55	0	230	287	62	0	72	158	202
Peak Hour Factor	0.95	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.95	0.96	0.96	0.96
Heavy Vehicles, %	2	1	1	1	2	1	1	1	2	1	1	1
Mvmt Flow	0	55	236	57	0	240	299	65	0	75	165	210
Number of Lanes	0	0	1	0	0	1	1	0	0	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	40.5	32.1	20.5
HCM LOS	E	D	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	31%	0%	16%	100%	0%	33%	0%
Vol Thru, %	69%	0%	68%	0%	82%	67%	0%
Vol Right, %	0%	100%	16%	0%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	230	202	335	230	349	171	95
LT Vol	72	0	53	230	0	57	0
Through Vol	158	0	227	0	287	114	0
RT Vol	0	202	55	0	62	0	95
Lane Flow Rate	240	210	349	240	364	178	99
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.586	0.462	0.822	0.581	0.817	0.456	0.229
Departure Headway (Hd)	8.801	7.909	8.483	8.735	8.089	9.219	8.313
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	410	457	426	414	447	392	432
Service Time	6.545	5.652	6.527	6.48	5.834	6.965	6.058
HCM Lane V/C Ratio	0.585	0.46	0.819	0.58	0.814	0.454	0.229
HCM Control Delay	23.3	17.3	40.5	23	38.1	19.5	13.5
HCM Lane LOS	C	C	E	C	E	C	B
HCM 95th-tile Q	3.6	2.4	7.6	3.6	7.6	2.3	0.9

Intersection				
Intersection Delay, s/veh				
Intersection LOS				

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	57	114	95
Future Vol, veh/h	0	57	114	95
Peak Hour Factor	0.95	0.96	0.96	0.96
Heavy Vehicles, %	2	1	1	1
Mvmt Flow	0	59	119	99
Number of Lanes	0	0	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	17.4
HCM LOS	C

Lane

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	249	28	105	0	2	15	22	0	63	263	12	0	18	318	286
Future Vol, veh/h	0	249	28	105	0	2	15	22	0	63	263	12	0	18	318	286
Peak Hour Factor	0.95	0.90	0.90	0.90	0.95	0.90	0.90	0.90	0.95	0.90	0.90	0.90	0.95	0.90	0.90	0.90
Heavy Vehicles, %	2	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1
Mvmt Flow	0	277	31	117	0	2	17	24	0	70	292	13	0	20	353	318
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	22.4	12.6	29.4	22.5
HCM LOS	C	B	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	19%	0%	90%	0%	5%	5%	0%
Vol Thru, %	81%	0%	10%	0%	38%	95%	0%
Vol Right, %	0%	100%	0%	100%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	326	12	277	105	39	336	286
LT Vol	63	0	249	0	2	18	0
Through Vol	263	0	28	0	15	318	0
RT Vol	0	12	0	105	22	0	286
Lane Flow Rate	362	13	308	117	43	373	318
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.756	0.025	0.685	0.222	0.103	0.736	0.561
Departure Headway (Hd)	7.518	6.699	8.018	6.84	8.54	7.098	6.353
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	482	534	452	525	419	508	569
Service Time	5.265	4.446	5.762	4.583	6.613	4.843	4.096
HCM Lane V/C Ratio	0.751	0.024	0.681	0.223	0.103	0.734	0.559
HCM Control Delay	30.1	9.6	26.5	11.5	12.6	27.2	17
HCM Lane LOS	D	A	D	B	B	D	C
HCM 95th-tile Q	6.4	0.1	5.1	0.8	0.3	6.1	3.4

Intersection				
Intersection Delay, s/veh	10.7			
Intersection LOS	B			

Approach	EB	WB	NB	SB
Entry Lanes	1	2	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	497	669	21	399
Demand Flow Rate, veh/h	507	682	21	407
Vehicles Circulating, veh/h	273	78	759	432
Vehicles Exiting, veh/h	566	702	20	328
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.2	7.2	7.3	13.8
Approach LOS	B	A	A	B

Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.625	0.375	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	507	426	256	21	407
Cap Entry Lane, veh/h	860	1045	1045	529	734
Entry HV Adj Factor	0.981	0.981	0.980	0.996	0.980
Flow Entry, veh/h	497	418	251	21	399
Cap Entry, veh/h	844	1025	1025	527	719
V/C Ratio	0.590	0.408	0.245	0.040	0.555
Control Delay, s/veh	13.2	7.9	5.9	7.3	13.8
LOS	B	A	A	A	B
95th %tile Queue, veh	4	2	1	0	3

Summary of All Intervals

Run Number	1	4	6	7	8	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6779	6849	6836	6810	6857	6828
Vehs Exited	6771	6868	6817	6826	6861	6829
Starting Vehs	86	117	89	95	94	96
Ending Vehs	94	98	108	79	90	90
Travel Distance (mi)	2275	2321	2288	2289	2303	2295
Travel Time (hr)	97.0	99.1	97.5	96.7	97.5	97.6
Total Delay (hr)	23.8	24.9	24.0	23.1	23.5	23.9
Total Stops	4770	4755	4722	4669	4711	4725
Fuel Used (gal)	83.1	84.5	83.4	83.2	83.7	83.6

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	4	6	7	8	Avg
Vehs Entered	6779	6849	6836	6810	6857	6828
Vehs Exited	6771	6868	6817	6826	6861	6829
Starting Vehs	86	117	89	95	94	96
Ending Vehs	94	98	108	79	90	90
Travel Distance (mi)	2275	2321	2288	2289	2303	2295
Travel Time (hr)	97.0	99.1	97.5	96.7	97.5	97.6
Total Delay (hr)	23.8	24.9	24.0	23.1	23.5	23.9
Total Stops	4770	4755	4722	4669	4711	4725
Fuel Used (gal)	83.1	84.5	83.4	83.2	83.7	83.6

1: Highway 1 & San Jacinto St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.3	3.9	0.0	0.0	0.0	2.6	0.3	2.7	2.9	0.2	2.9
Total Del/Veh (s)	28.0	24.9	5.9	22.3	12.2	5.4	28.4	12.3	3.7	29.1	12.5	3.8

1: Highway 1 & San Jacinto St Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	12.6

2: Main St & San Jacinto St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	4.1	0.2	4.1	0.2	0.2	0.2	0.1	0.1	0.1
Total Del/Veh (s)	0.6	0.7	0.5	4.4	9.1	2.2	7.3	9.8	3.7	5.6	10.0	4.3

2: Main St & San Jacinto St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	5.0

3: Highway 1 SB Ramps & State Route 41 Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.3	0.2	4.0	0.3
Total Del/Veh (s)	0.8	0.3	4.7	2.8	8.3	10.6	2.6	3.5

4: Main St & State Route 41 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	0.2	3.3	0.9	0.8	0.8	0.8	3.5	0.3	0.2	0.2
Total Del/Veh (s)	11.7	13.9	9.3	10.4	15.2	9.5	11.6	14.1	7.1	10.8	13.8	7.8

4: Main St & State Route 41 Performance by movement

Movement	All
Denied Del/Veh (s)	1.3
Total Del/Veh (s)	11.8

5: Main St & Beach St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.5	0.5	3.5	0.1	0.1	0.1	0.4	0.3	3.7	1.0	1.0	3.4
Total Del/Veh (s)	8.8	10.0	4.1	7.0	7.2	3.9	8.6	8.6	3.1	9.9	9.4	5.2

5: Main St & Beach St Performance by movement

Movement	All
Denied Del/Veh (s)	1.4
Total Del/Veh (s)	7.7

6: Morro Bay Blvd & Quintana Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.4	0.4	0.9	1.0	3.2	0.1	0.1	0.1	0.3	0.1	0.3
Total Del/Veh (s)	6.1	6.8	5.2	3.9	5.0	3.3	6.6	7.4	4.9	7.2	6.7	5.7

6: Morro Bay Blvd & Quintana Rd Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	5.7

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	11.4

Intersection: 1: Highway 1 & San Jacinto St

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	47	66	69	52	66	158	132	59	72	147	122	16
Average Queue (ft)	20	22	47	24	27	78	43	19	25	72	38	1
95th Queue (ft)	44	45	79	46	56	138	91	43	58	131	89	8
Link Distance (ft)	684		53	53		1245	1245			1258	1258	
Upstream Blk Time (%)			7	0								
Queuing Penalty (veh)			7	0								
Storage Bay Dist (ft)		70			500			90	450			80
Storage Blk Time (%)		0					1				1	
Queuing Penalty (veh)		0					1				0	

Intersection: 2: Main St & San Jacinto St

Movement	EB	WB	WB	WB	NB	SB
Directions Served	LTR	L	T	R	LTR	LTR
Maximum Queue (ft)	49	23	39	12	87	83
Average Queue (ft)	5	6	15	3	42	35
95th Queue (ft)	26	21	31	10	69	59
Link Distance (ft)	53		628		952	732
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)		40		40		
Storage Blk Time (%)		0	0			
Queuing Penalty (veh)		0	0			

Intersection: 3: Highway 1 SB Ramps & State Route 41

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	R
Maximum Queue (ft)	3	65	70	40
Average Queue (ft)	0	31	32	22
95th Queue (ft)	3	63	55	41
Link Distance (ft)	671	326	749	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Main St & State Route 41

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	LT	R	LTR
Maximum Queue (ft)	155	98	154	121	90	115
Average Queue (ft)	78	50	68	63	49	60
95th Queue (ft)	129	84	117	102	76	96
Link Distance (ft)	326		925	762		738
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		160			100	
Storage Blk Time (%)			0	1	0	
Queuing Penalty (veh)			0	2	0	

Intersection: 5: Main St & Beach St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	LT	R	LT	R
Maximum Queue (ft)	141	65	41	113	25	169	131
Average Queue (ft)	61	26	16	60	8	70	56
95th Queue (ft)	107	47	35	95	25	120	91
Link Distance (ft)	677		629	575		552	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		180			65		75
Storage Blk Time (%)	0			5		5	1
Queuing Penalty (veh)	0			1		15	3

Intersection: 6: Morro Bay Blvd & Quintana Rd

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	TR	LTR	LTR
Maximum Queue (ft)	137	74	22	44	148
Average Queue (ft)	59	23	1	14	54
95th Queue (ft)	106	62	12	40	115
Link Distance (ft)	768	692		189	622
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			130		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 30

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Embarcadero Direction Northbound Date 4/26/2016

Limits .000' South of Pacific Street to 1000' North of Beach Stree Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	1000' South of Pacific Street	Pacific Street	0.05	3.28	C	2834.99	1.13	A	2.54	B	#DIV/0!	N/A
2	Pacific Street	Beach Street	0.08	3.72	D	1574.98	1.32	A	2.86	C	#DIV/0!	N/A
3	Beach Street	1000' North of Beach Street	0.10	3.28	C	#DIV/0!	2.10	#DIV/0!	2.73	B	#DIV/0!	N/A
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Embarcadero Direction Southbound Date 4/26/2016

Limits .000' South of Pacific Street to 1000' North of Beach Stree Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	1000' South of Pacific Street	Pacific Street	0.06	3.28	C	4094.99	1.12	A	2.68	B	#DIV/0!	N/A
2	Pacific Street	Beach Street	0.07	3.72	D	3149.99	1.16	A	2.74	B	#DIV/0!	N/A
3	Beach Street	1000' North of Beach Street	0.10	3.02	C	4094.99	1.51	A	2.76	C	#DIV/0!	N/A
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street: Main Street | Direction: Northbound | Date: 4/26/2016

Limits: Radcliff Avenue to Highway 1 Southbound Ramps | Analyst: KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Radcliff Avenue	Highway 1 Southbound Ramps	0.17	3.28	C	944.96	2.56	B	2.34	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street: Main Street | Direction: Southbound | Date: 4/26/2016

Limits: Radcliff Avenue to Highway 1 Southbound Ramps | Analyst: KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Radcliff Avenue	Highway 1 Southbound Ramps	0.23	3.02	C	#DIV/0!	3.79	#DIV/0!	2.48	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Morro Bay Boulevard Direction Eastbound Date 4/26/2016

Limits Quintana Road to Harbor Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Quintana Road	Harbor Street	0.24	3.62	D	4724.99	2.37	B	2.43	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Morro Bay Boulevard Direction Westbound Date 4/26/2016

Limits Quintana Road to Harbor Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Quintana Road	Harbor Street	0.28	3.62	D	4724.99	2.53	B	2.50	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street State Route 41 Direction Eastbound Date 4/26/2016

Limits Main Street to Hill Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Main Street	Hill Street	0.23	3.16	C	#DIV/0!	3.39	#DIV/0!	0.75	A	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street State Route 41 Direction Westbound Date 4/26/2016

Limits Main Street to Hill Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Main Street	Hill Street	0.22	3.16	C	#DIV/0!	3.32	#DIV/0!	0.71	A	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Embarcadero Direction Northbound Date 4/26/2016

Limits .000' South of Pacific Street to 1000' North of Beach Stree Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	1000' South of Pacific Street	Pacific Street	0.07	3.28	C	2834.99	1.32	A	3.12	C	#DIV/0!	N/A
2	Pacific Street	Beach Street	0.09	3.72	D	1574.98	1.51	A	3.38	C	#DIV/0!	N/A
3	Beach Street	1000' North of Beach Street	0.18	3.28	C	#DIV/0!	2.48	#DIV/0!	3.02	C	#DIV/0!	N/A
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Embarcadero Direction Southbound Date 4/26/2016

Limits .000' South of Pacific Street to 1000' North of Beach Stree Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	1000' South of Pacific Street	Pacific Street	0.07	3.28	C	4094.99	1.27	A	3.12	C	#DIV/0!	N/A
2	Pacific Street	Beach Street	0.10	3.72	D	3149.99	1.43	A	3.46	C	#DIV/0!	N/A
3	Beach Street	1000' North of Beach Street	0.15	3.02	C	4094.99	1.77	A	2.97	C	#DIV/0!	N/A
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street: Main Street | Direction: Northbound | Date: 4/26/2016

Limits: Radcliff Avenue to Highway 1 Southbound Ramps | Analyst: KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Radcliff Avenue	Highway 1 Southbound Ramps	0.25	3.28	C	944.96	3.04	C	2.58	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street: Main Street | Direction: Southbound | Date: 4/26/2016

Limits: Radcliff Avenue to Highway 1 Southbound Ramps | Analyst: KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Radcliff Avenue	Highway 1 Southbound Ramps	0.24	3.02	C	#DIV/0!	3.94	#DIV/0!	2.55	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Morro Bay Boulevard Direction Eastbound Date 4/26/2016

Limits Quintana Road to Harbor Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Quintana Road	Harbor Street	0.22	3.62	D	4724.99	2.27	B	2.38	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street Morro Bay Boulevard Direction Westbound Date 4/26/2016

Limits Quintana Road to Harbor Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Quintana Road	Harbor Street	0.26	3.62	D	4724.99	2.47	B	2.47	B	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street State Route 41 Direction Eastbound Date 4/26/2016

Limits Main Street to Hill Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Main Street	Hill Street	0.21	3.16	C	#DIV/0!	3.31	#DIV/0!	0.71	A	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

LOS+ Multimodal Level of Service for Urban Streets
Results Summary

Street State Route 41 Direction Westbound Date 4/26/2016

Limits Main Street to Hill Street Analyst KP

Segment	From	To	Auto Mode			Pedestrian Mode			Bicycle Mode		Transit Mode	
			V/C Ratio	LOS Score	LOS	Ped Space[1]	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
1	Main Street	Hill Street	0.26	3.16	C	#DIV/0!	3.56	#DIV/0!	0.82	A	#DIV/0!	N/A
2												
3												
4												
5												

Note:
1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped)
Source: NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010, Chapter 17

Appendix D4: Model Validation Results

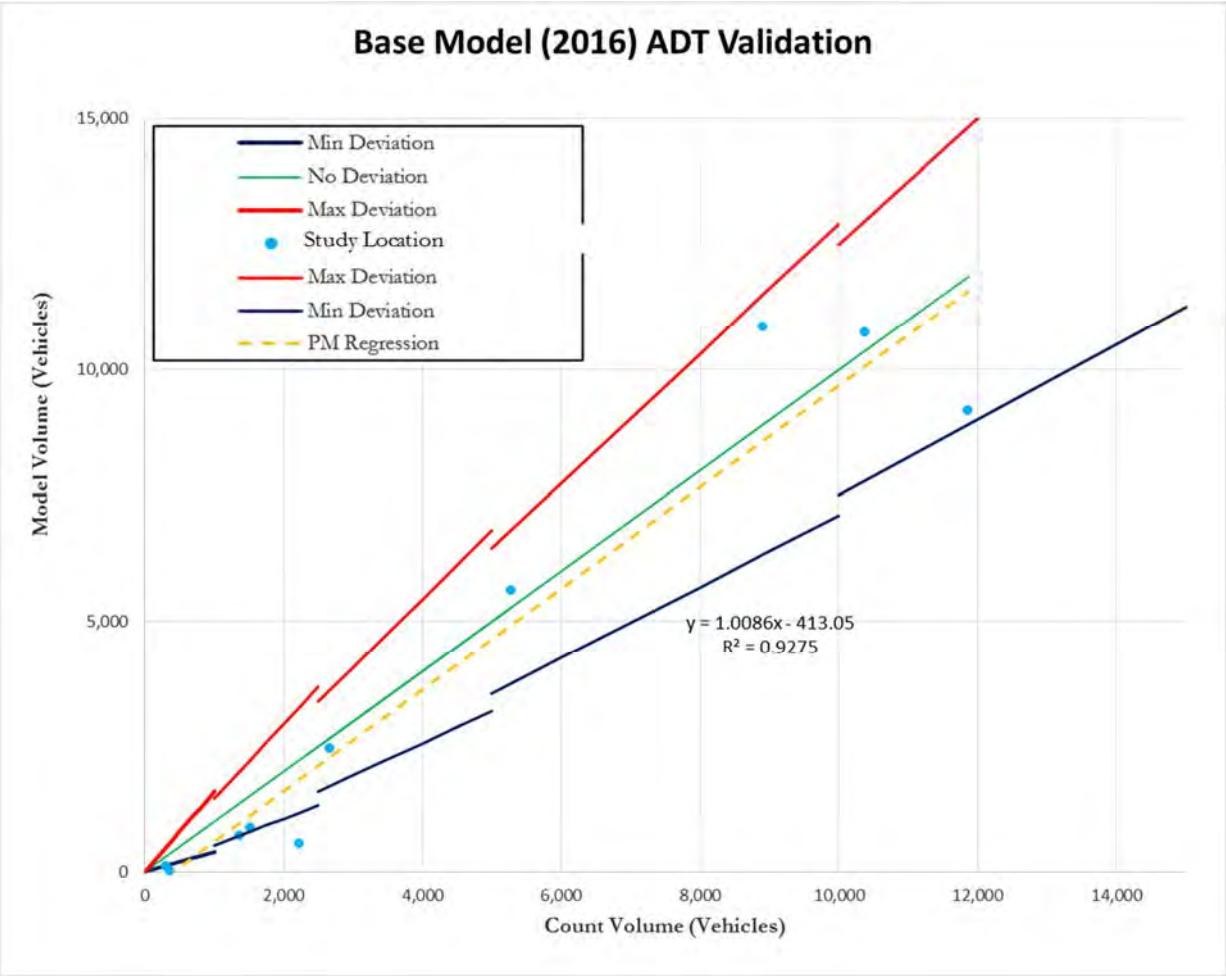

Table 1: Model Validation			
Validation Item	**Criterion for Acceptance**	**Model Results**	
		Daily	**PM**
2-way Sum of All Links Counted	Within ± 25%	-6%	-17.5%
% Within Maxium Deviation	At least 75%	77%	83%
Correlation Coefficient	Greater than 88%	98%	90%
% RMSE*	30-40%	18%	34%

Appendix C

AQ-GHG Emissions Data

Morro Bay General Plan

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	4,761.90	1000sqft	109.32	4,761,900.00	0
Government (Civic Center)	174.30	1000sqft	4.00	174,300.00	0
General Light Industry	374.90	1000sqft	8.61	374,900.00	0
Apartments Low Rise	379.00	Dwelling Unit	23.69	379,000.00	1084
Apartments Mid Rise	448.00	Dwelling Unit	11.79	448,000.00	1281
Condo/Townhouse	6.00	Dwelling Unit	0.38	6,000.00	17
Mobile Home Park	8.00	Dwelling Unit	1.01	9,600.00	23
Single Family Housing	91.00	Dwelling Unit	29.55	163,800.00	260
Strip Mall	552.40	1000sqft	12.68	552,400.00	0
Industrial Park	120.40	1000sqft	2.76	120,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Area Coating - SLOAPCD Rule 433 - limits VOC content to 100 g/L for flat coatings and 150 g/L for traffic Marking Coatings

Area Mitigation - Rule 504 prohibits residential wood-burning

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1634	1.6512	0.9878	1.7300e-003	6.2100e-003	0.0834	0.0896	1.6500e-003	0.0777	0.0793	0.0000	156.5566	156.5566	0.0418	0.0000	157.6026
2019	0.4875	4.9089	2.9582	5.2300e-003	0.4441	0.2484	0.6924	0.2386	0.2305	0.4690	0.0000	467.6534	467.6534	0.1291	0.0000	470.8810
2020	0.5690	6.0684	3.5775	6.7500e-003	2.2302	0.2865	2.5167	0.9468	0.2636	1.2104	0.0000	593.7682	593.7682	0.1862	0.0000	598.4237
2021	0.5576	6.0645	4.1110	8.3200e-003	1.4274	0.2593	1.6867	0.5052	0.2385	0.7437	0.0000	731.4642	731.4642	0.2306	0.0000	737.2297
2022	1.4996	12.7086	12.0725	0.0445	3.6214	0.1744	3.7958	0.9398	0.1629	1.1027	0.0000	4,128.0986	4,128.0986	0.2797	0.0000	4,135.0922

Morro Bay General Plan - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.7233	13.3124	14.1123	0.0576	3.8958	0.1261	4.0220	1.0502	0.1185	1.1687	0.0000	5,367.4005	5,367.4005	0.2745	0.0000	5,374.2640
2024	1.6374	12.9580	13.3232	0.0568	3.9259	0.1141	4.0400	1.0583	0.1072	1.1654	0.0000	5,298.5404	5,298.5404	0.2704	0.0000	5,305.2991
2025	1.5423	12.4800	12.4719	0.0554	3.9110	0.1009	4.0120	1.0543	0.0948	1.1491	0.0000	5,170.3095	5,170.3095	0.2638	0.0000	5,176.9041
2026	1.4771	12.2144	11.8011	0.0543	3.9111	0.0994	4.0105	1.0543	0.0933	1.1476	0.0000	5,073.4964	5,073.4964	0.2595	0.0000	5,079.9827
2027	1.4126	11.9723	11.1743	0.0533	3.9112	0.0976	4.0088	1.0543	0.0917	1.1460	0.0000	4,986.6178	4,986.6178	0.2552	0.0000	4,992.9986
2028	1.3415	11.7159	10.6113	0.0522	3.8963	0.0953	3.9916	1.0503	0.0895	1.1398	0.0000	4,891.1528	4,891.1528	0.2507	0.0000	4,897.4204
2029	1.2780	11.5576	10.1604	0.0517	3.9114	0.0939	4.0052	1.0544	0.0881	1.1425	0.0000	4,841.1860	4,841.1860	0.2481	0.0000	4,847.3889
2030	1.2044	10.7926	9.7395	0.0515	3.9114	0.0428	3.9542	1.0544	0.0412	1.0956	0.0000	4,821.8629	4,821.8629	0.1876	0.0000	4,826.5522
2031	1.1351	10.6344	9.3345	0.0509	3.9115	0.0414	3.9528	1.0544	0.0399	1.0943	0.0000	4,770.4776	4,770.4776	0.1845	0.0000	4,775.0903
2032	1.0760	10.5290	9.0173	0.0506	3.9265	0.0402	3.9667	1.0585	0.0389	1.0973	0.0000	4,744.8268	4,744.8268	0.1825	0.0000	4,749.3886
2033	1.0156	10.3257	8.6547	0.0498	3.8966	0.0388	3.9353	1.0504	0.0375	1.0879	0.0000	4,671.7274	4,671.7274	0.1789	0.0000	4,676.2006
2034	0.9739	10.2183	8.3940	0.0495	3.8966	0.0378	3.9343	1.0504	0.0366	1.0870	0.0000	4,640.5515	4,640.5515	0.1769	0.0000	4,644.9732
2035	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1734	4,632.1734	0.1747	0.0000	4,636.5410
2036	0.9334	10.1046	8.2328	0.0496	3.9266	0.0296	3.9562	1.0585	0.0284	1.0870	0.0000	4,649.9212	4,649.9212	0.1754	0.0000	4,654.3055
2037	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1734	4,632.1734	0.1747	0.0000	4,636.5410
2038	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1734	4,632.1734	0.1747	0.0000	4,636.5410
2039	0.9263	10.0275	8.1699	0.0492	3.8966	0.0294	3.9260	1.0504	0.0282	1.0787	0.0000	4,614.4256	4,614.4256	0.1740	0.0000	4,618.7765
2040	0.2117	1.5413	2.7124	8.9200e-003	0.4663	0.0163	0.4826	0.1256	0.0162	0.1418	0.0000	811.8100	811.8100	0.0289	0.0000	812.5327

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2041	0.1152	0.2732	1.3361	3.9700e-003	0.4134	7.3200e-003	0.4208	0.1099	7.2500e-003	0.1171	0.0000	351.8201	351.8201	6.6000e-003	0.0000	351.9850
2042	0.0666	0.0950	0.5663	2.6300e-003	0.4213	1.6000e-003	0.4229	0.1120	1.5200e-003	0.1135	0.0000	237.3411	237.3411	2.6500e-003	0.0000	237.4074
Maximum	**1.7233**	**13.3124**	**14.1123**	**0.0576**	**3.9266**	**0.2865**	**4.0400**	**1.0585**	**0.2636**	**1.2104**	**0.0000**	**5,367.4005**	**5,367.4005**	**0.2797**	**0.0000**	**5,374.2640**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1634	1.6512	0.9878	1.7300e-003	6.2100e-003	0.0834	0.0896	1.6500e-003	0.0777	0.0793	0.0000	156.5565	156.5565	0.0418	0.0000	157.6024
2019	0.4875	4.9089	2.9582	5.2300e-003	0.4441	0.2484	0.6924	0.2386	0.2305	0.4690	0.0000	467.6528	467.6528	0.1291	0.0000	470.8804
2020	0.5690	6.0684	3.5775	6.7500e-003	2.2302	0.2865	2.5167	0.9468	0.2636	1.2104	0.0000	593.7675	593.7675	0.1862	0.0000	598.4230
2021	0.5576	6.0644	4.1110	8.3200e-003	1.4274	0.2593	1.6867	0.5052	0.2385	0.7437	0.0000	731.4634	731.4634	0.2306	0.0000	737.2288
2022	1.4996	12.7086	12.0725	0.0445	3.6214	0.1744	3.7958	0.9398	0.1629	1.1027	0.0000	4,128.0981	4,128.0981	0.2797	0.0000	4,135.0917
2023	1.7233	13.3124	14.1123	0.0576	3.8958	0.1261	4.0220	1.0502	0.1185	1.1687	0.0000	5,367.4001	5,367.4001	0.2745	0.0000	5,374.2637
2024	1.6374	12.9580	13.3232	0.0568	3.9259	0.1141	4.0400	1.0583	0.1072	1.1654	0.0000	5,298.5400	5,298.5400	0.2704	0.0000	5,305.2987
2025	1.5423	12.4800	12.4719	0.0554	3.9110	0.1009	4.0120	1.0543	0.0948	1.1491	0.0000	5,170.3091	5,170.3091	0.2638	0.0000	5,176.9038
2026	1.4771	12.2144	11.8011	0.0543	3.9111	0.0994	4.0105	1.0543	0.0933	1.1476	0.0000	5,073.4961	5,073.4961	0.2595	0.0000	5,079.9823

Morro Bay General Plan - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2027	1.4126	11.9723	11.1743	0.0533	3.9112	0.0976	4.0088	1.0543	0.0917	1.1460	0.0000	4,986.6174	4,986.6174	0.2552	0.0000	4,992.9983
2028	1.3415	11.7159	10.6113	0.0522	3.8963	0.0953	3.9916	1.0503	0.0895	1.1398	0.0000	4,891.1524	4,891.1524	0.2507	0.0000	4,897.4201
2029	1.2780	11.5576	10.1604	0.0517	3.9114	0.0939	4.0052	1.0544	0.0881	1.1425	0.0000	4,841.1856	4,841.1856	0.2481	0.0000	4,847.3886
2030	1.2044	10.7926	9.7395	0.0515	3.9114	0.0428	3.9542	1.0544	0.0412	1.0956	0.0000	4,821.8625	4,821.8625	0.1876	0.0000	4,826.5518
2031	1.1351	10.6344	9.3345	0.0509	3.9115	0.0414	3.9528	1.0544	0.0399	1.0943	0.0000	4,770.4772	4,770.4772	0.1845	0.0000	4,775.0899
2032	1.0760	10.5290	9.0173	0.0506	3.9265	0.0402	3.9667	1.0585	0.0389	1.0973	0.0000	4,744.8264	4,744.8264	0.1825	0.0000	4,749.3882
2033	1.0156	10.3257	8.6547	0.0498	3.8966	0.0388	3.9353	1.0504	0.0375	1.0879	0.0000	4,671.7270	4,671.7270	0.1789	0.0000	4,676.2002
2034	0.9739	10.2183	8.3940	0.0495	3.8966	0.0378	3.9343	1.0504	0.0366	1.0870	0.0000	4,640.5511	4,640.5511	0.1769	0.0000	4,644.9728
2035	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1730	4,632.1730	0.1747	0.0000	4,636.5406
2036	0.9334	10.1046	8.2328	0.0496	3.9266	0.0296	3.9562	1.0585	0.0284	1.0870	0.0000	4,649.9208	4,649.9208	0.1754	0.0000	4,654.3051
2037	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1730	4,632.1730	0.1747	0.0000	4,636.5406
2038	0.9299	10.0660	8.2013	0.0494	3.9116	0.0295	3.9411	1.0545	0.0283	1.0828	0.0000	4,632.1730	4,632.1730	0.1747	0.0000	4,636.5406
2039	0.9263	10.0275	8.1699	0.0492	3.8966	0.0294	3.9260	1.0504	0.0282	1.0787	0.0000	4,614.4252	4,614.4252	0.1740	0.0000	4,618.7761
2040	0.2117	1.5413	2.7124	8.9200e-003	0.4663	0.0163	0.4826	0.1256	0.0162	0.1418	0.0000	811.8096	811.8096	0.0289	0.0000	812.5323
2041	0.1152	0.2732	1.3361	3.9700e-003	0.4134	7.3200e-003	0.4208	0.1099	7.2500e-003	0.1171	0.0000	351.8199	351.8199	6.6000e-003	0.0000	351.9849
2042	0.0666	0.0950	0.5663	2.6300e-003	0.4213	1.6000e-003	0.4229	0.1120	1.5200e-003	0.1135	0.0000	237.3411	237.3411	2.6500e-003	0.0000	237.4074
Maximum	**1.7233**	**13.3124**	**14.1123**	**0.0576**	**3.9266**	**0.2865**	**4.0400**	**1.0585**	**0.2636**	**1.2104**	**0.0000**	**5,367.4001**	**5,367.4001**	**0.2797**	**0.0000**	**5,374.2637**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-3-2018**	**12-2-2018**	1.3716	1.3716
2	**12-3-2018**	**3-2-2019**	1.2965	1.2965
3	**3-3-2019**	**6-2-2019**	1.2957	1.2957
4	**6-3-2019**	**9-2-2019**	1.2955	1.2955
5	**9-3-2019**	**12-2-2019**	1.4262	1.4262
6	**12-3-2019**	**3-2-2020**	1.5518	1.5518
7	**3-3-2020**	**6-2-2020**	1.5325	1.5325
8	**6-3-2020**	**9-2-2020**	1.7103	1.7103
9	**9-3-2020**	**12-2-2020**	1.7816	1.7816
10	**12-3-2020**	**3-2-2021**	1.6736	1.6736
11	**3-3-2021**	**6-2-2021**	1.6672	1.6672
12	**6-3-2021**	**9-2-2021**	1.6670	1.6670
13	**9-3-2021**	**12-2-2021**	1.6493	1.6493
14	**12-3-2021**	**3-2-2022**	1.4542	1.4542
15	**3-3-2022**	**6-2-2022**	2.9763	2.9763
16	**6-3-2022**	**9-2-2022**	4.4211	4.4211
17	**9-3-2022**	**12-2-2022**	4.4159	4.4159
18	**12-3-2022**	**3-2-2023**	3.9409	3.9409
19	**3-3-2023**	**6-2-2023**	3.7719	3.7719
20	**6-3-2023**	**9-2-2023**	3.7533	3.7533
21	**9-3-2023**	**12-2-2023**	3.7528	3.7528
22	**12-3-2023**	**3-2-2024**	3.6760	3.6760
23	**3-3-2024**	**6-2-2024**	3.6348	3.6348

24	**6-3-2024**	**9-2-2024**	3.6179	3.6179
25	**9-3-2024**	**12-2-2024**	3.6154	3.6154
26	**12-3-2024**	**3-2-2025**	3.5048	3.5048
27	**3-3-2025**	**6-2-2025**	3.5067	3.5067
28	**6-3-2025**	**9-2-2025**	3.4912	3.4912
29	**9-3-2025**	**12-2-2025**	3.4869	3.4869
30	**12-3-2025**	**3-2-2026**	3.4077	3.4077
31	**3-3-2026**	**6-2-2026**	3.4252	3.4252
32	**6-3-2026**	**9-2-2026**	3.4108	3.4108
33	**9-3-2026**	**12-2-2026**	3.4050	3.4050
34	**12-3-2026**	**3-2-2027**	3.3295	3.3295
35	**3-3-2027**	**6-2-2027**	3.3497	3.3497
36	**6-3-2027**	**9-2-2027**	3.3365	3.3365
37	**9-3-2027**	**12-2-2027**	3.3289	3.3289
38	**12-3-2027**	**3-2-2028**	3.2938	3.2938
39	**3-3-2028**	**6-2-2028**	3.2812	3.2812
40	**6-3-2028**	**9-2-2028**	3.2692	3.2692
41	**9-3-2028**	**12-2-2028**	3.2598	3.2598
42	**12-3-2028**	**3-2-2029**	3.1891	3.1891
43	**3-3-2029**	**6-2-2029**	3.2139	3.2139
44	**6-3-2029**	**9-2-2029**	3.2031	3.2031
45	**9-3-2029**	**12-2-2029**	3.1918	3.1918
46	**12-3-2029**	**3-2-2030**	3.0261	3.0261
47	**3-3-2030**	**6-2-2030**	3.0038	3.0038
48	**6-3-2030**	**9-2-2030**	2.9941	2.9941
49	**9-3-2030**	**12-2-2030**	2.9826	2.9826
50	**12-3-2030**	**3-2-2031**	2.9200	2.9200

51	**3-3-2031**	**6-2-2031**	2.9475	2.9475
52	**6-3-2031**	**9-2-2031**	2.9391	2.9391
53	**9-3-2031**	**12-2-2031**	2.9254	2.9254
54	**12-3-2031**	**3-2-2032**	2.8970	2.8970
55	**3-3-2032**	**6-2-2032**	2.8957	2.8957
56	**6-3-2032**	**9-2-2032**	2.8884	2.8884
57	**9-3-2032**	**12-2-2032**	2.8729	2.8729
58	**12-3-2032**	**3-2-2033**	2.8180	2.8180
59	**3-3-2033**	**6-2-2033**	2.8521	2.8521
60	**6-3-2033**	**9-2-2033**	2.8458	2.8458
61	**9-3-2033**	**12-2-2033**	2.8286	2.8286
62	**12-3-2033**	**3-2-2034**	2.7779	2.7779
63	**3-3-2034**	**6-2-2034**	2.8150	2.8150
64	**6-3-2034**	**9-2-2034**	2.8094	2.8094
65	**9-3-2034**	**12-2-2034**	2.7910	2.7910
66	**12-3-2034**	**3-2-2035**	2.7251	2.7251
67	**3-3-2035**	**6-2-2035**	2.7551	2.7551
68	**6-3-2035**	**9-2-2035**	2.7501	2.7501
69	**9-3-2035**	**12-2-2035**	2.7311	2.7311
70	**12-3-2035**	**3-2-2036**	2.7359	2.7359
71	**3-3-2036**	**6-2-2036**	2.7551	2.7551
72	**6-3-2036**	**9-2-2036**	2.7501	2.7501
73	**9-3-2036**	**12-2-2036**	2.7311	2.7311
74	**12-3-2036**	**3-2-2037**	2.7058	2.7058
75	**3-3-2037**	**6-2-2037**	2.7551	2.7551
76	**6-3-2037**	**9-2-2037**	2.7501	2.7501
77	**9-3-2037**	**12-2-2037**	2.7311	2.7311

78	**12-3-2037**	**3-2-2038**	2.7058	2.7058
79	**3-3-2038**	**6-2-2038**	2.7551	2.7551
80	**6-3-2038**	**9-2-2038**	2.7501	2.7501
81	**9-3-2038**	**12-2-2038**	2.7311	2.7311
82	**12-3-2038**	**3-2-2039**	2.7058	2.7058
83	**3-3-2039**	**6-2-2039**	2.7551	2.7551
84	**6-3-2039**	**9-2-2039**	2.7501	2.7501
85	**9-3-2039**	**12-2-2039**	2.7311	2.7311
86	**12-3-2039**	**3-2-2040**	2.0857	2.0857
87	**3-3-2040**	**6-2-2040**	0.1544	0.1544
88	**6-3-2040**	**9-2-2040**	0.1543	0.1543
89	**9-3-2040**	**12-2-2040**	0.1528	0.1528
90	**12-3-2040**	**3-2-2041**	0.1511	0.1511
91	**3-3-2041**	**6-2-2041**	0.1381	0.1381
92	**6-3-2041**	**9-2-2041**	0.0610	0.0610
93	**9-3-2041**	**12-2-2041**	0.0642	0.0642
94	**12-3-2041**	**3-2-2042**	0.0652	0.0652
95	**3-3-2042**	**6-2-2042**	0.0628	0.0628
96	**6-3-2042**	**9-2-2042**	0.0537	0.0537
		Highest	4.4211	4.4211

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.0908	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259
Energy	0.6860	6.2052	5.0094	0.0374		0.4740	0.4740		0.4740	0.4740	0.0000	39,271.8806	39,271.8806	1.5989	0.4284	39,439.5021
Mobile	7.9004	40.1825	90.0697	0.4497	59.0713	0.2028	59.2741	15.7847	0.1886	15.9733	0.0000	41,548.7251	41,548.7251	1.2124	0.0000	41,579.0358
Waste						0.0000	0.0000		0.0000	0.0000	1,443.2130	0.0000	1,443.2130	85.2914	0.0000	3,575.4990
Water						0.0000	0.0000		0.0000	0.0000	348.0770	2,341.3461	2,689.4231	35.8567	0.8661	3,843.9265
Total	**39.6773**	**46.5344**	**107.8106**	**0.4878**	**59.0713**	**0.7475**	**59.8188**	**15.7847**	**0.7333**	**16.5179**	**1,791.2900**	**83,182.8719**	**84,974.1619**	**123.9797**	**1.2944**	**88,459.3893**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.0908	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259
Energy	0.6860	6.2052	5.0094	0.0374		0.4740	0.4740		0.4740	0.4740	0.0000	39,271.8806	39,271.8806	1.5989	0.4284	39,439.5021
Mobile	7.9004	40.1825	90.0697	0.4497	59.0713	0.2028	59.2741	15.7847	0.1886	15.9733	0.0000	41,548.7251	41,548.7251	1.2124	0.0000	41,579.0358
Waste						0.0000	0.0000		0.0000	0.0000	1,443.2130	0.0000	1,443.2130	85.2914	0.0000	3,575.4990
Water						0.0000	0.0000		0.0000	0.0000	348.0770	2,341.3461	2,689.4231	35.8567	0.8661	3,843.9265
Total	**39.6773**	**46.5344**	**107.8106**	**0.4878**	**59.0713**	**0.7475**	**59.8188**	**15.7847**	**0.7333**	**16.5179**	**1,791.2900**	**83,182.8719**	**84,974.1619**	**123.9797**	**1.2944**	**88,459.3893**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/3/2018	10/25/2019	5	300	
2	Site Preparation	Site Preparation	10/26/2019	7/3/2020	5	180	
3	Grading	Grading	7/4/2020	4/15/2022	5	465	
4	Building Construction	Building Construction	4/16/2022	2/10/2040	5	4650	
5	Paving	Paving	2/11/2040	5/17/2041	5	330	
6	Architectural Coating	Architectural Coating	5/18/2041	8/22/2042	5	330	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,603.00	1,080.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	521.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1599	1.6479	0.9591	1.6700e-003		0.0834	0.0834		0.0776	0.0776	0.0000	151.0335	151.0335	0.0416	0.0000	152.0738
Total	**0.1599**	**1.6479**	**0.9591**	**1.6700e-003**		**0.0834**	**0.0834**		**0.0776**	**0.0776**	**0.0000**	**151.0335**	**151.0335**	**0.0416**	**0.0000**	**152.0738**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4500e-003	3.3200e-003	0.0288	6.0000e-005	6.2100e-003	4.0000e-005	6.2500e-003	1.6500e-003	4.0000e-005	1.6900e-003	0.0000	5.5231	5.5231	2.3000e-004	0.0000	5.5288
Total	**3.4500e-003**	**3.3200e-003**	**0.0288**	**6.0000e-005**	**6.2100e-003**	**4.0000e-005**	**6.2500e-003**	**1.6500e-003**	**4.0000e-005**	**1.6900e-003**	**0.0000**	**5.5231**	**5.5231**	**2.3000e-004**	**0.0000**	**5.5288**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1599	1.6479	0.9591	1.6700e-003		0.0834	0.0834		0.0776	0.0776	0.0000	151.0333	151.0333	0.0416	0.0000	152.0736
Total	**0.1599**	**1.6479**	**0.9591**	**1.6700e-003**		**0.0834**	**0.0834**		**0.0776**	**0.0776**	**0.0000**	**151.0333**	**151.0333**	**0.0416**	**0.0000**	**152.0736**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4500e-003	3.3200e-003	0.0288	6.0000e-005	6.2100e-003	4.0000e-005	6.2500e-003	1.6500e-003	4.0000e-005	1.6900e-003	0.0000	5.5231	5.5231	2.3000e-004	0.0000	5.5288
Total	**3.4500e-003**	**3.3200e-003**	**0.0288**	**6.0000e-005**	**6.2100e-003**	**4.0000e-005**	**6.2500e-003**	**1.6500e-003**	**4.0000e-005**	**1.6900e-003**	**0.0000**	**5.5231**	**5.5231**	**2.3000e-004**	**0.0000**	**5.5288**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3759	3.8288	2.3604	4.1500e-003		0.1921	0.1921		0.1787	0.1787	0.0000	370.5017	370.5017	0.1031	0.0000	373.0785
Total	**0.3759**	**3.8288**	**2.3604**	**4.1500e-003**		**0.1921**	**0.1921**		**0.1787**	**0.1787**	**0.0000**	**370.5017**	**370.5017**	**0.1031**	**0.0000**	**373.0785**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7100e-003	7.2400e-003	0.0627	1.5000e-004	0.0155	1.0000e-004	0.0156	4.1100e-003	1.0000e-004	4.2000e-003	0.0000	13.3396	13.3396	5.0000e-004	0.0000	13.3520
Total	**7.7100e-003**	**7.2400e-003**	**0.0627**	**1.5000e-004**	**0.0155**	**1.0000e-004**	**0.0156**	**4.1100e-003**	**1.0000e-004**	**4.2000e-003**	**0.0000**	**13.3396**	**13.3396**	**5.0000e-004**	**0.0000**	**13.3520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3759	3.8288	2.3604	4.1500e-003		0.1921	0.1921		0.1787	0.1787	0.0000	370.5013	370.5013	0.1031	0.0000	373.0780
Total	**0.3759**	**3.8288**	**2.3604**	**4.1500e-003**		**0.1921**	**0.1921**		**0.1787**	**0.1787**	**0.0000**	**370.5013**	**370.5013**	**0.1031**	**0.0000**	**373.0780**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7100e-003	7.2400e-003	0.0627	1.5000e-004	0.0155	1.0000e-004	0.0156	4.1100e-003	1.0000e-004	4.2000e-003	0.0000	13.3396	13.3396	5.0000e-004	0.0000	13.3520
Total	**7.7100e-003**	**7.2400e-003**	**0.0627**	**1.5000e-004**	**0.0155**	**1.0000e-004**	**0.0156**	**4.1100e-003**	**1.0000e-004**	**4.2000e-003**	**0.0000**	**13.3396**	**13.3396**	**5.0000e-004**	**0.0000**	**13.3520**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4246	0.0000	0.4246	0.2334	0.0000	0.2334	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1019	1.0710	0.5185	8.9000e-004		0.0562	0.0562		0.0517	0.0517	0.0000	80.2964	80.2964	0.0254	0.0000	80.9315
Total	**0.1019**	**1.0710**	**0.5185**	**8.9000e-004**	**0.4246**	**0.0562**	**0.4807**	**0.2334**	**0.0517**	**0.2851**	**0.0000**	**80.2964**	**80.2964**	**0.0254**	**0.0000**	**80.9315**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.9100e-003	0.0165	4.0000e-005	4.0700e-003	3.0000e-005	4.1000e-003	1.0800e-003	3.0000e-005	1.1100e-003	0.0000	3.5157	3.5157	1.3000e-004	0.0000	3.5189
Total	**2.0300e-003**	**1.9100e-003**	**0.0165**	**4.0000e-005**	**4.0700e-003**	**3.0000e-005**	**4.1000e-003**	**1.0800e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.5157**	**3.5157**	**1.3000e-004**	**0.0000**	**3.5189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4246	0.0000	0.4246	0.2334	0.0000	0.2334	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1019	1.0710	0.5185	8.9000e-004		0.0562	0.0562		0.0517	0.0517	0.0000	80.2963	80.2963	0.0254	0.0000	80.9314
Total	**0.1019**	**1.0710**	**0.5185**	**8.9000e-004**	**0.4246**	**0.0562**	**0.4807**	**0.2334**	**0.0517**	**0.2851**	**0.0000**	**80.2963**	**80.2963**	**0.0254**	**0.0000**	**80.9314**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.9100e-003	0.0165	4.0000e-005	4.0700e-003	3.0000e-005	4.1000e-003	1.0800e-003	3.0000e-005	1.1100e-003	0.0000	3.5157	3.5157	1.3000e-004	0.0000	3.5189
Total	**2.0300e-003**	**1.9100e-003**	**0.0165**	**4.0000e-005**	**4.0700e-003**	**3.0000e-005**	**4.1000e-003**	**1.0800e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.5157**	**3.5157**	**1.3000e-004**	**0.0000**	**3.5189**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2014	0.0000	1.2014	0.6604	0.0000	0.6604	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2711	2.8208	1.4307	2.5300e-003		0.1461	0.1461		0.1344	0.1344	0.0000	222.3140	222.3140	0.0719	0.0000	224.1115
Total	**0.2711**	**2.8208**	**1.4307**	**2.5300e-003**	**1.2014**	**0.1461**	**1.3475**	**0.6604**	**0.1344**	**0.7948**	**0.0000**	**222.3140**	**222.3140**	**0.0719**	**0.0000**	**224.1115**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2300e-003	4.7600e-003	0.0412	1.1000e-004	0.0115	8.0000e-005	0.0116	3.0600e-003	7.0000e-005	3.1300e-003	0.0000	9.6407	9.6407	3.2000e-004	0.0000	9.6487
Total	**5.2300e-003**	**4.7600e-003**	**0.0412**	**1.1000e-004**	**0.0115**	**8.0000e-005**	**0.0116**	**3.0600e-003**	**7.0000e-005**	**3.1300e-003**	**0.0000**	**9.6407**	**9.6407**	**3.2000e-004**	**0.0000**	**9.6487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2014	0.0000	1.2014	0.6604	0.0000	0.6604	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2711	2.8208	1.4307	2.5300e-003		0.1461	0.1461		0.1344	0.1344	0.0000	222.3138	222.3138	0.0719	0.0000	224.1113
Total	**0.2711**	**2.8208**	**1.4307**	**2.5300e-003**	**1.2014**	**0.1461**	**1.3475**	**0.6604**	**0.1344**	**0.7948**	**0.0000**	**222.3138**	**222.3138**	**0.0719**	**0.0000**	**224.1113**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2300e-003	4.7600e-003	0.0412	1.1000e-004	0.0115	8.0000e-005	0.0116	3.0600e-003	7.0000e-005	3.1300e-003	0.0000	9.6407	9.6407	3.2000e-004	0.0000	9.6487
Total	**5.2300e-003**	**4.7600e-003**	**0.0412**	**1.1000e-004**	**0.0115**	**8.0000e-005**	**0.0116**	**3.0600e-003**	**7.0000e-005**	**3.1300e-003**	**0.0000**	**9.6407**	**9.6407**	**3.2000e-004**	**0.0000**	**9.6487**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0048	0.0000	1.0048	0.2801	0.0000	0.2801	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2870	3.2377	2.0613	4.0000e-003		0.1402	0.1402		0.1290	0.1290	0.0000	351.4237	351.4237	0.1137	0.0000	354.2651
Total	**0.2870**	**3.2377**	**2.0613**	**4.0000e-003**	**1.0048**	**0.1402**	**1.1451**	**0.2801**	**0.1290**	**0.4091**	**0.0000**	**351.4237**	**351.4237**	**0.1137**	**0.0000**	**354.2651**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6400e-003	5.1300e-003	0.0444	1.2000e-004	0.0124	8.0000e-005	0.0125	3.3000e-003	8.0000e-005	3.3800e-003	0.0000	10.3898	10.3898	3.4000e-004	0.0000	10.3983
Total	**5.6400e-003**	**5.1300e-003**	**0.0444**	**1.2000e-004**	**0.0124**	**8.0000e-005**	**0.0125**	**3.3000e-003**	**8.0000e-005**	**3.3800e-003**	**0.0000**	**10.3898**	**10.3898**	**3.4000e-004**	**0.0000**	**10.3983**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0048	0.0000	1.0048	0.2801	0.0000	0.2801	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2870	3.2377	2.0613	4.0000e-003		0.1402	0.1402		0.1290	0.1290	0.0000	351.4233	351.4233	0.1137	0.0000	354.2647
Total	**0.2870**	**3.2377**	**2.0613**	**4.0000e-003**	**1.0048**	**0.1402**	**1.1451**	**0.2801**	**0.1290**	**0.4091**	**0.0000**	**351.4233**	**351.4233**	**0.1137**	**0.0000**	**354.2647**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6400e-003	5.1300e-003	0.0444	1.2000e-004	0.0124	8.0000e-005	0.0125	3.3000e-003	8.0000e-005	3.3800e-003	0.0000	10.3898	10.3898	3.4000e-004	0.0000	10.3983
Total	**5.6400e-003**	**5.1300e-003**	**0.0444**	**1.2000e-004**	**0.0124**	**8.0000e-005**	**0.0125**	**3.3000e-003**	**8.0000e-005**	**3.3800e-003**	**0.0000**	**10.3898**	**10.3898**	**3.4000e-004**	**0.0000**	**10.3983**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4023	0.0000	1.4023	0.4985	0.0000	0.4985	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5470	6.0552	4.0296	8.0900e-003		0.2591	0.2591		0.2384	0.2384	0.0000	711.1595	711.1595	0.2300	0.0000	716.9096
Total	**0.5470**	**6.0552**	**4.0296**	**8.0900e-003**	**1.4023**	**0.2591**	**1.6614**	**0.4985**	**0.2384**	**0.7369**	**0.0000**	**711.1595**	**711.1595**	**0.2300**	**0.0000**	**716.9096**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0106	9.2700e-003	0.0814	2.2000e-004	0.0251	1.6000e-004	0.0253	6.6800e-003	1.5000e-004	6.8200e-003	0.0000	20.3047	20.3047	6.1000e-004	0.0000	20.3201
Total	**0.0106**	**9.2700e-003**	**0.0814**	**2.2000e-004**	**0.0251**	**1.6000e-004**	**0.0253**	**6.6800e-003**	**1.5000e-004**	**6.8200e-003**	**0.0000**	**20.3047**	**20.3047**	**6.1000e-004**	**0.0000**	**20.3201**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4023	0.0000	1.4023	0.4985	0.0000	0.4985	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5470	6.0552	4.0296	8.0900e-003		0.2591	0.2591		0.2384	0.2384	0.0000	711.1587	711.1587	0.2300	0.0000	716.9087
Total	**0.5470**	**6.0552**	**4.0296**	**8.0900e-003**	**1.4023**	**0.2591**	**1.6614**	**0.4985**	**0.2384**	**0.7369**	**0.0000**	**711.1587**	**711.1587**	**0.2300**	**0.0000**	**716.9087**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0106	9.2700e-003	0.0814	2.2000e-004	0.0251	1.6000e-004	0.0253	6.6800e-003	1.5000e-004	6.8200e-003	0.0000	20.3047	20.3047	6.1000e-004	0.0000	20.3201
Total	**0.0106**	**9.2700e-003**	**0.0814**	**2.2000e-004**	**0.0251**	**1.6000e-004**	**0.0253**	**6.6800e-003**	**1.5000e-004**	**6.8200e-003**	**0.0000**	**20.3047**	**20.3047**	**6.1000e-004**	**0.0000**	**20.3201**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8422	0.0000	0.8422	0.1907	0.0000	0.1907	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1359	1.4566	1.0891	2.3300e-003		0.0613	0.0613		0.0564	0.0564	0.0000	204.5048	204.5048	0.0661	0.0000	206.1583
Total	**0.1359**	**1.4566**	**1.0891**	**2.3300e-003**	**0.8422**	**0.0613**	**0.9036**	**0.1907**	**0.0564**	**0.2471**	**0.0000**	**204.5048**	**204.5048**	**0.0661**	**0.0000**	**206.1583**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8700e-003	2.4000e-003	0.0214	6.0000e-005	7.2200e-003	4.0000e-005	7.2600e-003	1.9200e-003	4.0000e-005	1.9600e-003	0.0000	5.6261	5.6261	1.6000e-004	0.0000	5.6301
Total	**2.8700e-003**	**2.4000e-003**	**0.0214**	**6.0000e-005**	**7.2200e-003**	**4.0000e-005**	**7.2600e-003**	**1.9200e-003**	**4.0000e-005**	**1.9600e-003**	**0.0000**	**5.6261**	**5.6261**	**1.6000e-004**	**0.0000**	**5.6301**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8422	0.0000	0.8422	0.1907	0.0000	0.1907	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1359	1.4566	1.0891	2.3300e-003		0.0613	0.0613		0.0564	0.0564	0.0000	204.5045	204.5045	0.0661	0.0000	206.1580
Total	**0.1359**	**1.4566**	**1.0891**	**2.3300e-003**	**0.8422**	**0.0613**	**0.9036**	**0.1907**	**0.0564**	**0.2471**	**0.0000**	**204.5045**	**204.5045**	**0.0661**	**0.0000**	**206.1580**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8700e-003	2.4000e-003	0.0214	6.0000e-005	7.2200e-003	4.0000e-005	7.2600e-003	1.9200e-003	4.0000e-005	1.9600e-003	0.0000	5.6261	5.6261	1.6000e-004	0.0000	5.6301
Total	**2.8700e-003**	**2.4000e-003**	**0.0214**	**6.0000e-005**	**7.2200e-003**	**4.0000e-005**	**7.2600e-003**	**1.9200e-003**	**4.0000e-005**	**1.9600e-003**	**0.0000**	**5.6261**	**5.6261**	**1.6000e-004**	**0.0000**	**5.6301**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1578	1.4445	1.5136	2.4900e-003		0.0748	0.0748		0.0704	0.0704	0.0000	214.3459	214.3459	0.0514	0.0000	215.6296
Total	**0.1578**	**1.4445**	**1.5136**	**2.4900e-003**		**0.0748**	**0.0748**		**0.0704**	**0.0704**	**0.0000**	**214.3459**	**214.3459**	**0.0514**	**0.0000**	**215.6296**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2817	9.0359	2.5722	0.0196	0.4540	0.0239	0.4778	0.1312	0.0228	0.1540	0.0000	1,897.4263	1,897.4263	0.1113	0.0000	1,900.2079
Worker	0.9214	0.7692	6.8762	0.0200	2.3180	0.0143	2.3323	0.6160	0.0132	0.6292	0.0000	1,806.1956	1,806.1956	0.0508	0.0000	1,807.4663
Total	**1.2030**	**9.8051**	**9.4484**	**0.0396**	**2.7720**	**0.0382**	**2.8102**	**0.7472**	**0.0361**	**0.7832**	**0.0000**	**3,703.6219**	**3,703.6219**	**0.1621**	**0.0000**	**3,707.6742**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1578	1.4445	1.5136	2.4900e-003		0.0748	0.0748		0.0704	0.0704	0.0000	214.3456	214.3456	0.0514	0.0000	215.6294
Total	**0.1578**	**1.4445**	**1.5136**	**2.4900e-003**		**0.0748**	**0.0748**		**0.0704**	**0.0704**	**0.0000**	**214.3456**	**214.3456**	**0.0514**	**0.0000**	**215.6294**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2817	9.0359	2.5722	0.0196	0.4540	0.0239	0.4778	0.1312	0.0228	0.1540	0.0000	1,897.4263	1,897.4263	0.1113	0.0000	1,900.2079
Worker	0.9214	0.7692	6.8762	0.0200	2.3180	0.0143	2.3323	0.6160	0.0132	0.6292	0.0000	1,806.1956	1,806.1956	0.0508	0.0000	1,807.4663
Total	**1.2030**	**9.8051**	**9.4484**	**0.0396**	**2.7720**	**0.0382**	**2.8102**	**0.7472**	**0.0361**	**0.7832**	**0.0000**	**3,703.6219**	**3,703.6219**	**0.1621**	**0.0000**	**3,707.6742**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3023	10.4707	3.1758	0.0271	0.6381	0.0155	0.6537	0.1844	0.0149	0.1993	0.0000	2,622.8216	2,622.8216	0.1391	0.0000	2,626.2988
Worker	1.2166	0.9717	8.8248	0.0270	3.2577	0.0196	3.2773	0.8658	0.0181	0.8838	0.0000	2,443.2327	2,443.2327	0.0638	0.0000	2,444.8269
Total	**1.5189**	**11.4424**	**12.0006**	**0.0541**	**3.8958**	**0.0352**	**3.9310**	**1.0502**	**0.0329**	**1.0831**	**0.0000**	**5,066.0543**	**5,066.0543**	**0.2029**	**0.0000**	**5,071.1257**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3023	10.4707	3.1758	0.0271	0.6381	0.0155	0.6537	0.1844	0.0149	0.1993	0.0000	2,622.8216	2,622.8216	0.1391	0.0000	2,626.2988
Worker	1.2166	0.9717	8.8248	0.0270	3.2577	0.0196	3.2773	0.8658	0.0181	0.8838	0.0000	2,443.2327	2,443.2327	0.0638	0.0000	2,444.8269
Total	**1.5189**	**11.4424**	**12.0006**	**0.0541**	**3.8958**	**0.0352**	**3.9310**	**1.0502**	**0.0329**	**1.0831**	**0.0000**	**5,066.0543**	**5,066.0543**	**0.2029**	**0.0000**	**5,071.1257**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2887	10.3133	3.0082	0.0271	0.6431	0.0144	0.6576	0.1859	0.0138	0.1997	0.0000	2,628.5066	2,628.5066	0.1409	0.0000	2,632.0283
Worker	1.1559	0.8835	8.1971	0.0262	3.2828	0.0193	3.3021	0.8724	0.0178	0.8902	0.0000	2,366.3115	2,366.3115	0.0577	0.0000	2,367.7529
Total	**1.4447**	**11.1969**	**11.2053**	**0.0533**	**3.9259**	**0.0337**	**3.9597**	**1.0583**	**0.0316**	**1.0899**	**0.0000**	**4,994.8181**	**4,994.8181**	**0.1985**	**0.0000**	**4,999.7812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2887	10.3133	3.0082	0.0271	0.6431	0.0144	0.6576	0.1859	0.0138	0.1997	0.0000	2,628.5066	2,628.5066	0.1409	0.0000	2,632.0283
Worker	1.1559	0.8835	8.1971	0.0262	3.2828	0.0193	3.3021	0.8724	0.0178	0.8902	0.0000	2,366.3115	2,366.3115	0.0577	0.0000	2,367.7529
Total	**1.4447**	**11.1969**	**11.2053**	**0.0533**	**3.9259**	**0.0337**	**3.9597**	**1.0583**	**0.0316**	**1.0899**	**0.0000**	**4,994.8181**	**4,994.8181**	**0.1985**	**0.0000**	**4,999.7812**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2743	10.0558	2.8463	0.0268	0.6408	0.0133	0.6541	0.1852	0.0127	0.1979	0.0000	2,604.8468	2,604.8468	0.1409	0.0000	2,608.3704
Worker	1.0896	0.7969	7.5266	0.0250	3.2703	0.0188	3.2891	0.8691	0.0173	0.8864	0.0000	2,262.8078	2,262.8078	0.0517	0.0000	2,264.1002
Total	**1.3638**	**10.8527**	**10.3729**	**0.0519**	**3.9110**	**0.0321**	**3.9431**	**1.0543**	**0.0300**	**1.0843**	**0.0000**	**4,867.6546**	**4,867.6546**	**0.1926**	**0.0000**	**4,872.4706**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2743	10.0558	2.8463	0.0268	0.6408	0.0133	0.6541	0.1852	0.0127	0.1979	0.0000	2,604.8468	2,604.8468	0.1409	0.0000	2,608.3704
Worker	1.0896	0.7969	7.5266	0.0250	3.2703	0.0188	3.2891	0.8691	0.0173	0.8864	0.0000	2,262.8078	2,262.8078	0.0517	0.0000	2,264.1002
Total	**1.3638**	**10.8527**	**10.3729**	**0.0519**	**3.9110**	**0.0321**	**3.9431**	**1.0543**	**0.0300**	**1.0843**	**0.0000**	**4,867.6546**	**4,867.6546**	**0.1926**	**0.0000**	**4,872.4706**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2626	9.8610	2.7209	0.0267	0.6409	0.0123	0.6532	0.1852	0.0118	0.1970	0.0000	2,592.0781	2,592.0781	0.1415	0.0000	2,595.6151
Worker	1.0360	0.7261	6.9812	0.0241	3.2703	0.0182	3.2885	0.8691	0.0168	0.8859	0.0000	2,178.7634	2,178.7634	0.0468	0.0000	2,179.9341
Total	**1.2986**	**10.5871**	**9.7021**	**0.0508**	**3.9111**	**0.0306**	**3.9417**	**1.0543**	**0.0286**	**1.0829**	**0.0000**	**4,770.8416**	**4,770.8416**	**0.1883**	**0.0000**	**4,775.5492**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2626	9.8610	2.7209	0.0267	0.6409	0.0123	0.6532	0.1852	0.0118	0.1970	0.0000	2,592.0781	2,592.0781	0.1415	0.0000	2,595.6151
Worker	1.0360	0.7261	6.9812	0.0241	3.2703	0.0182	3.2885	0.8691	0.0168	0.8859	0.0000	2,178.7634	2,178.7634	0.0468	0.0000	2,179.9341
Total	**1.2986**	**10.5871**	**9.7021**	**0.0508**	**3.9111**	**0.0306**	**3.9417**	**1.0543**	**0.0286**	**1.0829**	**0.0000**	**4,770.8416**	**4,770.8416**	**0.1883**	**0.0000**	**4,775.5492**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2522	9.6845	2.6022	0.0265	0.6410	0.0116	0.6525	0.1853	0.0111	0.1963	0.0000	2,580.4360	2,580.4360	0.1418	0.0000	2,583.9811
Worker	0.9819	0.6605	6.4730	0.0233	3.2703	0.0172	3.2875	0.8691	0.0158	0.8849	0.0000	2,103.5268	2,103.5268	0.0423	0.0000	2,104.5840
Total	**1.2342**	**10.3451**	**9.0752**	**0.0498**	**3.9112**	**0.0288**	**3.9400**	**1.0543**	**0.0269**	**1.0812**	**0.0000**	**4,683.9629**	**4,683.9629**	**0.1841**	**0.0000**	**4,688.5651**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2522	9.6845	2.6022	0.0265	0.6410	0.0116	0.6525	0.1853	0.0111	0.1963	0.0000	2,580.4360	2,580.4360	0.1418	0.0000	2,583.9811
Worker	0.9819	0.6605	6.4730	0.0233	3.2703	0.0172	3.2875	0.8691	0.0158	0.8849	0.0000	2,103.5268	2,103.5268	0.0423	0.0000	2,104.5840
Total	**1.2342**	**10.3451**	**9.0752**	**0.0498**	**3.9112**	**0.0288**	**3.9400**	**1.0543**	**0.0269**	**1.0812**	**0.0000**	**4,683.9629**	**4,683.9629**	**0.1841**	**0.0000**	**4,688.5651**

3.5 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4953**	**301.4953**	**0.0709**	**0.0000**	**303.2671**

3.5 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2428	9.4946	2.5074	0.0263	0.6386	0.0109	0.6494	0.1846	0.0104	0.1949	0.0000	2,560.5790	2,560.5790	0.1415	0.0000	2,564.1165
Worker	0.9210	0.6003	6.0129	0.0224	3.2577	0.0159	3.2736	0.8658	0.0146	0.8804	0.0000	2,029.0786	2,029.0786	0.0383	0.0000	2,030.0368
Total	**1.1638**	**10.0948**	**8.5203**	**0.0487**	**3.8963**	**0.0268**	**3.9231**	**1.0503**	**0.0250**	**1.0753**	**0.0000**	**4,589.6575**	**4,589.6575**	**0.1798**	**0.0000**	**4,594.1533**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4949**	**301.4949**	**0.0709**	**0.0000**	**303.2667**

3.5 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2428	9.4946	2.5074	0.0263	0.6386	0.0109	0.6494	0.1846	0.0104	0.1949	0.0000	2,560.5790	2,560.5790	0.1415	0.0000	2,564.1165
Worker	0.9210	0.6003	6.0129	0.0224	3.2577	0.0159	3.2736	0.8658	0.0146	0.8804	0.0000	2,029.0786	2,029.0786	0.0383	0.0000	2,030.0368
Total	**1.1638**	**10.0948**	**8.5203**	**0.0487**	**3.8963**	**0.0268**	**3.9231**	**1.0503**	**0.0250**	**1.0753**	**0.0000**	**4,589.6575**	**4,589.6575**	**0.1798**	**0.0000**	**4,594.1533**

3.5 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2359	9.3814	2.4446	0.0263	0.6411	0.0102	0.6513	0.1853	9.7500e-003	0.1951	0.0000	2,560.6027	2,560.6027	0.1422	0.0000	2,564.1563
Worker	0.8636	0.5489	5.6168	0.0219	3.2703	0.0148	3.2851	0.8691	0.0136	0.8827	0.0000	1,977.9285	1,977.9285	0.0348	0.0000	1,978.7991
Total	**1.0995**	**9.9303**	**8.0614**	**0.0481**	**3.9114**	**0.0250**	**3.9364**	**1.0544**	**0.0234**	**1.0778**	**0.0000**	**4,538.5311**	**4,538.5311**	**0.1770**	**0.0000**	**4,542.9554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2359	9.3814	2.4446	0.0263	0.6411	0.0102	0.6513	0.1853	9.7500e-003	0.1951	0.0000	2,560.6027	2,560.6027	0.1422	0.0000	2,564.1563
Worker	0.8636	0.5489	5.6168	0.0219	3.2703	0.0148	3.2851	0.8691	0.0136	0.8827	0.0000	1,977.9285	1,977.9285	0.0348	0.0000	1,978.7991
Total	**1.0995**	**9.9303**	**8.0614**	**0.0481**	**3.9114**	**0.0250**	**3.9364**	**1.0544**	**0.0234**	**1.0778**	**0.0000**	**4,538.5311**	**4,538.5311**	**0.1770**	**0.0000**	**4,542.9554**

3.5 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0336**	**343.0336**	**0.0138**	**0.0000**	**343.3777**

3.5 Building Construction - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2300	9.2574	2.3895	0.0262	0.6412	9.6800e-003	0.6508	0.1853	9.2600e-003	0.1946	0.0000	2,552.8201	2,552.8201	0.1422	0.0000	2,556.3758
Worker	0.8036	0.4997	5.2416	0.0213	3.2703	0.0137	3.2840	0.8691	0.0126	0.8817	0.0000	1,926.0092	1,926.0092	0.0316	0.0000	1,926.7987
Total	**1.0335**	**9.7571**	**7.6311**	**0.0475**	**3.9114**	**0.0234**	**3.9348**	**1.0544**	**0.0219**	**1.0763**	**0.0000**	**4,478.8293**	**4,478.8293**	**0.1738**	**0.0000**	**4,483.1745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0332**	**343.0332**	**0.0138**	**0.0000**	**343.3773**

3.5 Building Construction - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2300	9.2574	2.3895	0.0262	0.6412	9.6800e-003	0.6508	0.1853	9.2600e-003	0.1946	0.0000	2,552.8201	2,552.8201	0.1422	0.0000	2,556.3758
Worker	0.8036	0.4997	5.2416	0.0213	3.2703	0.0137	3.2840	0.8691	0.0126	0.8817	0.0000	1,926.0092	1,926.0092	0.0316	0.0000	1,926.7987
Total	**1.0335**	**9.7571**	**7.6311**	**0.0475**	**3.9114**	**0.0234**	**3.9348**	**1.0544**	**0.0219**	**1.0763**	**0.0000**	**4,478.8293**	**4,478.8293**	**0.1738**	**0.0000**	**4,483.1745**

3.5 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0336**	**343.0336**	**0.0138**	**0.0000**	**343.3777**

3.5 Building Construction - 2031

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2251	9.1462	2.3473	0.0261	0.6412	9.2200e-003	0.6504	0.1853	8.8200e-003	0.1942	0.0000	2,546.9337	2,546.9337	0.1423	0.0000	2,550.4906
Worker	0.7392	0.4528	4.8786	0.0208	3.2703	0.0128	3.2831	0.8691	0.0118	0.8808	0.0000	1,880.5103	1,880.5103	0.0285	0.0000	1,881.2221
Total	**0.9643**	**9.5990**	**7.2260**	**0.0469**	**3.9115**	**0.0220**	**3.9335**	**1.0544**	**0.0206**	**1.0750**	**0.0000**	**4,427.4440**	**4,427.4440**	**0.1708**	**0.0000**	**4,431.7126**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	**0.1708**	**1.0355**	**2.1085**	**4.0400e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**343.0332**	**343.0332**	**0.0138**	**0.0000**	**343.3773**

3.5 Building Construction - 2031

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2251	9.1462	2.3473	0.0261	0.6412	9.2200e-003	0.6504	0.1853	8.8200e-003	0.1942	0.0000	2,546.9337	2,546.9337	0.1423	0.0000	2,550.4906
Worker	0.7392	0.4528	4.8786	0.0208	3.2703	0.0128	3.2831	0.8691	0.0118	0.8808	0.0000	1,880.5103	1,880.5103	0.0285	0.0000	1,881.2221
Total	**0.9643**	**9.5990**	**7.2260**	**0.0469**	**3.9115**	**0.0220**	**3.9335**	**1.0544**	**0.0206**	**1.0750**	**0.0000**	**4,427.4440**	**4,427.4440**	**0.1708**	**0.0000**	**4,431.7126**

3.5 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3479	344.3479	0.0138	0.0000	344.6933
Total	**0.1715**	**1.0394**	**2.1166**	**4.0600e-003**		**0.0194**	**0.0194**		**0.0194**	**0.0194**	**0.0000**	**344.3479**	**344.3479**	**0.0138**	**0.0000**	**344.6933**

3.5 Building Construction - 2032

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2220	9.0764	2.3264	0.0262	0.6437	8.8400e-003	0.6526	0.1861	8.4500e-003	0.1945	0.0000	2,552.5509	2,552.5509	0.1428	0.0000	2,556.1216
Worker	0.6825	0.4132	4.5743	0.0204	3.2828	0.0120	3.2948	0.8724	0.0110	0.8834	0.0000	1,847.9280	1,847.9280	0.0258	0.0000	1,848.5737
Total	**0.9045**	**9.4895**	**6.9007**	**0.0466**	**3.9265**	**0.0208**	**3.9473**	**1.0585**	**0.0195**	**1.0779**	**0.0000**	**4,400.4789**	**4,400.4789**	**0.1687**	**0.0000**	**4,404.6953**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1715	1.0394	2.1166	4.0600e-003		0.0194	0.0194		0.0194	0.0194	0.0000	344.3475	344.3475	0.0138	0.0000	344.6929
Total	**0.1715**	**1.0394**	**2.1166**	**4.0600e-003**		**0.0194**	**0.0194**		**0.0194**	**0.0194**	**0.0000**	**344.3475**	**344.3475**	**0.0138**	**0.0000**	**344.6929**

3.5 Building Construction - 2032

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2220	9.0764	2.3264	0.0262	0.6437	8.8400e-003	0.6526	0.1861	8.4500e-003	0.1945	0.0000	2,552.5509	2,552.5509	0.1428	0.0000	2,556.1216
Worker	0.6825	0.4132	4.5743	0.0204	3.2828	0.0120	3.2948	0.8724	0.0110	0.8834	0.0000	1,847.9280	1,847.9280	0.0258	0.0000	1,848.5737
Total	**0.9045**	**9.4895**	**6.9007**	**0.0466**	**3.9265**	**0.0208**	**3.9473**	**1.0585**	**0.0195**	**1.0779**	**0.0000**	**4,400.4789**	**4,400.4789**	**0.1687**	**0.0000**	**4,404.6953**

3.5 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7193**	**341.7193**	**0.0137**	**0.0000**	**342.0621**

3.5 Building Construction - 2033

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2173	8.9180	2.2842	0.0259	0.6388	8.4300e-003	0.6473	0.1847	8.0600e-003	0.1927	0.0000	2,530.2668	2,530.2668	0.1419	0.0000	2,533.8134
Worker	0.6281	0.3762	4.2701	0.0199	3.2577	0.0111	3.2688	0.8658	0.0102	0.8759	0.0000	1,799.7413	1,799.7413	0.0234	0.0000	1,800.3252
Total	**0.8454**	**9.2942**	**6.5543**	**0.0458**	**3.8966**	**0.0195**	**3.9161**	**1.0504**	**0.0183**	**1.0687**	**0.0000**	**4,330.0081**	**4,330.0081**	**0.1652**	**0.0000**	**4,334.1386**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7189**	**341.7189**	**0.0137**	**0.0000**	**342.0617**

3.5 Building Construction - 2033

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2173	8.9180	2.2842	0.0259	0.6388	8.4300e-003	0.6473	0.1847	8.0600e-003	0.1927	0.0000	2,530.2668	2,530.2668	0.1419	0.0000	2,533.8134
Worker	0.6281	0.3762	4.2701	0.0199	3.2577	0.0111	3.2688	0.8658	0.0102	0.8759	0.0000	1,799.7413	1,799.7413	0.0234	0.0000	1,800.3252
Total	**0.8454**	**9.2942**	**6.5543**	**0.0458**	**3.8966**	**0.0195**	**3.9161**	**1.0504**	**0.0183**	**1.0687**	**0.0000**	**4,330.0081**	**4,330.0081**	**0.1652**	**0.0000**	**4,334.1386**

3.5 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7193	341.7193	0.0137	0.0000	342.0621
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7193**	**341.7193**	**0.0137**	**0.0000**	**342.0621**

3.5 Building Construction - 2034

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2145	8.8376	2.2625	0.0259	0.6389	8.1200e-003	0.6470	0.1847	7.7600e-003	0.1924	0.0000	2,528.4115	2,528.4115	0.1418	0.0000	2,531.9566
Worker	0.5892	0.3493	4.0311	0.0195	3.2577	0.0104	3.2681	0.8658	9.5400e-003	0.8753	0.0000	1,770.4207	1,770.4207	0.0214	0.0000	1,770.9545
Total	**0.8037**	**9.1868**	**6.2936**	**0.0455**	**3.8966**	**0.0185**	**3.9151**	**1.0504**	**0.0173**	**1.0677**	**0.0000**	**4,298.8322**	**4,298.8322**	**0.1632**	**0.0000**	**4,302.9111**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1702	1.0315	2.1004	4.0200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	341.7189	341.7189	0.0137	0.0000	342.0617
Total	**0.1702**	**1.0315**	**2.1004**	**4.0200e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**341.7189**	**341.7189**	**0.0137**	**0.0000**	**342.0617**

3.5 Building Construction - 2034

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2145	8.8376	2.2625	0.0259	0.6389	8.1200e-003	0.6470	0.1847	7.7600e-003	0.1924	0.0000	2,528.4115	2,528.4115	0.1418	0.0000	2,531.9566
Worker	0.5892	0.3493	4.0311	0.0195	3.2577	0.0104	3.2681	0.8658	9.5400e-003	0.8753	0.0000	1,770.4207	1,770.4207	0.0214	0.0000	1,770.9545
Total	**0.8037**	**9.1868**	**6.2936**	**0.0455**	**3.8966**	**0.0185**	**3.9151**	**1.0504**	**0.0173**	**1.0677**	**0.0000**	**4,298.8322**	**4,298.8322**	**0.1632**	**0.0000**	**4,302.9111**

3.5 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0336**	**343.0336**	**0.0128**	**0.0000**	**343.3530**

3.5 Building Construction - 2035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0332**	**343.0332**	**0.0128**	**0.0000**	**343.3526**

3.5 Building Construction - 2035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

3.5 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3479	344.3479	0.0128	0.0000	344.6686
Total	**0.1594**	**0.9381**	**2.1114**	**4.0600e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**344.3479**	**344.3479**	**0.0128**	**0.0000**	**344.6686**

3.5 Building Construction - 2036

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2137	8.8356	2.2628	0.0261	0.6438	7.9200e-003	0.6517	0.1861	7.5700e-003	0.1937	0.0000	2,546.6469	2,546.6469	0.1427	0.0000	2,550.2150
Worker	0.5603	0.3308	3.8586	0.0194	3.2828	9.8100e-003	3.2926	0.8724	9.0200e-003	0.8814	0.0000	1,758.9264	1,758.9264	0.0198	0.0000	1,759.4220
Total	**0.7740**	**9.1665**	**6.1213**	**0.0455**	**3.9266**	**0.0177**	**3.9443**	**1.0585**	**0.0166**	**1.0751**	**0.0000**	**4,305.5733**	**4,305.5733**	**0.1626**	**0.0000**	**4,309.6370**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1594	0.9381	2.1114	4.0600e-003		0.0118	0.0118		0.0118	0.0118	0.0000	344.3475	344.3475	0.0128	0.0000	344.6682
Total	**0.1594**	**0.9381**	**2.1114**	**4.0600e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**344.3475**	**344.3475**	**0.0128**	**0.0000**	**344.6682**

3.5 Building Construction - 2036

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2137	8.8356	2.2628	0.0261	0.6438	7.9200e-003	0.6517	0.1861	7.5700e-003	0.1937	0.0000	2,546.6469	2,546.6469	0.1427	0.0000	2,550.2150
Worker	0.5603	0.3308	3.8586	0.0194	3.2828	9.8100e-003	3.2926	0.8724	9.0200e-003	0.8814	0.0000	1,758.9264	1,758.9264	0.0198	0.0000	1,759.4220
Total	**0.7740**	**9.1665**	**6.1213**	**0.0455**	**3.9266**	**0.0177**	**3.9443**	**1.0585**	**0.0166**	**1.0751**	**0.0000**	**4,305.5733**	**4,305.5733**	**0.1626**	**0.0000**	**4,309.6370**

3.5 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0336**	**343.0336**	**0.0128**	**0.0000**	**343.3530**

3.5 Building Construction - 2037

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0332**	**343.0332**	**0.0128**	**0.0000**	**343.3526**

3.5 Building Construction - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

3.5 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0336	343.0336	0.0128	0.0000	343.3530
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0336**	**343.0336**	**0.0128**	**0.0000**	**343.3530**

3.5 Building Construction - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1588	0.9346	2.1034	4.0400e-003		0.0118	0.0118		0.0118	0.0118	0.0000	343.0332	343.0332	0.0128	0.0000	343.3526
Total	**0.1588**	**0.9346**	**2.1034**	**4.0400e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**343.0332**	**343.0332**	**0.0128**	**0.0000**	**343.3526**

3.5 Building Construction - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2129	8.8019	2.2541	0.0260	0.6414	7.8900e-003	0.6493	0.1854	7.5400e-003	0.1929	0.0000	2,536.9269	2,536.9269	0.1422	0.0000	2,540.4813
Worker	0.5582	0.3296	3.8439	0.0193	3.2703	9.7700e-003	3.2800	0.8691	8.9800e-003	0.8781	0.0000	1,752.2129	1,752.2129	0.0198	0.0000	1,752.7067
Total	**0.7711**	**9.1315**	**6.0980**	**0.0453**	**3.9116**	**0.0177**	**3.9293**	**1.0545**	**0.0165**	**1.0710**	**0.0000**	**4,289.1398**	**4,289.1398**	**0.1619**	**0.0000**	**4,293.1880**

3.5 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1582	0.9310	2.0953	4.0200e-003		0.0118	0.0118		0.0118	0.0118	0.0000	341.7193	341.7193	0.0127	0.0000	342.0375
Total	**0.1582**	**0.9310**	**2.0953**	**4.0200e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**341.7193**	**341.7193**	**0.0127**	**0.0000**	**342.0375**

3.5 Building Construction - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2121	8.7682	2.2455	0.0259	0.6389	7.8600e-003	0.6468	0.1847	7.5100e-003	0.1922	0.0000	2,527.2069	2,527.2069	0.1416	0.0000	2,530.7477
Worker	0.5561	0.3283	3.8291	0.0193	3.2577	9.7300e-003	3.2675	0.8658	8.9500e-003	0.8747	0.0000	1,745.4995	1,745.4995	0.0197	0.0000	1,745.9913
Total	**0.7681**	**9.0965**	**6.0746**	**0.0452**	**3.8966**	**0.0176**	**3.9142**	**1.0504**	**0.0165**	**1.0669**	**0.0000**	**4,272.7063**	**4,272.7063**	**0.1613**	**0.0000**	**4,276.7390**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1582	0.9310	2.0953	4.0200e-003		0.0118	0.0118		0.0118	0.0118	0.0000	341.7189	341.7189	0.0127	0.0000	342.0371
Total	**0.1582**	**0.9310**	**2.0953**	**4.0200e-003**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**341.7189**	**341.7189**	**0.0127**	**0.0000**	**342.0371**

3.5 Building Construction - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2121	8.7682	2.2455	0.0259	0.6389	7.8600e-003	0.6468	0.1847	7.5100e-003	0.1922	0.0000	2,527.2069	2,527.2069	0.1416	0.0000	2,530.7477
Worker	0.5561	0.3283	3.8291	0.0193	3.2577	9.7300e-003	3.2675	0.8658	8.9500e-003	0.8747	0.0000	1,745.4995	1,745.4995	0.0197	0.0000	1,745.9913
Total	**0.7681**	**9.0965**	**6.0746**	**0.0452**	**3.8966**	**0.0176**	**3.9142**	**1.0504**	**0.0165**	**1.0669**	**0.0000**	**4,272.7063**	**4,272.7063**	**0.1613**	**0.0000**	**4,276.7390**

3.5 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0180	0.1034	0.2418	4.6000e-004		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	39.4292	39.4292	1.4200e-003	0.0000	39.4646
Total	**0.0180**	**0.1034**	**0.2418**	**4.6000e-004**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**39.4292**	**39.4292**	**1.4200e-003**	**0.0000**	**39.4646**

3.5 Building Construction - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0239	0.9839	0.2563	3.0000e-003	0.0737	8.2000e-004	0.0746	0.0213	7.8000e-004	0.0221	0.0000	292.8704	292.8704	0.0164	0.0000	293.2797
Worker	0.0508	0.0303	0.3709	2.1200e-003	0.3759	8.7000e-004	0.3768	0.0999	8.0000e-004	0.1007	0.0000	192.6143	192.6143	1.6900e-003	0.0000	192.6566
Total	**0.0746**	**1.0142**	**0.6272**	**5.1200e-003**	**0.4496**	**1.6900e-003**	**0.4513**	**0.1212**	**1.5800e-003**	**0.1228**	**0.0000**	**485.4847**	**485.4847**	**0.0181**	**0.0000**	**485.9363**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0180	0.1034	0.2418	4.6000e-004		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	39.4291	39.4291	1.4200e-003	0.0000	39.4645
Total	**0.0180**	**0.1034**	**0.2418**	**4.6000e-004**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**39.4291**	**39.4291**	**1.4200e-003**	**0.0000**	**39.4645**

3.5 Building Construction - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0239	0.9839	0.2563	3.0000e-003	0.0737	8.2000e-004	0.0746	0.0213	7.8000e-004	0.0221	0.0000	292.8704	292.8704	0.0164	0.0000	293.2797
Worker	0.0508	0.0303	0.3709	2.1200e-003	0.3759	8.7000e-004	0.3768	0.0999	8.0000e-004	0.1007	0.0000	192.6143	192.6143	1.6900e-003	0.0000	192.6566
Total	**0.0746**	**1.0142**	**0.6272**	**5.1200e-003**	**0.4496**	**1.6900e-003**	**0.4513**	**0.1212**	**1.5800e-003**	**0.1228**	**0.0000**	**485.4847**	**485.4847**	**0.0181**	**0.0000**	**485.9363**

3.6 Paving - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1168	0.4223	1.8269	3.2400e-003		0.0135	0.0135		0.0135	0.0135	0.0000	278.3494	278.3494	9.3600e-003	0.0000	278.5833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1168**	**0.4223**	**1.8269**	**3.2400e-003**		**0.0135**	**0.0135**		**0.0135**	**0.0135**	**0.0000**	**278.3494**	**278.3494**	**9.3600e-003**	**0.0000**	**278.5833**

3.6 Paving - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2500e-003	1.3400e-003	0.0165	9.0000e-005	0.0167	4.0000e-005	0.0167	4.4300e-003	4.0000e-005	4.4700e-003	0.0000	8.5467	8.5467	8.0000e-005	0.0000	8.5485
Total	**2.2500e-003**	**1.3400e-003**	**0.0165**	**9.0000e-005**	**0.0167**	**4.0000e-005**	**0.0167**	**4.4300e-003**	**4.0000e-005**	**4.4700e-003**	**0.0000**	**8.5467**	**8.5467**	**8.0000e-005**	**0.0000**	**8.5485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1168	0.4223	1.8269	3.2400e-003		0.0135	0.0135		0.0135	0.0135	0.0000	278.3491	278.3491	9.3600e-003	0.0000	278.5829
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1168**	**0.4223**	**1.8269**	**3.2400e-003**		**0.0135**	**0.0135**		**0.0135**	**0.0135**	**0.0000**	**278.3491**	**278.3491**	**9.3600e-003**	**0.0000**	**278.5829**

3.6 Paving - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2500e-003	1.3400e-003	0.0165	9.0000e-005	0.0167	4.0000e-005	0.0167	4.4300e-003	4.0000e-005	4.4700e-003	0.0000	8.5467	8.5467	8.0000e-005	0.0000	8.5485
Total	**2.2500e-003**	**1.3400e-003**	**0.0165**	**9.0000e-005**	**0.0167**	**4.0000e-005**	**0.0167**	**4.4300e-003**	**4.0000e-005**	**4.4700e-003**	**0.0000**	**8.5467**	**8.5467**	**8.0000e-005**	**0.0000**	**8.5485**

3.6 Paving - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0501	0.1810	0.7830	1.3900e-003		5.7600e-003	5.7600e-003		5.7600e-003	5.7600e-003	0.0000	119.2926	119.2926	4.0100e-003	0.0000	119.3928
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0501**	**0.1810**	**0.7830**	**1.3900e-003**		**5.7600e-003**	**5.7600e-003**		**5.7600e-003**	**5.7600e-003**	**0.0000**	**119.2926**	**119.2926**	**4.0100e-003**	**0.0000**	**119.3928**

3.6 Paving - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	5.8000e-004	7.0500e-003	4.0000e-005	7.1500e-003	2.0000e-005	7.1600e-003	1.9000e-003	2.0000e-005	1.9100e-003	0.0000	3.6629	3.6629	3.0000e-005	0.0000	3.6637
Total	**9.7000e-004**	**5.8000e-004**	**7.0500e-003**	**4.0000e-005**	**7.1500e-003**	**2.0000e-005**	**7.1600e-003**	**1.9000e-003**	**2.0000e-005**	**1.9100e-003**	**0.0000**	**3.6629**	**3.6629**	**3.0000e-005**	**0.0000**	**3.6637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0501	0.1810	0.7830	1.3900e-003		5.7600e-003	5.7600e-003		5.7600e-003	5.7600e-003	0.0000	119.2925	119.2925	4.0100e-003	0.0000	119.3927
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0501**	**0.1810**	**0.7830**	**1.3900e-003**		**5.7600e-003**	**5.7600e-003**		**5.7600e-003**	**5.7600e-003**	**0.0000**	**119.2925**	**119.2925**	**4.0100e-003**	**0.0000**	**119.3927**

3.6 Paving - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	5.8000e-004	7.0500e-003	4.0000e-005	7.1500e-003	2.0000e-005	7.1600e-003	1.9000e-003	2.0000e-005	1.9100e-003	0.0000	3.6629	3.6629	3.0000e-005	0.0000	3.6637
Total	**9.7000e-004**	**5.8000e-004**	**7.0500e-003**	**4.0000e-005**	**7.1500e-003**	**2.0000e-005**	**7.1600e-003**	**1.9000e-003**	**2.0000e-005**	**1.9100e-003**	**0.0000**	**3.6629**	**3.6629**	**3.0000e-005**	**0.0000**	**3.6637**

3.7 Architectural Coating - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.3100e-003	0.0589	0.1452	2.4000e-004		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	20.6814	20.6814	7.3000e-004	0.0000	20.6996
Total	**9.3100e-003**	**0.0589**	**0.1452**	**2.4000e-004**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**	**0.0000**	**20.6814**	**20.6814**	**7.3000e-004**	**0.0000**	**20.6996**

3.7 Architectural Coating - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0549	0.0328	0.4009	2.3000e-003	0.4063	9.4000e-004	0.4072	0.1080	8.7000e-004	0.1088	0.0000	208.1833	208.1833	1.8300e-003	0.0000	208.2290
Total	**0.0549**	**0.0328**	**0.4009**	**2.3000e-003**	**0.4063**	**9.4000e-004**	**0.4072**	**0.1080**	**8.7000e-004**	**0.1088**	**0.0000**	**208.1833**	**208.1833**	**1.8300e-003**	**0.0000**	**208.2290**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.3100e-003	0.0589	0.1452	2.4000e-004		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	20.6813	20.6813	7.3000e-004	0.0000	20.6995
Total	**9.3100e-003**	**0.0589**	**0.1452**	**2.4000e-004**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**	**0.0000**	**20.6813**	**20.6813**	**7.3000e-004**	**0.0000**	**20.6995**

3.7 Architectural Coating - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0549	0.0328	0.4009	2.3000e-003	0.4063	9.4000e-004	0.4072	0.1080	8.7000e-004	0.1088	0.0000	208.1833	208.1833	1.8300e-003	0.0000	208.2290
Total	**0.0549**	**0.0328**	**0.4009**	**2.3000e-003**	**0.4063**	**9.4000e-004**	**0.4072**	**0.1080**	**8.7000e-004**	**0.1088**	**0.0000**	**208.1833**	**208.1833**	**1.8300e-003**	**0.0000**	**208.2290**

3.7 Architectural Coating - 2042

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.6500e-003	0.0611	0.1506	2.5000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	21.4473	21.4473	7.5000e-004	0.0000	21.4662
Total	**9.6500e-003**	**0.0611**	**0.1506**	**2.5000e-004**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**21.4473**	**21.4473**	**7.5000e-004**	**0.0000**	**21.4662**

3.7 Architectural Coating - 2042

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0569	0.0340	0.4158	2.3800e-003	0.4213	9.8000e-004	0.4223	0.1120	9.0000e-004	0.1129	0.0000	215.8938	215.8938	1.9000e-003	0.0000	215.9412
Total	**0.0569**	**0.0340**	**0.4158**	**2.3800e-003**	**0.4213**	**9.8000e-004**	**0.4223**	**0.1120**	**9.0000e-004**	**0.1129**	**0.0000**	**215.8938**	**215.8938**	**1.9000e-003**	**0.0000**	**215.9412**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.6500e-003	0.0611	0.1506	2.5000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	21.4473	21.4473	7.5000e-004	0.0000	21.4662
Total	**9.6500e-003**	**0.0611**	**0.1506**	**2.5000e-004**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**21.4473**	**21.4473**	**7.5000e-004**	**0.0000**	**21.4662**

3.7 Architectural Coating - 2042

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0569	0.0340	0.4158	2.3800e-003	0.4213	9.8000e-004	0.4223	0.1120	9.0000e-004	0.1129	0.0000	215.8938	215.8938	1.9000e-003	0.0000	215.9412
Total	**0.0569**	**0.0340**	**0.4158**	**2.3800e-003**	**0.4213**	**9.8000e-004**	**0.4223**	**0.1120**	**9.0000e-004**	**0.1129**	**0.0000**	**215.8938**	**215.8938**	**1.9000e-003**	**0.0000**	**215.9412**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.9004	40.1825	90.0697	0.4497	59.0713	0.2028	59.2741	15.7847	0.1886	15.9733	0.0000	41,548.7251	41,548.7251	1.2124	0.0000	41,579.0358
Unmitigated	7.9004	40.1825	90.0697	0.4497	59.0713	0.2028	59.2741	15.7847	0.1886	15.9733	0.0000	41,548.7251	41,548.7251	1.2124	0.0000	41,579.0358

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,497.61	2,713.64	2300.53	6,354,699	6,354,699
Apartments Mid Rise	2,979.20	2,862.72	2625.28	7,401,015	7,401,015
Condo/Townhouse	34.86	34.02	29.04	86,181	86,181
General Light Industry	2,613.05	494.87	254.93	6,513,510	6,513,510
Industrial Park	822.33	299.80	87.89	1,905,069	1,905,069
Government (Civic Center)	4,866.46	0.00	0.00	8,162,312	8,162,312
Mobile Home Park	39.92	40.00	34.88	99,658	99,658
Single Family Housing	866.32	901.81	784.42	2,184,951	2,184,951
Strip Mall	24,482.37	23,222.90	11285.53	28,521,953	28,521,953
Office Park	54,380.90	7,809.52	3619.04	96,566,590	96,566,590
Total	93,583.02	38,379.27	21,021.55	157,795,938	157,795,938

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Apartments Mid Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
General Light Industry	13.00	5.00	5.00	59.00	28.00	13.00	92	5	3
Industrial Park	13.00	5.00	5.00	59.00	28.00	13.00	79	19	2
Government (Civic Center)	13.00	5.00	5.00	75.00	20.00	5.00	50	34	16
Mobile Home Park	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Strip Mall	13.00	5.00	5.00	16.60	64.40	19.00	45	40	15
Office Park	13.00	5.00	5.00	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Apartments Mid Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Condo/Townhouse	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
General Light Industry	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Industrial Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Government (Civic Center)	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Mobile Home Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Single Family Housing	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Strip Mall	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Office Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	32,482.7412	32,482.7412	1.4688	0.3039	32,610.0183
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	32,482.7412	32,482.7412	1.4688	0.3039	32,610.0183
NaturalGas Mitigated	0.6860	6.2052	5.0094	0.0374		0.4740	0.4740		0.4740	0.4740	0.0000	6,789.1394	6,789.1394	0.1301	0.1245	6,829.4838
NaturalGas Unmitigated	0.6860	6.2052	5.0094	0.0374		0.4740	0.4740		0.4740	0.4740	0.0000	6,789.1394	6,789.1394	0.1301	0.1245	6,829.4838

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	3.86536e+006	0.0208	0.1781	0.0758	1.1400e-003		0.0144	0.0144		0.0144	0.0144	0.0000	206.2706	206.2706	3.9500e-003	3.7800e-003	207.4963
Apartments Mid Rise	3.87047e+006	0.0209	0.1784	0.0759	1.1400e-003		0.0144	0.0144		0.0144	0.0144	0.0000	206.5432	206.5432	3.9600e-003	3.7900e-003	207.7706
Condo/Townhouse	112338	6.1000e-004	5.1800e-003	2.2000e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9948	5.9948	1.1000e-004	1.1000e-004	6.0304
General Light Industry	9.88986e+006	0.0533	0.4848	0.4072	2.9100e-003		0.0368	0.0368		0.0368	0.0368	0.0000	527.7607	527.7607	0.0101	9.6800e-003	530.8969
Government (Civic Center)	2.85329e+006	0.0154	0.1399	0.1175	8.4000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	152.2625	152.2625	2.9200e-003	2.7900e-003	153.1673
Industrial Park	1.97095e+006	0.0106	0.0966	0.0812	5.8000e-004		7.3400e-003	7.3400e-003		7.3400e-003	7.3400e-003	0.0000	105.1773	105.1773	2.0200e-003	1.9300e-003	105.8023
Mobile Home Park	135951	7.3000e-004	6.2600e-003	2.6700e-003	4.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	7.2549	7.2549	1.4000e-004	1.3000e-004	7.2980
Office Park	1.00571e+008	0.5423	4.9300	4.1412	0.0296		0.3747	0.3747		0.3747	0.3747	0.0000	5,366.8691	5,366.8691	0.1029	0.0984	5,398.7617
Single Family Housing	2.64492e+006	0.0143	0.1219	0.0519	7.8000e-004		9.8500e-003	9.8500e-003		9.8500e-003	9.8500e-003	0.0000	141.1432	141.1432	2.7100e-003	2.5900e-003	141.9819
Strip Mall	1.30919e+006	7.0600e-003	0.0642	0.0539	3.9000e-004		4.8800e-003	4.8800e-003		4.8800e-003	4.8800e-003	0.0000	69.8633	69.8633	1.3400e-003	1.2800e-003	70.2784
Total		**0.6860**	**6.2052**	**5.0094**	**0.0374**		**0.4740**	**0.4740**		**0.4740**	**0.4740**	**0.0000**	**6,789.1394**	**6,789.1394**	**0.1301**	**0.1245**	**6,829.4838**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	3.86536e+006	0.0208	0.1781	0.0758	1.1400e-003		0.0144	0.0144		0.0144	0.0144	0.0000	206.2706	206.2706	3.9500e-003	3.7800e-003	207.4963
Apartments Mid Rise	3.87047e+006	0.0209	0.1784	0.0759	1.1400e-003		0.0144	0.0144		0.0144	0.0144	0.0000	206.5432	206.5432	3.9600e-003	3.7900e-003	207.7706
Condo/Townhouse	112338	6.1000e-004	5.1800e-003	2.2000e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9948	5.9948	1.1000e-004	1.1000e-004	6.0304
General Light Industry	9.88986e+006	0.0533	0.4848	0.4072	2.9100e-003		0.0368	0.0368		0.0368	0.0368	0.0000	527.7607	527.7607	0.0101	9.6800e-003	530.8969
Government (Civic Center)	2.85329e+006	0.0154	0.1399	0.1175	8.4000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	152.2625	152.2625	2.9200e-003	2.7900e-003	153.1673
Industrial Park	1.97095e+006	0.0106	0.0966	0.0812	5.8000e-004		7.3400e-003	7.3400e-003		7.3400e-003	7.3400e-003	0.0000	105.1773	105.1773	2.0200e-003	1.9300e-003	105.8023
Mobile Home Park	135951	7.3000e-004	6.2600e-003	2.6700e-003	4.0000e-005		5.1000e-004	5.1000e-004		5.1000e-004	5.1000e-004	0.0000	7.2549	7.2549	1.4000e-004	1.3000e-004	7.2980
Office Park	1.00571e+008	0.5423	4.9300	4.1412	0.0296		0.3747	0.3747		0.3747	0.3747	0.0000	5,366.8691	5,366.8691	0.1029	0.0984	5,398.7617
Single Family Housing	2.64492e+006	0.0143	0.1219	0.0519	7.8000e-004		9.8500e-003	9.8500e-003		9.8500e-003	9.8500e-003	0.0000	141.1432	141.1432	2.7100e-003	2.5900e-003	141.9819
Strip Mall	1.30919e+006	7.0600e-003	0.0642	0.0539	3.9000e-004		4.8800e-003	4.8800e-003		4.8800e-003	4.8800e-003	0.0000	69.8633	69.8633	1.3400e-003	1.2800e-003	70.2784
Total		**0.6860**	**6.2052**	**5.0094**	**0.0374**		**0.4740**	**0.4740**		**0.4740**	**0.4740**	**0.0000**	**6,789.1394**	**6,789.1394**	**0.1301**	**0.1245**	**6,829.4838**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.6482e+006	479.4789	0.0217	4.4900e-003	481.3576
Apartments Mid Rise	1.8495e+006	538.0410	0.0243	5.0300e-003	540.1492
Condo/Townhouse	30272.6	8.8066	4.0000e-004	8.0000e-005	8.8412
General Light Industry	3.09667e+006	900.8580	0.0407	8.4300e-003	904.3878
Government (Civic Center)	3.10777e+006	904.0856	0.0409	8.4600e-003	907.6281
Industrial Park	2.14673e+006	624.5090	0.0282	5.8400e-003	626.9560
Mobile Home Park	42824.7	12.4582	5.6000e-004	1.2000e-004	12.5070
Office Park	9.30951e+007	27,082.4452	1.2246	0.2534	27,188.5622
Single Family Housing	736242	214.1812	9.6800e-003	2.0000e-003	215.0204
Strip Mall	5.90516e+006	1,717.8776	0.0777	0.0161	1,724.6088
Total		**32,482.7412**	**1.4688**	**0.3039**	**32,610.0183**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.6482e+006	479.4789	0.0217	4.4900e-003	481.3576
Apartments Mid Rise	1.8495e+006	538.0410	0.0243	5.0300e-003	540.1492
Condo/Townhouse	30272.6	8.8066	4.0000e-004	8.0000e-005	8.8412
General Light Industry	3.09667e+006	900.8580	0.0407	8.4300e-003	904.3878
Government (Civic Center)	3.10777e+006	904.0856	0.0409	8.4600e-003	907.6281
Industrial Park	2.14673e+006	624.5090	0.0282	5.8400e-003	626.9560
Mobile Home Park	42824.7	12.4582	5.6000e-004	1.2000e-004	12.5070
Office Park	9.30951e+007	27,082.4452	1.2246	0.2534	27,188.5622
Single Family Housing	736242	214.1812	9.6800e-003	2.0000e-003	215.0204
Strip Mall	5.90516e+006	1,717.8776	0.0777	0.0161	1,724.6088
Total		**32,482.7412**	**1.4688**	**0.3039**	**32,610.0183**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.0908	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259
Unmitigated	31.0908	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.4033					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	27.3006					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3870	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259
Total	**31.0909**	**0.1467**	**12.7315**	**6.8000e-004**		**0.0707**	**0.0707**		**0.0707**	**0.0707**	**0.0000**	**20.9201**	**20.9201**	**0.0202**	**0.0000**	**21.4259**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.4033					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	27.3006					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3870	0.1467	12.7315	6.8000e-004		0.0707	0.0707		0.0707	0.0707	0.0000	20.9201	20.9201	0.0202	0.0000	21.4259
Total	**31.0909**	**0.1467**	**12.7315**	**6.8000e-004**		**0.0707**	**0.0707**		**0.0707**	**0.0707**	**0.0000**	**20.9201**	**20.9201**	**0.0202**	**0.0000**	**21.4259**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2,689.4231	35.8567	0.8661	3,843.9265
Unmitigated	2,689.4231	35.8567	0.8661	3,843.9265

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	24.6934 / 15.5676	62.5552	0.8071	0.0195	88.5472
Apartments Mid Rise	29.189 / 18.4018	73.9439	0.9541	0.0231	104.6679
Condo/Townhouse	0.390924 / 0.246452	0.9903	0.0128	3.1000e-004	1.4018
General Light Industry	86.6956 / 0	163.9740	2.8312	0.0680	255.0109
Government (Civic Center)	34.6264 / 21.2226	87.1002	1.1317	0.0274	123.5452
Industrial Park	27.8425 / 0	52.6606	0.9092	0.0218	81.8974
Mobile Home Park	0.521232 / 0.328603	1.3204	0.0170	4.1000e-004	1.8691
Office Park	846.35 / 518.731	2,128.9332	27.6625	0.6686	3,019.7343
Single Family Housing	5.92902 / 3.73786	15.0199	0.1938	4.6800e-003	21.2607
Strip Mall	40.9177 / 25.0786	102.9254	1.3374	0.0323	145.9921
Total		**2,689.4231**	**35.8567**	**0.8660**	**3,843.9265**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	24.6934 / 15.5676	62.5552	0.8071	0.0195	88.5472
Apartments Mid Rise	29.189 / 18.4018	73.9439	0.9541	0.0231	104.6679
Condo/Townhouse	0.390924 / 0.246452	0.9903	0.0128	3.1000e-004	1.4018
General Light Industry	86.6956 / 0	163.9740	2.8312	0.0680	255.0109
Government (Civic Center)	34.6264 / 21.2226	87.1002	1.1317	0.0274	123.5452
Industrial Park	27.8425 / 0	52.6606	0.9092	0.0218	81.8974
Mobile Home Park	0.521232 / 0.328603	1.3204	0.0170	4.1000e-004	1.8691
Office Park	846.35 / 518.731	2,128.9332	27.6625	0.6686	3,019.7343
Single Family Housing	5.92902 / 3.73786	15.0199	0.1938	4.6800e-003	21.2607
Strip Mall	40.9177 / 25.0786	102.9254	1.3374	0.0323	145.9921
Total		**2,689.4231**	**35.8567**	**0.8660**	**3,843.9265**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,443.2130	85.2914	0.0000	3,575.4990
Unmitigated	1,443.2130	85.2914	0.0000	3,575.4990

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	174.34	35.3894	2.0915	0.0000	87.6759
Apartments Mid Rise	206.08	41.8324	2.4722	0.0000	103.6379
Condo/Townhouse	2.76	0.5603	0.0331	0.0000	1.3880
General Light Industry	464.88	94.3664	5.5769	0.0000	233.7889
Government (Civic Center)	993.51	201.6736	11.9186	0.0000	499.6377
Industrial Park	149.3	30.3066	1.7911	0.0000	75.0832
Mobile Home Park	3.68	0.7470	0.0442	0.0000	1.8507
Office Park	4428.57	898.9597	53.1270	0.0000	2,227.1346
Single Family Housing	106.6	21.6388	1.2788	0.0000	53.6093
Strip Mall	580.02	117.7388	6.9582	0.0000	291.6929
Total		**1,443.2130**	**85.2915**	**0.0000**	**3,575.4991**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	174.34	35.3894	2.0915	0.0000	87.6759
Apartments Mid Rise	206.08	41.8324	2.4722	0.0000	103.6379
Condo/Townhouse	2.76	0.5603	0.0331	0.0000	1.3880
General Light Industry	464.88	94.3664	5.5769	0.0000	233.7889
Government (Civic Center)	993.51	201.6736	11.9186	0.0000	499.6377
Industrial Park	149.3	30.3066	1.7911	0.0000	75.0832
Mobile Home Park	3.68	0.7470	0.0442	0.0000	1.8507
Office Park	4428.57	898.9597	53.1270	0.0000	2,227.1346
Single Family Housing	106.6	21.6388	1.2788	0.0000	53.6093
Strip Mall	580.02	117.7388	6.9582	0.0000	291.6929
Total		**1,443.2130**	**85.2915**	**0.0000**	**3,575.4991**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Morro Bay General Plan

San Luis Obispo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	4,761.90	1000sqft	109.32	4,761,900.00	0
Government (Civic Center)	174.30	1000sqft	4.00	174,300.00	0
General Light Industry	374.90	1000sqft	8.61	374,900.00	0
Apartments Low Rise	379.00	Dwelling Unit	23.69	379,000.00	1084
Apartments Mid Rise	448.00	Dwelling Unit	11.79	448,000.00	1281
Condo/Townhouse	6.00	Dwelling Unit	0.38	6,000.00	17
Mobile Home Park	8.00	Dwelling Unit	1.01	9,600.00	23
Single Family Housing	91.00	Dwelling Unit	29.55	163,800.00	260
Strip Mall	552.40	1000sqft	12.68	552,400.00	0
Industrial Park	120.40	1000sqft	2.76	120,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Area Coating - SLOAPCD Rule 433 - limits VOC content to 100 g/L for flat coatings and 150 g/L for traffic Marking Coatings

Area Mitigation - Rule 504 prohibits residential wood-burning

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7975	38.3919	22.9890	0.0403	0.1483	1.9396	2.0879	0.0393	1.8058	1.8451	0.0000	4,019.0895	4,019.0895	1.0727	0.0000	4,045.9065
2019	4.4196	45.6456	22.7864	0.0402	18.2442	2.3915	20.6358	9.9779	2.2002	12.1781	0.0000	3,959.9016	3,959.9016	1.1980	0.0000	3,986.5787
2020	4.5356	50.2689	32.6682	0.0639	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,190.6427	6,190.6427	1.9484	0.0000	6,239.3538
2021	4.2708	46.4637	31.5231	0.0638	8.8711	1.9866	10.8576	3.6489	1.8276	5.4766	0.0000	6,185.5239	6,185.5239	1.9482	0.0000	6,234.2279
2022	14.3929	120.1636	119.3367	0.4665	30.7488	1.6361	31.9641	8.2696	1.5052	9.4141	0.0000	47,864.5767	47,864.5767	2.5212	0.0000	47,927.6059

Morro Bay General Plan - San Luis Obispo County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	12.9603	101.2718	109.6284	0.4542	30.7497	0.9676	31.7173	8.2699	0.9094	9.1793	0.0000	46,654.1670	46,654.1670	2.3116	0.0000	46,711.9567
2024	12.2097	97.9007	102.7578	0.4444	30.7506	0.8686	31.6191	8.2703	0.8158	9.0861	0.0000	45,692.9737	45,692.9737	2.2573	0.0000	45,749.4064
2025	11.5342	94.7183	96.5748	0.4348	30.7514	0.7715	31.5228	8.2706	0.7244	8.9950	0.0000	44,746.6717	44,746.6717	2.2096	0.0000	44,801.9109
2026	11.0383	92.7694	91.3836	0.4261	30.7521	0.7600	31.5121	8.2708	0.7136	8.9844	0.0000	43,898.7583	43,898.7583	2.1719	0.0000	43,953.0567
2027	10.5491	90.9959	86.5359	0.4184	30.7527	0.7464	31.4991	8.2710	0.7008	8.9719	0.0000	43,138.5800	43,138.5800	2.1355	0.0000	43,191.9661
2028	10.0532	89.4439	82.4825	0.4115	30.7533	0.7320	31.4853	8.2712	0.6873	8.9586	0.0000	42,467.6374	42,467.6374	2.1045	0.0000	42,520.2497
2029	9.5371	87.9479	78.6659	0.4054	30.7538	0.7180	31.4718	8.2714	0.6743	8.9457	0.0000	41,865.8823	41,865.8823	2.0738	0.0000	41,917.7264
2030	8.9840	82.1418	75.3917	0.4041	30.7543	0.3266	31.0809	8.2716	0.3149	8.5865	0.0000	41,684.9335	41,684.9335	1.5617	0.0000	41,723.9749
2031	8.4665	80.9829	72.2400	0.3995	30.7546	0.3160	31.0706	8.2717	0.3050	8.5767	0.0000	41,235.9176	41,235.9176	1.5351	0.0000	41,274.2962
2032	7.9943	79.9129	69.4990	0.3955	30.7550	0.3061	31.0611	8.2719	0.2958	8.5677	0.0000	40,853.7649	40,853.7649	1.5115	0.0000	40,891.5522
2033	7.6025	79.0073	67.1975	0.3922	30.7553	0.2975	31.0528	8.2720	0.2878	8.5598	0.0000	40,530.7511	40,530.7511	1.4927	0.0000	40,568.0687
2034	7.2881	78.2145	65.1528	0.3894	30.7555	0.2897	31.0453	8.2721	0.2806	8.5526	0.0000	40,257.8829	40,257.8829	1.4748	0.0000	40,294.7529
2035	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2036	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2037	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2038	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2039	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2040	5.9918	74.2356	58.3684	0.3810	30.7563	0.1861	30.9424	8.2723	0.1790	8.4513	0.0000	39,460.1016	39,460.1016	1.4057	0.0000	39,495.2428

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2041	1.0299	3.6671	15.9688	0.0325	5.1507	0.1168	5.1697	1.3661	0.1167	1.3842	0.0000	3,230.8991	3,230.8991	0.0900	0.0000	3,231.8015
2042	0.7648	1.0914	7.0410	0.0325	5.1507	0.0191	5.1697	1.3661	0.0181	1.3842	0.0000	3,230.8991	3,230.8991	0.0361	0.0000	3,231.8015
Maximum	**14.3929**	**120.1636**	**119.3367**	**0.4665**	**30.7563**	**2.3915**	**31.9641**	**9.9779**	**2.2002**	**12.1781**	**0.0000**	**47,864.5767**	**47,864.5767**	**2.5212**	**0.0000**	**47,927.6059**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7975	38.3919	22.9890	0.0403	0.1483	1.9396	2.0879	0.0393	1.8058	1.8451	0.0000	4,019.0895	4,019.0895	1.0727	0.0000	4,045.9065
2019	4.4196	45.6456	22.7864	0.0402	18.2442	2.3915	20.6358	9.9779	2.2002	12.1781	0.0000	3,959.9016	3,959.9016	1.1980	0.0000	3,986.5787
2020	4.5356	50.2689	32.6682	0.0639	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,190.6427	6,190.6427	1.9484	0.0000	6,239.3538
2021	4.2708	46.4637	31.5231	0.0638	8.8711	1.9866	10.8576	3.6489	1.8276	5.4766	0.0000	6,185.5239	6,185.5239	1.9482	0.0000	6,234.2279
2022	14.3929	120.1636	119.3367	0.4665	30.7488	1.6361	31.9641	8.2696	1.5052	9.4141	0.0000	47,864.5767	47,864.5767	2.5212	0.0000	47,927.6059
2023	12.9603	101.2718	109.6284	0.4542	30.7497	0.9676	31.7173	8.2699	0.9094	9.1793	0.0000	46,654.1670	46,654.1670	2.3116	0.0000	46,711.9567
2024	12.2097	97.9007	102.7578	0.4444	30.7506	0.8686	31.6191	8.2703	0.8158	9.0861	0.0000	45,692.9737	45,692.9737	2.2573	0.0000	45,749.4064
2025	11.5342	94.7183	96.5748	0.4348	30.7514	0.7715	31.5228	8.2706	0.7244	8.9950	0.0000	44,746.6717	44,746.6717	2.2096	0.0000	44,801.9109
2026	11.0383	92.7694	91.3836	0.4261	30.7521	0.7600	31.5121	8.2708	0.7136	8.9844	0.0000	43,898.7583	43,898.7583	2.1719	0.0000	43,953.0567

Morro Bay General Plan - San Luis Obispo County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2027	10.5491	90.9959	86.5359	0.4184	30.7527	0.7464	31.4991	8.2710	0.7008	8.9719	0.0000	43,138.5800	43,138.5800	2.1355	0.0000	43,191.9661
2028	10.0532	89.4439	82.4825	0.4115	30.7533	0.7320	31.4853	8.2712	0.6873	8.9586	0.0000	42,467.6374	42,467.6374	2.1045	0.0000	42,520.2497
2029	9.5371	87.9479	78.6659	0.4054	30.7538	0.7180	31.4718	8.2714	0.6743	8.9457	0.0000	41,865.8823	41,865.8823	2.0738	0.0000	41,917.7264
2030	8.9840	82.1418	75.3917	0.4041	30.7543	0.3266	31.0809	8.2716	0.3149	8.5865	0.0000	41,684.9335	41,684.9335	1.5617	0.0000	41,723.9749
2031	8.4665	80.9829	72.2400	0.3995	30.7546	0.3160	31.0706	8.2717	0.3050	8.5767	0.0000	41,235.9176	41,235.9176	1.5351	0.0000	41,274.2962
2032	7.9943	79.9129	69.4990	0.3955	30.7550	0.3061	31.0611	8.2719	0.2958	8.5677	0.0000	40,853.7649	40,853.7649	1.5115	0.0000	40,891.5522
2033	7.6025	79.0073	67.1975	0.3922	30.7553	0.2975	31.0528	8.2720	0.2878	8.5598	0.0000	40,530.7511	40,530.7511	1.4927	0.0000	40,568.0687
2034	7.2881	78.2145	65.1528	0.3894	30.7555	0.2897	31.0453	8.2721	0.2806	8.5526	0.0000	40,257.8829	40,257.8829	1.4748	0.0000	40,294.7529
2035	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2036	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2037	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2038	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2039	6.9268	76.7733	63.3937	0.3871	30.7558	0.2252	30.9809	8.2721	0.2165	8.4886	0.0000	40,029.2624	40,029.2624	1.4505	0.0000	40,065.5241
2040	5.9918	74.2356	58.3684	0.3810	30.7563	0.1861	30.9424	8.2723	0.1790	8.4513	0.0000	39,460.1016	39,460.1016	1.4057	0.0000	39,495.2428
2041	1.0299	3.6671	15.9688	0.0325	5.1507	0.1168	5.1697	1.3661	0.1167	1.3842	0.0000	3,230.8991	3,230.8991	0.0900	0.0000	3,231.8015
2042	0.7648	1.0914	7.0410	0.0325	5.1507	0.0191	5.1697	1.3661	0.0181	1.3842	0.0000	3,230.8991	3,230.8991	0.0361	0.0000	3,231.8015
Maximum	**14.3929**	**120.1636**	**119.3367**	**0.4665**	**30.7563**	**2.3915**	**31.9641**	**9.9779**	**2.2002**	**12.1781**	**0.0000**	**47,864.5767**	**47,864.5767**	**2.5212**	**0.0000**	**47,927.6059**

Morro Bay General Plan - San Luis Obispo County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Energy	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
Mobile	58.6609	272.3431	631.0949	3.2363	423.0173	1.4103	424.4276	112.7977	1.3114	114.1091		329,451.6649	329,451.6649	9.1812		329,681.1936
Total	**233.0056**	**307.2332**	**735.7039**	**3.4455**	**423.0173**	**4.4360**	**427.4532**	**112.7977**	**4.3370**	**117.1347**	**0.0000**	**370,598.2477**	**370,598.2477**	**10.1023**	**0.7518**	**371,074.8383**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Energy	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
Mobile	58.6609	272.3431	631.0949	3.2363	423.0173	1.4103	424.4276	112.7977	1.3114	114.1091		329,451.6649	329,451.6649	9.1812		329,681.1936
Total	**233.0056**	**307.2332**	**735.7039**	**3.4455**	**423.0173**	**4.4360**	**427.4532**	**112.7977**	**4.3370**	**117.1347**	**0.0000**	**370,598.2477**	**370,598.2477**	**10.1023**	**0.7518**	**371,074.8383**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/3/2018	10/25/2019	5	300	
2	Site Preparation	Site Preparation	10/26/2019	7/3/2020	5	180	
3	Grading	Grading	7/4/2020	4/15/2022	5	465	
4	Building Construction	Building Construction	4/16/2022	2/10/2040	5	4650	
5	Paving	Paving	2/11/2040	5/17/2041	5	330	
6	Architectural Coating	Architectural Coating	5/18/2041	8/22/2042	5	330	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,603.00	1,080.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	521.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0694	0.6849	1.4800e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		147.3230	147.3230	5.9600e-003		147.4721
Total	**0.0785**	**0.0694**	**0.6849**	**1.4800e-003**	**0.1483**	**1.0100e-003**	**0.1493**	**0.0393**	**9.4000e-004**	**0.0403**		**147.3230**	**147.3230**	**5.9600e-003**		**147.4721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0694	0.6849	1.4800e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		147.3230	147.3230	5.9600e-003		147.4721
Total	**0.0785**	**0.0694**	**0.6849**	**1.4800e-003**	**0.1483**	**1.0100e-003**	**0.1493**	**0.0393**	**9.4000e-004**	**0.0403**		**147.3230**	**147.3230**	**5.9600e-003**		**147.4721**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0705	0.0608	0.6028	1.4400e-003	0.1483	9.8000e-004	0.1493	0.0393	9.1000e-004	0.0402		143.0023	143.0023	5.2500e-003		143.1336
Total	**0.0705**	**0.0608**	**0.6028**	**1.4400e-003**	**0.1483**	**9.8000e-004**	**0.1493**	**0.0393**	**9.1000e-004**	**0.0402**		**143.0023**	**143.0023**	**5.2500e-003**		**143.1336**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0705	0.0608	0.6028	1.4400e-003	0.1483	9.8000e-004	0.1493	0.0393	9.1000e-004	0.0402		143.0023	143.0023	5.2500e-003		143.1336
Total	**0.0705**	**0.0608**	**0.6028**	**1.4400e-003**	**0.1483**	**9.8000e-004**	**0.1493**	**0.0393**	**9.1000e-004**	**0.0402**		**143.0023**	**143.0023**	**5.2500e-003**		**143.1336**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.0729	0.7233	1.7200e-003	0.1780	1.1800e-003	0.1791	0.0472	1.0900e-003	0.0483		171.6027	171.6027	6.3000e-003		171.7603
Total	**0.0846**	**0.0729**	**0.7233**	**1.7200e-003**	**0.1780**	**1.1800e-003**	**0.1791**	**0.0472**	**1.0900e-003**	**0.0483**		**171.6027**	**171.6027**	**6.3000e-003**		**171.7603**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0846	0.0729	0.7233	1.7200e-003	0.1780	1.1800e-003	0.1791	0.0472	1.0900e-003	0.0483		171.6027	171.6027	6.3000e-003		171.7603
Total	**0.0846**	**0.0729**	**0.7233**	**1.7200e-003**	**0.1780**	**1.1800e-003**	**0.1791**	**0.0472**	**1.0900e-003**	**0.0483**		**171.6027**	**171.6027**	**6.3000e-003**		**171.7603**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0770	0.0642	0.6389	1.6700e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		166.2997	166.2997	5.4200e-003		166.4352
Total	**0.0770**	**0.0642**	**0.6389**	**1.6700e-003**	**0.1780**	**1.1400e-003**	**0.1791**	**0.0472**	**1.0500e-003**	**0.0483**		**166.2997**	**166.2997**	**5.4200e-003**		**166.4352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0770	0.0642	0.6389	1.6700e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		166.2997	166.2997	5.4200e-003		166.4352
Total	**0.0770**	**0.0642**	**0.6389**	**1.6700e-003**	**0.1780**	**1.1400e-003**	**0.1791**	**0.0472**	**1.0500e-003**	**0.0483**		**166.2997**	**166.2997**	**5.4200e-003**		**166.4352**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.6733**	**2.1739**	**10.8472**	**3.5965**	**2.0000**	**5.5965**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0855	0.0714	0.7099	1.8600e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		184.7775	184.7775	6.0200e-003		184.9280
Total	**0.0855**	**0.0714**	**0.7099**	**1.8600e-003**	**0.1977**	**1.2600e-003**	**0.1990**	**0.0524**	**1.1700e-003**	**0.0536**		**184.7775**	**184.7775**	**6.0200e-003**		**184.9280**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.6733**	**2.1739**	**10.8472**	**3.5965**	**2.0000**	**5.5965**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0855	0.0714	0.7099	1.8600e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		184.7775	184.7775	6.0200e-003		184.9280
Total	**0.0855**	**0.0714**	**0.7099**	**1.8600e-003**	**0.1977**	**1.2600e-003**	**0.1990**	**0.0524**	**1.1700e-003**	**0.0536**		**184.7775**	**184.7775**	**6.0200e-003**		**184.9280**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0797	0.0638	0.6447	1.7900e-003	0.1977	1.2200e-003	0.1990	0.0524	1.1300e-003	0.0536		178.4805	178.4805	5.3600e-003		178.6144
Total	**0.0797**	**0.0638**	**0.6447**	**1.7900e-003**	**0.1977**	**1.2200e-003**	**0.1990**	**0.0524**	**1.1300e-003**	**0.0536**		**178.4805**	**178.4805**	**5.3600e-003**		**178.6144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0797	0.0638	0.6447	1.7900e-003	0.1977	1.2200e-003	0.1990	0.0524	1.1300e-003	0.0536		178.4805	178.4805	5.3600e-003		178.6144
Total	**0.0797**	**0.0638**	**0.6447**	**1.7900e-003**	**0.1977**	**1.2200e-003**	**0.1990**	**0.0524**	**1.1300e-003**	**0.0536**		**178.4805**	**178.4805**	**5.3600e-003**		**178.6144**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0747	0.0574	0.5916	1.7300e-003	0.1977	1.1900e-003	0.1989	0.0524	1.1000e-003	0.0535		172.0987	172.0987	4.8100e-003		172.2189
Total	**0.0747**	**0.0574**	**0.5916**	**1.7300e-003**	**0.1977**	**1.1900e-003**	**0.1989**	**0.0524**	**1.1000e-003**	**0.0535**		**172.0987**	**172.0987**	**4.8100e-003**		**172.2189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0747	0.0574	0.5916	1.7300e-003	0.1977	1.1900e-003	0.1989	0.0524	1.1000e-003	0.0535		172.0987	172.0987	4.8100e-003		172.2189
Total	**0.0747**	**0.0574**	**0.5916**	**1.7300e-003**	**0.1977**	**1.1900e-003**	**0.1989**	**0.0524**	**1.1000e-003**	**0.0535**		**172.0987**	**172.0987**	**4.8100e-003**		**172.2189**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9595	97.0784	25.9778	0.2148	5.0152	0.2515	5.2667	1.4446	0.2405	1.6851		22,911.5979	22,911.5979	1.2834		22,943.6820
Worker	9.7271	7.4696	76.9955	0.2248	25.7336	0.1549	25.8885	6.8251	0.1428	6.9679		22,398.6453	22,398.6453	0.6259		22,414.2917
Total	**12.6867**	**104.5480**	**102.9733**	**0.4396**	**30.7488**	**0.4064**	**31.1551**	**8.2696**	**0.3833**	**8.6530**		**45,310.2432**	**45,310.2432**	**1.9092**		**45,357.9737**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9595	97.0784	25.9778	0.2148	5.0152	0.2515	5.2667	1.4446	0.2405	1.6851		22,911.5979	22,911.5979	1.2834		22,943.6820
Worker	9.7271	7.4696	76.9955	0.2248	25.7336	0.1549	25.8885	6.8251	0.1428	6.9679		22,398.6453	22,398.6453	0.6259		22,414.2917
Total	**12.6867**	**104.5480**	**102.9733**	**0.4396**	**30.7488**	**0.4064**	**31.1551**	**8.2696**	**0.3833**	**8.6530**		**45,310.2432**	**45,310.2432**	**1.9092**		**45,357.9737**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2581	80.1714	22.9304	0.2110	5.0161	0.1170	5.1331	1.4449	0.1119	1.5568		22,540.6422	22,540.6422	1.1441		22,569.2446
Worker	9.1295	6.7155	70.4539	0.2163	25.7336	0.1509	25.8845	6.8251	0.1391	6.9641		21,558.3149	21,558.3149	0.5596		21,572.3060
Total	**11.3876**	**86.8870**	**93.3844**	**0.4273**	**30.7497**	**0.2679**	**31.0176**	**8.2699**	**0.2509**	**8.5209**		**44,098.9571**	**44,098.9571**	**1.7037**		**44,141.5506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2581	80.1714	22.9304	0.2110	5.0161	0.1170	5.1331	1.4449	0.1119	1.5568		22,540.6422	22,540.6422	1.1441		22,569.2446
Worker	9.1295	6.7155	70.4539	0.2163	25.7336	0.1509	25.8845	6.8251	0.1391	6.9641		21,558.3149	21,558.3149	0.5596		21,572.3060
Total	**11.3876**	**86.8870**	**93.3844**	**0.4273**	**30.7497**	**0.2679**	**31.0176**	**8.2699**	**0.2509**	**8.5209**		**44,098.9571**	**44,098.9571**	**1.7037**		**44,141.5506**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1407	78.3961	21.5503	0.2096	5.0170	0.1080	5.1250	1.4452	0.1032	1.5484		22,417.3746	22,417.3746	1.1501		22,446.1262
Worker	8.5975	6.0608	65.0407	0.2079	25.7336	0.1473	25.8809	6.8251	0.1357	6.9608		20,719.9002	20,719.9002	0.5029		20,732.4725
Total	**10.7381**	**84.4570**	**86.5910**	**0.4175**	**30.7506**	**0.2552**	**31.0058**	**8.2703**	**0.2389**	**8.5092**		**43,137.2748**	**43,137.2748**	**1.6530**		**43,178.5987**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1407	78.3961	21.5503	0.2096	5.0170	0.1080	5.1250	1.4452	0.1032	1.5484		22,417.3746	22,417.3746	1.1501		22,446.1262
Worker	8.5975	6.0608	65.0407	0.2079	25.7336	0.1473	25.8809	6.8251	0.1357	6.9608		20,719.9002	20,719.9002	0.5029		20,732.4725
Total	**10.7381**	**84.4570**	**86.5910**	**0.4175**	**30.7506**	**0.2552**	**31.0058**	**8.2703**	**0.2389**	**8.5092**		**43,137.2748**	**43,137.2748**	**1.6530**		**43,178.5987**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0416	76.7603	20.4670	0.2083	5.0178	0.0998	5.1175	1.4455	0.0954	1.5409		22,300.9644	22,300.9644	1.1554		22,329.8494
Worker	8.1252	5.4883	60.0231	0.1995	25.7336	0.1442	25.8778	6.8251	0.1328	6.9579		19,889.2330	19,889.2330	0.4532		19,900.5634
Total	**10.1668**	**82.2486**	**80.4901**	**0.4078**	**30.7514**	**0.2439**	**30.9953**	**8.2706**	**0.2282**	**8.4987**		**42,190.1973**	**42,190.1973**	**1.6086**		**42,230.4128**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0416	76.7603	20.4670	0.2083	5.0178	0.0998	5.1175	1.4455	0.0954	1.5409		22,300.9644	22,300.9644	1.1554		22,329.8494
Worker	8.1252	5.4883	60.0231	0.1995	25.7336	0.1442	25.8778	6.8251	0.1328	6.9579		19,889.2330	19,889.2330	0.4532		19,900.5634
Total	**10.1668**	**82.2486**	**80.4901**	**0.4078**	**30.7514**	**0.2439**	**30.9953**	**8.2706**	**0.2282**	**8.4987**		**42,190.1973**	**42,190.1973**	**1.6086**		**42,230.4128**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9552	75.2986	19.5652	0.2071	5.0185	0.0928	5.1113	1.4458	0.0887	1.5345		22,191.7890	22,191.7890	1.1601		22,220.7902
Worker	7.7157	5.0012	55.7337	0.1920	25.7336	0.1396	25.8732	6.8251	0.1286	6.9537		19,150.4949	19,150.4949	0.4109		19,160.7684
Total	**9.6709**	**80.2998**	**75.2989**	**0.3992**	**30.7521**	**0.2324**	**30.9845**	**8.2708**	**0.2173**	**8.4881**		**41,342.2840**	**41,342.2840**	**1.5710**		**41,381.5587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9552	75.2986	19.5652	0.2071	5.0185	0.0928	5.1113	1.4458	0.0887	1.5345		22,191.7890	22,191.7890	1.1601		22,220.7902
Worker	7.7157	5.0012	55.7337	0.1920	25.7336	0.1396	25.8732	6.8251	0.1286	6.9537		19,150.4949	19,150.4949	0.4109		19,160.7684
Total	**9.6709**	**80.2998**	**75.2989**	**0.3992**	**30.7521**	**0.2324**	**30.9845**	**8.2708**	**0.2173**	**8.4881**		**41,342.2840**	**41,342.2840**	**1.5710**		**41,381.5587**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8783	73.9766	18.7124	0.2060	5.0191	0.0871	5.1062	1.4460	0.0832	1.5292		22,092.5021	22,092.5021	1.1630		22,121.5771
Worker	7.3034	4.5497	51.7388	0.1854	25.7336	0.1318	25.8654	6.8251	0.1213	6.9464		18,489.6035	18,489.6035	0.3715		18,498.8909
Total	**9.1817**	**78.5263**	**70.4512**	**0.3914**	**30.7527**	**0.2189**	**30.9716**	**8.2710**	**0.2045**	**8.4756**		**40,582.1056**	**40,582.1056**	**1.5345**		**40,620.4681**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8783	73.9766	18.7124	0.2060	5.0191	0.0871	5.1062	1.4460	0.0832	1.5292		22,092.5021	22,092.5021	1.1630		22,121.5771
Worker	7.3034	4.5497	51.7388	0.1854	25.7336	0.1318	25.8654	6.8251	0.1213	6.9464		18,489.6035	18,489.6035	0.3715		18,498.8909
Total	**9.1817**	**78.5263**	**70.4512**	**0.3914**	**30.7527**	**0.2189**	**30.9716**	**8.2710**	**0.2045**	**8.4756**		**40,582.1056**	**40,582.1056**	**1.5345**		**40,620.4681**

3.5 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8150	72.8231	18.1009	0.2051	5.0197	0.0821	5.1018	1.4462	0.0784	1.5246		22,006.7974	22,006.7974	1.1653		22,035.9288
Worker	6.8708	4.1511	48.2970	0.1795	25.7336	0.1224	25.8560	6.8251	0.1126	6.9377		17,904.3657	17,904.3657	0.3383		17,912.8229
Total	**8.6858**	**76.9742**	**66.3979**	**0.3846**	**30.7533**	**0.2044**	**30.9577**	**8.2712**	**0.1911**	**8.4623**		**39,911.1631**	**39,911.1631**	**1.5036**		**39,948.7517**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8150	72.8231	18.1009	0.2051	5.0197	0.0821	5.1018	1.4462	0.0784	1.5246		22,006.7974	22,006.7974	1.1653		22,035.9288
Worker	6.8708	4.1511	48.2970	0.1795	25.7336	0.1224	25.8560	6.8251	0.1126	6.9377		17,904.3657	17,904.3657	0.3383		17,912.8229
Total	**8.6858**	**76.9742**	**66.3979**	**0.3846**	**30.7533**	**0.2044**	**30.9577**	**8.2712**	**0.1911**	**8.4623**		**39,911.1631**	**39,911.1631**	**1.5036**		**39,948.7517**

3.5 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7576	71.6964	17.5813	0.2042	5.0202	0.0770	5.0972	1.4464	0.0736	1.5200		21,922.5139	21,922.5139	1.1664		21,951.6725
Worker	6.4121	3.7818	45.0000	0.1743	25.7336	0.1135	25.8471	6.8251	0.1044	6.9295		17,386.8941	17,386.8941	0.3065		17,394.5558
Total	**8.1697**	**75.4782**	**62.5813**	**0.3784**	**30.7538**	**0.1905**	**30.9443**	**8.2714**	**0.1780**	**8.4494**		**39,309.4080**	**39,309.4080**	**1.4728**		**39,346.2284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7576	71.6964	17.5813	0.2042	5.0202	0.0770	5.0972	1.4464	0.0736	1.5200		21,922.5139	21,922.5139	1.1664		21,951.6725
Worker	6.4121	3.7818	45.0000	0.1743	25.7336	0.1135	25.8471	6.8251	0.1044	6.9295		17,386.8941	17,386.8941	0.3065		17,394.5558
Total	**8.1697**	**75.4782**	**62.5813**	**0.3784**	**30.7538**	**0.1905**	**30.9443**	**8.2714**	**0.1780**	**8.4494**		**39,309.4080**	**39,309.4080**	**1.4728**		**39,346.2284**

3.5 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7132	70.7635	17.1855	0.2034	5.0207	0.0732	5.0938	1.4465	0.0699	1.5165		21,856.0591	21,856.0591	1.1673		21,885.2411
Worker	5.9617	3.4437	42.0492	0.1697	25.7336	0.1053	25.8389	6.8251	0.0969	6.9219		16,931.3277	16,931.3277	0.2781		16,938.2810
Total	**7.6748**	**74.2072**	**59.2347**	**0.3731**	**30.7543**	**0.1785**	**30.9327**	**8.2716**	**0.1668**	**8.4384**		**38,787.3868**	**38,787.3868**	**1.4454**		**38,823.5220**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7132	70.7635	17.1855	0.2034	5.0207	0.0732	5.0938	1.4465	0.0699	1.5165		21,856.0591	21,856.0591	1.1673		21,885.2411
Worker	5.9617	3.4437	42.0492	0.1697	25.7336	0.1053	25.8389	6.8251	0.0969	6.9219		16,931.3277	16,931.3277	0.2781		16,938.2810
Total	**7.6748**	**74.2072**	**59.2347**	**0.3731**	**30.7543**	**0.1785**	**30.9327**	**8.2716**	**0.1668**	**8.4384**		**38,787.3868**	**38,787.3868**	**1.4454**		**38,823.5220**

3.5 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2031

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6769	69.9270	16.8830	0.2029	5.0210	0.0698	5.0908	1.4467	0.0667	1.5134		21,806.1364	21,806.1364	1.1679		21,835.3331
Worker	5.4805	3.1213	39.2000	0.1656	25.7336	0.0980	25.8316	6.8251	0.0902	6.9152		16,532.2345	16,532.2345	0.2510		16,538.5103
Total	**7.1573**	**73.0483**	**56.0830**	**0.3685**	**30.7546**	**0.1678**	**30.9224**	**8.2717**	**0.1569**	**8.4286**		**38,338.3709**	**38,338.3709**	**1.4189**		**38,373.8434**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2031

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6769	69.9270	16.8830	0.2029	5.0210	0.0698	5.0908	1.4467	0.0667	1.5134		21,806.1364	21,806.1364	1.1679		21,835.3331
Worker	5.4805	3.1213	39.2000	0.1656	25.7336	0.0980	25.8316	6.8251	0.0902	6.9152		16,532.2345	16,532.2345	0.2510		16,538.5103
Total	**7.1573**	**73.0483**	**56.0830**	**0.3685**	**30.7546**	**0.1678**	**30.9224**	**8.2717**	**0.1569**	**8.4286**		**38,338.3709**	**38,338.3709**	**1.4189**		**38,373.8434**

3.5 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6476	69.1397	16.6691	0.2025	5.0214	0.0667	5.0880	1.4468	0.0637	1.5105		21,771.5949	21,771.5949	1.1681		21,800.7985
Worker	5.0376	2.8386	36.6729	0.1621	25.7336	0.0913	25.8249	6.8251	0.0840	6.9090		16,184.6232	16,184.6232	0.2271		16,190.3008
Total	**6.6852**	**71.9783**	**53.3420**	**0.3646**	**30.7550**	**0.1580**	**30.9129**	**8.2719**	**0.1477**	**8.4196**		**37,956.2181**	**37,956.2181**	**1.3952**		**37,991.0993**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6476	69.1397	16.6691	0.2025	5.0214	0.0667	5.0880	1.4468	0.0637	1.5105		21,771.5949	21,771.5949	1.1681		21,800.7985
Worker	5.0376	2.8386	36.6729	0.1621	25.7336	0.0913	25.8249	6.8251	0.0840	6.9090		16,184.6232	16,184.6232	0.2271		16,190.3008
Total	**6.6852**	**71.9783**	**53.3420**	**0.3646**	**30.7550**	**0.1580**	**30.9129**	**8.2719**	**0.1477**	**8.4196**		**37,956.2181**	**37,956.2181**	**1.3952**		**37,991.0993**

3.5 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6250	68.4677	16.4918	0.2022	5.0217	0.0641	5.0858	1.4469	0.0613	1.5082		21,748.6389	21,748.6389	1.1693		21,777.8718
Worker	4.6684	2.6050	34.5488	0.1591	25.7336	0.0853	25.8189	6.8251	0.0784	6.9035		15,884.5654	15,884.5654	0.2072		15,889.7440
Total	**6.2934**	**71.0727**	**51.0406**	**0.3613**	**30.7553**	**0.1494**	**30.9047**	**8.2720**	**0.1397**	**8.4117**		**37,633.2043**	**37,633.2043**	**1.3765**		**37,667.6159**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6250	68.4677	16.4918	0.2022	5.0217	0.0641	5.0858	1.4469	0.0613	1.5082		21,748.6389	21,748.6389	1.1693		21,777.8718
Worker	4.6684	2.6050	34.5488	0.1591	25.7336	0.0853	25.8189	6.8251	0.0784	6.9035		15,884.5654	15,884.5654	0.2072		15,889.7440
Total	**6.2934**	**71.0727**	**51.0406**	**0.3613**	**30.7553**	**0.1494**	**30.9047**	**8.2720**	**0.1397**	**8.4117**		**37,633.2043**	**37,633.2043**	**1.3765**		**37,667.6159**

3.5 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6042	67.8606	16.3343	0.2020	5.0219	0.0618	5.0837	1.4470	0.0591	1.5061		21,733.9525	21,733.9525	1.1690		21,763.1775
Worker	4.3748	2.4193	32.6615	0.1565	25.7336	0.0798	25.8134	6.8251	0.0734	6.8984		15,626.3837	15,626.3837	0.1896		15,631.1225
Total	**5.9790**	**70.2799**	**48.9958**	**0.3585**	**30.7555**	**0.1416**	**30.8971**	**8.2721**	**0.1324**	**8.4045**		**37,360.3362**	**37,360.3362**	**1.3586**		**37,394.3000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6042	67.8606	16.3343	0.2020	5.0219	0.0618	5.0837	1.4470	0.0591	1.5061		21,733.9525	21,733.9525	1.1690		21,763.1775
Worker	4.3748	2.4193	32.6615	0.1565	25.7336	0.0798	25.8134	6.8251	0.0734	6.8984		15,626.3837	15,626.3837	0.1896		15,631.1225
Total	**5.9790**	**70.2799**	**48.9958**	**0.3585**	**30.7555**	**0.1416**	**30.8971**	**8.2721**	**0.1324**	**8.4045**		**37,360.3362**	**37,360.3362**	**1.3586**		**37,394.3000**

3.5 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

3.5 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2036

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2036

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

3.5 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2037

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

3.5 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

3.5 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5859	67.3374	16.2102	0.2019	5.0222	0.0599	5.0821	1.4471	0.0572	1.5043		21,724.8035	21,724.8035	1.1677		21,753.9965
Worker	4.1240	2.2745	31.0657	0.1543	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		15,406.9122	15,406.9122	0.1748		15,411.2829
Total	**5.7100**	**69.6119**	**47.2759**	**0.3561**	**30.7558**	**0.1348**	**30.8905**	**8.2721**	**0.1261**	**8.3982**		**37,131.7157**	**37,131.7157**	**1.3426**		**37,165.2794**

3.5 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1970	6.8903	16.1185	0.0310		0.0737	0.0737		0.0737	0.0737		2,897.5471	2,897.5471	0.1041		2,900.1503
Total	**1.1970**	**6.8903**	**16.1185**	**0.0310**		**0.0737**	**0.0737**		**0.0737**	**0.0737**		**2,897.5471**	**2,897.5471**	**0.1041**		**2,900.1503**

3.5 Building Construction - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5476	65.5247	16.0267	0.2025	5.0227	0.0543	5.0770	1.4473	0.0519	1.4991		21,826.6217	21,826.6217	1.1707		21,855.8881
Worker	3.2472	1.8205	26.2233	0.1475	25.7336	0.0581	25.7917	6.8251	0.0534	6.8785		14,735.9328	14,735.9328	0.1309		14,739.2044
Total	**4.7948**	**67.3453**	**42.2500**	**0.3500**	**30.7563**	**0.1124**	**30.8687**	**8.2723**	**0.1053**	**8.3776**		**36,562.5545**	**36,562.5545**	**1.3015**		**36,595.0925**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1970	6.8903	16.1185	0.0310		0.0737	0.0737		0.0737	0.0737	0.0000	2,897.5471	2,897.5471	0.1041		2,900.1503
Total	**1.1970**	**6.8903**	**16.1185**	**0.0310**		**0.0737**	**0.0737**		**0.0737**	**0.0737**	**0.0000**	**2,897.5471**	**2,897.5471**	**0.1041**		**2,900.1503**

3.5 Building Construction - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.5476	65.5247	16.0267	0.2025	5.0227	0.0543	5.0770	1.4473	0.0519	1.4991		21,826.6217	21,826.6217	1.1707		21,855.8881
Worker	3.2472	1.8205	26.2233	0.1475	25.7336	0.0581	25.7917	6.8251	0.0534	6.8785		14,735.9328	14,735.9328	0.1309		14,739.2044
Total	**4.7948**	**67.3453**	**42.2500**	**0.3500**	**30.7563**	**0.1124**	**30.8687**	**8.2723**	**0.1053**	**8.3776**		**36,562.5545**	**36,562.5545**	**1.3015**		**36,595.0925**

3.6 Paving - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164		2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**		**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0187	0.0105	0.1511	8.5000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		84.9170	84.9170	7.5000e-004		84.9359
Total	**0.0187**	**0.0105**	**0.1511**	**8.5000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**84.9170**	**84.9170**	**7.5000e-004**		**84.9359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164	0.0000	2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**	**0.0000**	**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0187	0.0105	0.1511	8.5000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		84.9170	84.9170	7.5000e-004		84.9359
Total	**0.0187**	**0.0105**	**0.1511**	**8.5000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**84.9170**	**84.9170**	**7.5000e-004**		**84.9359**

3.6 Paving - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164		2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**		**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0187	0.0105	0.1511	8.5000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		84.9170	84.9170	7.5000e-004		84.9359
Total	**0.0187**	**0.0105**	**0.1511**	**8.5000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**84.9170**	**84.9170**	**7.5000e-004**		**84.9359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164	0.0000	2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**	**0.0000**	**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0187	0.0105	0.1511	8.5000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		84.9170	84.9170	7.5000e-004		84.9359
Total	**0.0187**	**0.0105**	**0.1511**	**8.5000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**84.9170**	**84.9170**	**7.5000e-004**		**84.9359**

3.7 Architectural Coating - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003		281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**		**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6499	0.3644	5.2487	0.0295	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,949.4510	2,949.4510	0.0262		2,950.1058
Total	**0.6499**	**0.3644**	**5.2487**	**0.0295**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,949.4510**	**2,949.4510**	**0.0262**		**2,950.1058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003	0.0000	281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**	**0.0000**	**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6499	0.3644	5.2487	0.0295	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,949.4510	2,949.4510	0.0262		2,950.1058
Total	**0.6499**	**0.3644**	**5.2487**	**0.0295**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,949.4510**	**2,949.4510**	**0.0262**		**2,950.1058**

3.7 Architectural Coating - 2042

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003		281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**		**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2042

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6499	0.3644	5.2487	0.0295	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,949.4510	2,949.4510	0.0262		2,950.1058
Total	**0.6499**	**0.3644**	**5.2487**	**0.0295**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,949.4510**	**2,949.4510**	**0.0262**		**2,950.1058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003	0.0000	281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**	**0.0000**	**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2042

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6499	0.3644	5.2487	0.0295	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,949.4510	2,949.4510	0.0262		2,950.1058
Total	**0.6499**	**0.3644**	**5.2487**	**0.0295**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,949.4510**	**2,949.4510**	**0.0262**		**2,950.1058**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	58.6609	272.3431	631.0949	3.2363	423.0173	1.4103	424.4276	112.7977	1.3114	114.1091		329,451.6649	329,451.6649	9.1812		329,681.1936
Unmitigated	58.6609	272.3431	631.0949	3.2363	423.0173	1.4103	424.4276	112.7977	1.3114	114.1091		329,451.6649	329,451.6649	9.1812		329,681.1936

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,497.61	2,713.64	2300.53	6,354,699	6,354,699
Apartments Mid Rise	2,979.20	2,862.72	2625.28	7,401,015	7,401,015
Condo/Townhouse	34.86	34.02	29.04	86,181	86,181
General Light Industry	2,613.05	494.87	254.93	6,513,510	6,513,510
Industrial Park	822.33	299.80	87.89	1,905,069	1,905,069
Government (Civic Center)	4,866.46	0.00	0.00	8,162,312	8,162,312
Mobile Home Park	39.92	40.00	34.88	99,658	99,658
Single Family Housing	866.32	901.81	784.42	2,184,951	2,184,951
Strip Mall	24,482.37	23,222.90	11285.53	28,521,953	28,521,953
Office Park	54,380.90	7,809.52	3619.04	96,566,590	96,566,590
Total	93,583.02	38,379.27	21,021.55	157,795,938	157,795,938

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Apartments Mid Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
General Light Industry	13.00	5.00	5.00	59.00	28.00	13.00	92	5	3
Industrial Park	13.00	5.00	5.00	59.00	28.00	13.00	79	19	2
Government (Civic Center)	13.00	5.00	5.00	75.00	20.00	5.00	50	34	16
Mobile Home Park	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Strip Mall	13.00	5.00	5.00	16.60	64.40	19.00	45	40	15
Office Park	13.00	5.00	5.00	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Apartments Mid Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Condo/Townhouse	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
General Light Industry	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Industrial Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Government (Civic Center)	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Mobile Home Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Single Family Housing	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Strip Mall	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Office Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
NaturalGas Unmitigated	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	10590	0.1142	0.9759	0.4153	6.2300e-003		0.0789	0.0789		0.0789	0.0789		1,245.8869	1,245.8869	0.0239	0.0228	1,253.2906
Apartments Mid Rise	10604	0.1144	0.9772	0.4158	6.2400e-003		0.0790	0.0790		0.0790	0.0790		1,247.5338	1,247.5338	0.0239	0.0229	1,254.9473
Condo/Townhouse	307.776	3.3200e-003	0.0284	0.0121	1.8000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003		36.2089	36.2089	6.9000e-004	6.6000e-004	36.4241
General Light Industry	27095.5	0.2922	2.6564	2.2314	0.0159		0.2019	0.2019		0.2019	0.2019		3,187.7073	3,187.7073	0.0611	0.0584	3,206.6503
Government (Civic Center)	7817.24	0.0843	0.7664	0.6438	4.6000e-003		0.0583	0.0583		0.0583	0.0583		919.6748	919.6748	0.0176	0.0169	925.1400
Industrial Park	5399.86	0.0582	0.5294	0.4447	3.1800e-003		0.0402	0.0402		0.0402	0.0402		635.2774	635.2774	0.0122	0.0117	639.0525
Mobile Home Park	372.468	4.0200e-003	0.0343	0.0146	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003		43.8197	43.8197	8.4000e-004	8.0000e-004	44.0801
Office Park	275538	2.9715	27.0135	22.6914	0.1621		2.0530	2.0530		2.0530	2.0530		32,416.2218	32,416.2218	0.6213	0.5943	32,608.8552
Single Family Housing	7246.36	0.0782	0.6678	0.2842	4.2600e-003		0.0540	0.0540		0.0540	0.0540		852.5135	852.5135	0.0163	0.0156	857.5796
Strip Mall	3586.82	0.0387	0.3517	0.2954	2.1100e-003		0.0267	0.0267		0.0267	0.0267		421.9784	421.9784	8.0900e-003	7.7400e-003	424.4860
Total		**3.7590**	**34.0011**	**27.4486**	**0.2050**		**2.5971**	**2.5971**		**2.5971**	**2.5971**		**41,006.8225**	**41,006.8225**	**0.7860**	**0.7518**	**41,250.5055**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	10.59	0.1142	0.9759	0.4153	6.2300e-003		0.0789	0.0789		0.0789	0.0789		1,245.8869	1,245.8869	0.0239	0.0228	1,253.2906
Apartments Mid Rise	10.604	0.1144	0.9772	0.4158	6.2400e-003		0.0790	0.0790		0.0790	0.0790		1,247.5338	1,247.5338	0.0239	0.0229	1,254.9473
Condo/Townhouse	0.307776	3.3200e-003	0.0284	0.0121	1.8000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003		36.2089	36.2089	6.9000e-004	6.6000e-004	36.4241
General Light Industry	27.0955	0.2922	2.6564	2.2314	0.0159		0.2019	0.2019		0.2019	0.2019		3,187.7073	3,187.7073	0.0611	0.0584	3,206.6503
Government (Civic Center)	7.81724	0.0843	0.7664	0.6438	4.6000e-003		0.0583	0.0583		0.0583	0.0583		919.6748	919.6748	0.0176	0.0169	925.1400
Industrial Park	5.39986	0.0582	0.5294	0.4447	3.1800e-003		0.0402	0.0402		0.0402	0.0402		635.2774	635.2774	0.0122	0.0117	639.0525
Mobile Home Park	0.372468	4.0200e-003	0.0343	0.0146	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003		43.8197	43.8197	8.4000e-004	8.0000e-004	44.0801
Office Park	275.538	2.9715	27.0135	22.6914	0.1621		2.0530	2.0530		2.0530	2.0530		32,416.2218	32,416.2218	0.6213	0.5943	32,608.8552
Single Family Housing	7.24636	0.0782	0.6678	0.2842	4.2600e-003		0.0540	0.0540		0.0540	0.0540		852.5135	852.5135	0.0163	0.0156	857.5796
Strip Mall	3.58682	0.0387	0.3517	0.2954	2.1100e-003		0.0267	0.0267		0.0267	0.0267		421.9784	421.9784	8.0900e-003	7.7400e-003	424.4860
Total		**3.7590**	**34.0011**	**27.4486**	**0.2050**		**2.5971**	**2.5971**		**2.5971**	**2.5971**		**41,006.8225**	**41,006.8225**	**0.7860**	**0.7518**	**41,250.5055**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Unmitigated	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.6480					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	149.5924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3452	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286		139.7603	139.7603	0.1352		143.1392
Total	**170.5857**	**0.8891**	**77.1605**	**4.1100e-003**		**0.4286**	**0.4286**		**0.4286**	**0.4286**	**0.0000**	**139.7603**	**139.7603**	**0.1352**	**0.0000**	**143.1392**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.6480					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	149.5924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3452	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286		139.7603	139.7603	0.1352		143.1392
Total	**170.5857**	**0.8891**	**77.1605**	**4.1100e-003**		**0.4286**	**0.4286**		**0.4286**	**0.4286**	**0.0000**	**139.7603**	**139.7603**	**0.1352**	**0.0000**	**143.1392**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Morro Bay General Plan

San Luis Obispo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	4,761.90	1000sqft	109.32	4,761,900.00	0
Government (Civic Center)	174.30	1000sqft	4.00	174,300.00	0
General Light Industry	374.90	1000sqft	8.61	374,900.00	0
Apartments Low Rise	379.00	Dwelling Unit	23.69	379,000.00	1084
Apartments Mid Rise	448.00	Dwelling Unit	11.79	448,000.00	1281
Condo/Townhouse	6.00	Dwelling Unit	0.38	6,000.00	17
Mobile Home Park	8.00	Dwelling Unit	1.01	9,600.00	23
Single Family Housing	91.00	Dwelling Unit	29.55	163,800.00	260
Strip Mall	552.40	1000sqft	12.68	552,400.00	0
Industrial Park	120.40	1000sqft	2.76	120,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Area Coating - SLOAPCD Rule 433 - limits VOC content to 100 g/L for flat coatings and 150 g/L for traffic Marking Coatings

Area Mitigation - Rule 504 prohibits residential wood-burning

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8081	38.4013	22.9782	0.0402	0.1483	1.9396	2.0879	0.0393	1.8058	1.8451	0.0000	4,012.2102	4,012.2102	1.0726	0.0000	4,039.0238
2019	4.4312	45.6555	22.7705	0.0402	18.2442	2.3915	20.6358	9.9779	2.2002	12.1781	0.0000	3,953.2126	3,953.2126	1.1978	0.0000	3,979.8862
2020	4.5476	50.2785	32.6490	0.0638	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,181.9907	6,181.9907	1.9482	0.0000	6,230.6968
2021	4.2822	46.4722	31.5040	0.0637	8.8711	1.9866	10.8576	3.6489	1.8276	5.4766	0.0000	6,177.1662	6,177.1662	1.9480	0.0000	6,225.8655
2022	15.9961	120.4616	120.3741	0.4494	30.7488	1.6361	31.9799	8.2696	1.5052	9.4292	0.0000	46,102.1437	46,102.1437	2.5897	0.0000	46,166.8858

Morro Bay General Plan - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	14.4649	101.5563	109.9627	0.4375	30.7497	0.9736	31.7233	8.2699	0.9151	9.1851	0.0000	44,929.6895	44,929.6895	2.3647	0.0000	44,988.8074
2024	13.6598	98.0853	103.0069	0.4281	30.7506	0.8740	31.6246	8.2703	0.8210	9.0913	0.0000	44,011.2391	44,011.2391	2.3121	0.0000	44,069.0414
2025	12.9350	94.8172	96.7923	0.4189	30.7514	0.7762	31.5275	8.2706	0.7289	8.9995	0.0000	43,107.2089	43,107.2089	2.2658	0.0000	43,163.8529
2026	12.3987	92.7961	91.5878	0.4106	30.7521	0.7641	31.5162	8.2708	0.7175	8.9884	0.0000	42,296.9964	42,296.9964	2.2296	0.0000	42,352.7354
2027	11.8654	90.9538	86.7246	0.4032	30.7527	0.7501	31.5028	8.2710	0.7043	8.9754	0.0000	41,569.4988	41,569.4988	2.1944	0.0000	41,624.3581
2028	11.3128	89.3455	82.6787	0.3967	30.7533	0.7353	31.4886	8.2712	0.6904	8.9617	0.0000	40,928.0653	40,928.0653	2.1645	0.0000	40,982.1775
2029	10.7331	87.7989	78.8673	0.3908	30.7538	0.7208	31.4746	8.2714	0.6769	8.9483	0.0000	40,352.7670	40,352.7670	2.1345	0.0000	40,406.1300
2030	10.1156	81.9451	75.6080	0.3897	30.7543	0.3291	31.0833	8.2716	0.3173	8.5889	0.0000	40,193.9207	40,193.9207	1.6232	0.0000	40,234.4999
2031	9.5245	80.7399	72.4731	0.3853	30.7546	0.3181	31.0728	8.2717	0.3071	8.5788	0.0000	39,763.0945	39,763.0945	1.5973	0.0000	39,803.0283
2032	8.9831	79.6302	69.7540	0.3815	30.7550	0.3080	31.0630	8.2719	0.2977	8.5695	0.0000	39,395.5848	39,395.5848	1.5742	0.0000	39,434.9407
2033	8.5338	78.6891	67.4756	0.3783	30.7553	0.2993	31.0545	8.2720	0.2895	8.5615	0.0000	39,084.0062	39,084.0062	1.5561	0.0000	39,122.9082
2034	8.1759	77.8671	65.4543	0.3756	30.7555	0.2913	31.0468	8.2721	0.2821	8.5541	0.0000	38,820.1180	38,820.1180	1.5385	0.0000	38,858.5816
2035	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2036	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2037	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2038	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2039	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2040	6.7102	73.7791	58.7722	0.3674	30.7563	0.1870	30.9433	8.2723	0.1799	8.4522	0.0000	38,039.3749	38,039.3749	1.4693	0.0000	38,076.1064

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2041	1.0335	3.6684	15.9593	0.0311	5.1507	0.1168	5.1697	1.3661	0.1167	1.3842	0.0000	3,091.4063	3,091.4063	0.0900	0.0000	3,092.2674
2042	0.8888	1.1383	6.7110	0.0311	5.1507	0.0191	5.1697	1.3661	0.0181	1.3842	0.0000	3,091.4063	3,091.4063	0.0344	0.0000	3,092.2674
Maximum	**15.9961**	**120.4616**	**120.3741**	**0.4494**	**30.7563**	**2.3915**	**31.9799**	**9.9779**	**2.2002**	**12.1781**	**0.0000**	**46,102.1437**	**46,102.1437**	**2.5897**	**0.0000**	**46,166.8858**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8081	38.4013	22.9782	0.0402	0.1483	1.9396	2.0879	0.0393	1.8058	1.8451	0.0000	4,012.2102	4,012.2102	1.0726	0.0000	4,039.0238
2019	4.4312	45.6555	22.7705	0.0402	18.2442	2.3915	20.6358	9.9779	2.2002	12.1781	0.0000	3,953.2126	3,953.2126	1.1978	0.0000	3,979.8862
2020	4.5476	50.2785	32.6490	0.0638	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,181.9907	6,181.9907	1.9482	0.0000	6,230.6968
2021	4.2822	46.4722	31.5040	0.0637	8.8711	1.9866	10.8576	3.6489	1.8276	5.4766	0.0000	6,177.1662	6,177.1662	1.9480	0.0000	6,225.8655
2022	15.9961	120.4616	120.3741	0.4494	30.7488	1.6361	31.9799	8.2696	1.5052	9.4292	0.0000	46,102.1437	46,102.1437	2.5897	0.0000	46,166.8858
2023	14.4649	101.5563	109.9627	0.4375	30.7497	0.9736	31.7233	8.2699	0.9151	9.1851	0.0000	44,929.6895	44,929.6895	2.3647	0.0000	44,988.8074
2024	13.6598	98.0853	103.0069	0.4281	30.7506	0.8740	31.6246	8.2703	0.8210	9.0913	0.0000	44,011.2391	44,011.2391	2.3121	0.0000	44,069.0414
2025	12.9350	94.8172	96.7923	0.4189	30.7514	0.7762	31.5275	8.2706	0.7289	8.9995	0.0000	43,107.2089	43,107.2089	2.2658	0.0000	43,163.8529
2026	12.3987	92.7961	91.5878	0.4106	30.7521	0.7641	31.5162	8.2708	0.7175	8.9884	0.0000	42,296.9964	42,296.9964	2.2296	0.0000	42,352.7354

Morro Bay General Plan - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2027	11.8654	90.9538	86.7246	0.4032	30.7527	0.7501	31.5028	8.2710	0.7043	8.9754	0.0000	41,569.4988	41,569.4988	2.1944	0.0000	41,624.3581
2028	11.3128	89.3455	82.6787	0.3967	30.7533	0.7353	31.4886	8.2712	0.6904	8.9617	0.0000	40,928.0653	40,928.0653	2.1645	0.0000	40,982.1775
2029	10.7331	87.7989	78.8673	0.3908	30.7538	0.7208	31.4746	8.2714	0.6769	8.9483	0.0000	40,352.7670	40,352.7670	2.1345	0.0000	40,406.1300
2030	10.1156	81.9451	75.6080	0.3897	30.7543	0.3291	31.0833	8.2716	0.3173	8.5889	0.0000	40,193.9207	40,193.9207	1.6232	0.0000	40,234.4999
2031	9.5245	80.7399	72.4731	0.3853	30.7546	0.3181	31.0728	8.2717	0.3071	8.5788	0.0000	39,763.0945	39,763.0945	1.5973	0.0000	39,803.0283
2032	8.9831	79.6302	69.7540	0.3815	30.7550	0.3080	31.0630	8.2719	0.2977	8.5695	0.0000	39,395.5848	39,395.5848	1.5742	0.0000	39,434.9407
2033	8.5338	78.6891	67.4756	0.3783	30.7553	0.2993	31.0545	8.2720	0.2895	8.5615	0.0000	39,084.0062	39,084.0062	1.5561	0.0000	39,122.9082
2034	8.1759	77.8671	65.4543	0.3756	30.7555	0.2913	31.0468	8.2721	0.2821	8.5541	0.0000	38,820.1180	38,820.1180	1.5385	0.0000	38,858.5816
2035	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2036	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2037	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2038	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2039	7.7780	76.4027	63.7170	0.3733	30.7558	0.2266	30.9823	8.2721	0.2178	8.4900	0.0000	38,598.7419	38,598.7419	1.5144	0.0000	38,636.6024
2040	6.7102	73.7791	58.7722	0.3674	30.7563	0.1870	30.9433	8.2723	0.1799	8.4522	0.0000	38,039.3749	38,039.3749	1.4693	0.0000	38,076.1064
2041	1.0335	3.6684	15.9593	0.0311	5.1507	0.1168	5.1697	1.3661	0.1167	1.3842	0.0000	3,091.4063	3,091.4063	0.0900	0.0000	3,092.2674
2042	0.8888	1.1383	6.7110	0.0311	5.1507	0.0191	5.1697	1.3661	0.0181	1.3842	0.0000	3,091.4063	3,091.4063	0.0344	0.0000	3,092.2674
Maximum	**15.9961**	**120.4616**	**120.3741**	**0.4494**	**30.7563**	**2.3915**	**31.9799**	**9.9779**	**2.2002**	**12.1781**	**0.0000**	**46,102.1437**	**46,102.1437**	**2.5897**	**0.0000**	**46,166.8858**

Morro Bay General Plan - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Energy	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
Mobile	55.1813	275.2493	635.1896	3.1046	423.0173	1.4135	424.4308	112.7977	1.3145	114.1122		316,051.4036	316,051.4036	9.4507		316,287.6701
Total	**229.5259**	**310.1394**	**739.7987**	**3.3138**	**423.0173**	**4.4392**	**427.4565**	**112.7977**	**4.3401**	**117.1378**	**0.0000**	**357,197.9864**	**357,197.9864**	**10.3718**	**0.7518**	**357,681.3148**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Energy	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
Mobile	55.1813	275.2493	635.1896	3.1046	423.0173	1.4135	424.4308	112.7977	1.3145	114.1122		316,051.4036	316,051.4036	9.4507		316,287.6701
Total	**229.5259**	**310.1394**	**739.7987**	**3.3138**	**423.0173**	**4.4392**	**427.4565**	**112.7977**	**4.3401**	**117.1378**	**0.0000**	**357,197.9864**	**357,197.9864**	**10.3718**	**0.7518**	**357,681.3148**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/3/2018	10/25/2019	5	300	
2	Site Preparation	Site Preparation	10/26/2019	7/3/2020	5	180	
3	Grading	Grading	7/4/2020	4/15/2022	5	465	
4	Building Construction	Building Construction	4/16/2022	2/10/2040	5	4650	
5	Paving	Paving	2/11/2040	5/17/2041	5	330	
6	Architectural Coating	Architectural Coating	5/18/2041	8/22/2042	5	330	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,603.00	1,080.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	521.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0892	0.0788	0.6742	1.4100e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		140.4437	140.4437	5.8300e-003		140.5895
Total	**0.0892**	**0.0788**	**0.6742**	**1.4100e-003**	**0.1483**	**1.0100e-003**	**0.1493**	**0.0393**	**9.4000e-004**	**0.0403**		**140.4437**	**140.4437**	**5.8300e-003**		**140.5895**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0892	0.0788	0.6742	1.4100e-003	0.1483	1.0100e-003	0.1493	0.0393	9.4000e-004	0.0403		140.4437	140.4437	5.8300e-003		140.5895
Total	**0.0892**	**0.0788**	**0.6742**	**1.4100e-003**	**0.1483**	**1.0100e-003**	**0.1493**	**0.0393**	**9.4000e-004**	**0.0403**		**140.4437**	**140.4437**	**5.8300e-003**		**140.5895**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0690	0.5896	1.3700e-003	0.1483	9.8000e-004	0.1493	0.0393	9.1000e-004	0.0402		136.3132	136.3132	5.1200e-003		136.4411
Total	**0.0802**	**0.0690**	**0.5896**	**1.3700e-003**	**0.1483**	**9.8000e-004**	**0.1493**	**0.0393**	**9.1000e-004**	**0.0402**		**136.3132**	**136.3132**	**5.1200e-003**		**136.4411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0802	0.0690	0.5896	1.3700e-003	0.1483	9.8000e-004	0.1493	0.0393	9.1000e-004	0.0402		136.3132	136.3132	5.1200e-003		136.4411
Total	**0.0802**	**0.0690**	**0.5896**	**1.3700e-003**	**0.1483**	**9.8000e-004**	**0.1493**	**0.0393**	**9.1000e-004**	**0.0402**		**136.3132**	**136.3132**	**5.1200e-003**		**136.4411**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0828	0.7075	1.6400e-003	0.1780	1.1800e-003	0.1791	0.0472	1.0900e-003	0.0483		163.5759	163.5759	6.1400e-003		163.7294
Total	**0.0962**	**0.0828**	**0.7075**	**1.6400e-003**	**0.1780**	**1.1800e-003**	**0.1791**	**0.0472**	**1.0900e-003**	**0.0483**		**163.5759**	**163.5759**	**6.1400e-003**		**163.7294**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0828	0.7075	1.6400e-003	0.1780	1.1800e-003	0.1791	0.0472	1.0900e-003	0.0483		163.5759	163.5759	6.1400e-003		163.7294
Total	**0.0962**	**0.0828**	**0.7075**	**1.6400e-003**	**0.1780**	**1.1800e-003**	**0.1791**	**0.0472**	**1.0900e-003**	**0.0483**		**163.5759**	**163.5759**	**6.1400e-003**		**163.7294**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	**0.0878**	**0.0729**	**0.6216**	**1.5900e-003**	**0.1780**	**1.1400e-003**	**0.1791**	**0.0472**	**1.0500e-003**	**0.0483**		**158.5129**	**158.5129**	**5.2400e-003**		**158.6439**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	**0.0878**	**0.0729**	**0.6216**	**1.5900e-003**	**0.1780**	**1.1400e-003**	**0.1791**	**0.0472**	**1.0500e-003**	**0.0483**		**158.5129**	**158.5129**	**5.2400e-003**		**158.6439**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.6733**	**2.1739**	**10.8472**	**3.5965**	**2.0000**	**5.5965**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	**0.0975**	**0.0810**	**0.6907**	**1.7700e-003**	**0.1977**	**1.2600e-003**	**0.1990**	**0.0524**	**1.1700e-003**	**0.0536**		**176.1254**	**176.1254**	**5.8200e-003**		**176.2710**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.6733**	**2.1739**	**10.8472**	**3.5965**	**2.0000**	**5.5965**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	**0.0975**	**0.0810**	**0.6907**	**1.7700e-003**	**0.1977**	**1.2600e-003**	**0.1990**	**0.0524**	**1.1700e-003**	**0.0536**		**176.1254**	**176.1254**	**5.8200e-003**		**176.2710**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0910	0.0724	0.6255	1.7100e-003	0.1977	1.2200e-003	0.1990	0.0524	1.1300e-003	0.0536		170.1228	170.1228	5.1700e-003		170.2520
Total	**0.0910**	**0.0724**	**0.6255**	**1.7100e-003**	**0.1977**	**1.2200e-003**	**0.1990**	**0.0524**	**1.1300e-003**	**0.0536**		**170.1228**	**170.1228**	**5.1700e-003**		**170.2520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0910	0.0724	0.6255	1.7100e-003	0.1977	1.2200e-003	0.1990	0.0524	1.1300e-003	0.0536		170.1228	170.1228	5.1700e-003		170.2520
Total	**0.0910**	**0.0724**	**0.6255**	**1.7100e-003**	**0.1977**	**1.2200e-003**	**0.1990**	**0.0524**	**1.1300e-003**	**0.0536**		**170.1228**	**170.1228**	**5.1700e-003**		**170.2520**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0856	0.0651	0.5726	1.6500e-003	0.1977	1.1900e-003	0.1989	0.0524	1.1000e-003	0.0535		164.0423	164.0423	4.6300e-003		164.1581
Total	**0.0856**	**0.0651**	**0.5726**	**1.6500e-003**	**0.1977**	**1.1900e-003**	**0.1989**	**0.0524**	**1.1000e-003**	**0.0535**		**164.0423**	**164.0423**	**4.6300e-003**		**164.1581**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0856	0.0651	0.5726	1.6500e-003	0.1977	1.1900e-003	0.1989	0.0524	1.1000e-003	0.0535		164.0423	164.0423	4.6300e-003		164.1581
Total	**0.0856**	**0.0651**	**0.5726**	**1.6500e-003**	**0.1977**	**1.1900e-003**	**0.1989**	**0.0524**	**1.1000e-003**	**0.0535**		**164.0423**	**164.0423**	**4.6300e-003**		**164.1581**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1533	96.3719	29.4836	0.2082	5.0152	0.2673	5.2825	1.4446	0.2556	1.7002		22,197.7056	22,197.7056	1.3751		22,232.0834
Worker	11.1366	8.4740	74.5271	0.2143	25.7336	0.1549	25.8885	6.8251	0.1428	6.9679		21,350.1046	21,350.1046	0.6026		21,365.1702
Total	**14.2899**	**104.8460**	**104.0107**	**0.4225**	**30.7488**	**0.4222**	**31.1709**	**8.2696**	**0.3984**	**8.6681**		**43,547.8102**	**43,547.8102**	**1.9777**		**43,597.2536**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1533	96.3719	29.4836	0.2082	5.0152	0.2673	5.2825	1.4446	0.2556	1.7002		22,197.7056	22,197.7056	1.3751		22,232.0834
Worker	11.1366	8.4740	74.5271	0.2143	25.7336	0.1549	25.8885	6.8251	0.1428	6.9679		21,350.1046	21,350.1046	0.6026		21,365.1702
Total	**14.2899**	**104.8460**	**104.0107**	**0.4225**	**30.7488**	**0.4222**	**31.1709**	**8.2696**	**0.3984**	**8.6681**		**43,547.8102**	**43,547.8102**	**1.9777**		**43,597.2536**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.4095	79.5553	25.7195	0.2044	5.0161	0.1231	5.1391	1.4449	0.1177	1.5625		21,825.0594	21,825.0594	1.2194		21,855.5453
Worker	10.4826	7.6161	67.9992	0.2062	25.7336	0.1509	25.8845	6.8251	0.1391	6.9641		20,549.4202	20,549.4202	0.5374		20,562.8560
Total	**12.8921**	**87.1714**	**93.7187**	**0.4106**	**30.7497**	**0.2739**	**31.0236**	**8.2699**	**0.2567**	**8.5267**		**42,374.4796**	**42,374.4796**	**1.7569**		**42,418.4013**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.4095	79.5553	25.7195	0.2044	5.0161	0.1231	5.1391	1.4449	0.1177	1.5625		21,825.0594	21,825.0594	1.2194		21,855.5453
Worker	10.4826	7.6161	67.9992	0.2062	25.7336	0.1509	25.8845	6.8251	0.1391	6.9641		20,549.4202	20,549.4202	0.5374		20,562.8560
Total	**12.8921**	**87.1714**	**93.7187**	**0.4106**	**30.7497**	**0.2739**	**31.0236**	**8.2699**	**0.2567**	**8.5267**		**42,374.4796**	**42,374.4796**	**1.7569**		**42,418.4013**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2835	77.7698	24.1970	0.2031	5.0170	0.1134	5.1304	1.4452	0.1084	1.5536		21,704.9531	21,704.9531	1.2259		21,735.6007
Worker	9.9047	6.8717	62.6430	0.1981	25.7336	0.1473	25.8809	6.8251	0.1357	6.9608		19,750.5871	19,750.5871	0.4818		19,762.6330
Total	**12.1882**	**84.6415**	**86.8401**	**0.4012**	**30.7506**	**0.2607**	**31.0112**	**8.2703**	**0.2441**	**8.5144**		**41,455.5402**	**41,455.5402**	**1.7077**		**41,498.2337**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2835	77.7698	24.1970	0.2031	5.0170	0.1134	5.1304	1.4452	0.1084	1.5536		21,704.9531	21,704.9531	1.2259		21,735.6007
Worker	9.9047	6.8717	62.6430	0.1981	25.7336	0.1473	25.8809	6.8251	0.1357	6.9608		19,750.5871	19,750.5871	0.4818		19,762.6330
Total	**12.1882**	**84.6415**	**86.8401**	**0.4012**	**30.7506**	**0.2607**	**31.0112**	**8.2703**	**0.2441**	**8.5144**		**41,455.5402**	**41,455.5402**	**1.7077**		**41,498.2337**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1771	76.1266	22.9970	0.2018	5.0178	0.1045	5.1222	1.4455	0.0999	1.5453		21,591.6290	21,591.6290	1.2315		21,622.4156
Worker	9.3906	6.2209	57.7107	0.1902	25.7336	0.1442	25.8778	6.8251	0.1328	6.9579		18,959.1055	18,959.1055	0.4334		18,969.9392
Total	**11.5676**	**82.3475**	**80.7077**	**0.3919**	**30.7514**	**0.2486**	**31.0000**	**8.2706**	**0.2327**	**8.5032**		**40,550.7345**	**40,550.7345**	**1.6648**		**40,592.3548**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1771	76.1266	22.9970	0.2018	5.0178	0.1045	5.1222	1.4455	0.0999	1.5453		21,591.6290	21,591.6290	1.2315		21,622.4156
Worker	9.3906	6.2209	57.7107	0.1902	25.7336	0.1442	25.8778	6.8251	0.1328	6.9579		18,959.1055	18,959.1055	0.4334		18,969.9392
Total	**11.5676**	**82.3475**	**80.7077**	**0.3919**	**30.7514**	**0.2486**	**31.0000**	**8.2706**	**0.2327**	**8.5032**		**40,550.7345**	**40,550.7345**	**1.6648**		**40,592.3548**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0841	74.6585	21.9962	0.2006	5.0185	0.0970	5.1154	1.4458	0.0927	1.5384		21,485.5848	21,485.5848	1.2363		21,516.4921
Worker	8.9471	5.6678	53.5070	0.1831	25.7336	0.1396	25.8732	6.8251	0.1286	6.9537		18,254.9373	18,254.9373	0.3923		18,264.7452
Total	**11.0313**	**80.3264**	**75.5031**	**0.3837**	**30.7521**	**0.2366**	**30.9887**	**8.2708**	**0.2213**	**8.4921**		**39,740.5220**	**39,740.5220**	**1.6286**		**39,781.2374**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0841	74.6585	21.9962	0.2006	5.0185	0.0970	5.1154	1.4458	0.0927	1.5384		21,485.5848	21,485.5848	1.2363		21,516.4921
Worker	8.9471	5.6678	53.5070	0.1831	25.7336	0.1396	25.8732	6.8251	0.1286	6.9537		18,254.9373	18,254.9373	0.3923		18,264.7452
Total	**11.0313**	**80.3264**	**75.5031**	**0.3837**	**30.7521**	**0.2366**	**30.9887**	**8.2708**	**0.2213**	**8.4921**		**39,740.5220**	**39,740.5220**	**1.6286**		**39,781.2374**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0014	73.3286	21.0501	0.1996	5.0191	0.0907	5.1098	1.4460	0.0867	1.5327		21,388.5443	21,388.5443	1.2393		21,419.5279
Worker	8.4966	5.1556	49.5899	0.1767	25.7336	0.1318	25.8654	6.8251	0.1213	6.9464		17,624.4802	17,624.4802	0.3541		17,633.3321
Total	**10.4980**	**78.4842**	**70.6400**	**0.3763**	**30.7527**	**0.2225**	**30.9752**	**8.2710**	**0.2080**	**8.4791**		**39,013.0245**	**39,013.0245**	**1.5934**		**39,052.8600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0014	73.3286	21.0501	0.1996	5.0191	0.0907	5.1098	1.4460	0.0867	1.5327		21,388.5443	21,388.5443	1.2393		21,419.5279
Worker	8.4966	5.1556	49.5899	0.1767	25.7336	0.1318	25.8654	6.8251	0.1213	6.9464		17,624.4802	17,624.4802	0.3541		17,633.3321
Total	**10.4980**	**78.4842**	**70.6400**	**0.3763**	**30.7527**	**0.2225**	**30.9752**	**8.2710**	**0.2080**	**8.4791**		**39,013.0245**	**39,013.0245**	**1.5934**		**39,052.8600**

3.5 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9332	72.1727	20.3693	0.1986	5.0197	0.0853	5.1050	1.4462	0.0816	1.5278		21,305.6010	21,305.6010	1.2414		21,336.6370
Worker	8.0122	4.7032	46.2247	0.1711	25.7336	0.1224	25.8560	6.8251	0.1126	6.9377		17,065.9899	17,065.9899	0.3221		17,074.0424
Total	**9.9454**	**76.8758**	**66.5940**	**0.3697**	**30.7533**	**0.2077**	**30.9610**	**8.2712**	**0.1942**	**8.4654**		**38,371.5909**	**38,371.5909**	**1.5635**		**38,410.6794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9332	72.1727	20.3693	0.1986	5.0197	0.0853	5.1050	1.4462	0.0816	1.5278		21,305.6010	21,305.6010	1.2414		21,336.6370
Worker	8.0122	4.7032	46.2247	0.1711	25.7336	0.1224	25.8560	6.8251	0.1126	6.9377		17,065.9899	17,065.9899	0.3221		17,074.0424
Total	**9.9454**	**76.8758**	**66.5940**	**0.3697**	**30.7533**	**0.2077**	**30.9610**	**8.2712**	**0.1942**	**8.4654**		**38,371.5909**	**38,371.5909**	**1.5635**		**38,410.6794**

3.5 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8712	71.0456	19.7880	0.1978	5.0202	0.0798	5.1000	1.4464	0.0762	1.5226		21,224.3974	21,224.3974	1.2422		21,255.4516
Worker	7.4945	4.2837	42.9946	0.1661	25.7336	0.1135	25.8471	6.8251	0.1044	6.9295		16,571.8953	16,571.8953	0.2914		16,579.1803
Total	**9.3657**	**75.3292**	**62.7826**	**0.3638**	**30.7538**	**0.1932**	**30.9470**	**8.2714**	**0.1806**	**8.4521**		**37,796.2926**	**37,796.2926**	**1.5336**		**37,834.6319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8712	71.0456	19.7880	0.1978	5.0202	0.0798	5.1000	1.4464	0.0762	1.5226		21,224.3974	21,224.3974	1.2422		21,255.4516
Worker	7.4945	4.2837	42.9946	0.1661	25.7336	0.1135	25.8471	6.8251	0.1044	6.9295		16,571.8953	16,571.8953	0.2914		16,579.1803
Total	**9.3657**	**75.3292**	**62.7826**	**0.3638**	**30.7538**	**0.1932**	**30.9470**	**8.2714**	**0.1806**	**8.4521**		**37,796.2926**	**37,796.2926**	**1.5336**		**37,834.6319**

3.5 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8234	70.1109	19.3469	0.1970	5.0207	0.0756	5.0963	1.4465	0.0723	1.5188		21,159.6440	21,159.6440	1.2428		21,190.7136
Worker	6.9831	3.8996	40.1042	0.1617	25.7336	0.1053	25.8389	6.8251	0.0969	6.9219		16,136.7299	16,136.7299	0.2641		16,143.3334
Total	**8.8064**	**74.0105**	**59.4511**	**0.3587**	**30.7543**	**0.1809**	**30.9352**	**8.2716**	**0.1691**	**8.4407**		**37,296.3739**	**37,296.3739**	**1.5069**		**37,334.0470**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.8234	70.1109	19.3469	0.1970	5.0207	0.0756	5.0963	1.4465	0.0723	1.5188		21,159.6440	21,159.6440	1.2428		21,190.7136
Worker	6.9831	3.8996	40.1042	0.1617	25.7336	0.1053	25.8389	6.8251	0.0969	6.9219		16,136.7299	16,136.7299	0.2641		16,143.3334
Total	**8.8064**	**74.0105**	**59.4511**	**0.3587**	**30.7543**	**0.1809**	**30.9352**	**8.2716**	**0.1691**	**8.4407**		**37,296.3739**	**37,296.3739**	**1.5069**		**37,334.0470**

3.5 Building Construction - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2031

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7843	69.2727	19.0088	0.1965	5.0210	0.0719	5.0930	1.4467	0.0688	1.5154		21,110.1988	21,110.1988	1.2431		21,141.2752
Worker	6.4311	3.5326	37.3073	0.1578	25.7336	0.0980	25.8316	6.8251	0.0902	6.9152		15,755.3489	15,755.3489	0.2381		15,761.3003
Total	**8.2154**	**72.8053**	**56.3161**	**0.3543**	**30.7546**	**0.1700**	**30.9246**	**8.2717**	**0.1589**	**8.4307**		**36,865.5477**	**36,865.5477**	**1.4811**		**36,902.5754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2031

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7843	69.2727	19.0088	0.1965	5.0210	0.0719	5.0930	1.4467	0.0688	1.5154		21,110.1988	21,110.1988	1.2431		21,141.2752
Worker	6.4311	3.5326	37.3073	0.1578	25.7336	0.0980	25.8316	6.8251	0.0902	6.9152		15,755.3489	15,755.3489	0.2381		15,761.3003
Total	**8.2154**	**72.8053**	**56.3161**	**0.3543**	**30.7546**	**0.1700**	**30.9246**	**8.2717**	**0.1589**	**8.4307**		**36,865.5477**	**36,865.5477**	**1.4811**		**36,902.5754**

3.5 Building Construction - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7528	68.4846	18.7699	0.1961	5.0214	0.0686	5.0900	1.4468	0.0655	1.5123		21,074.9305	21,074.9305	1.2429		21,106.0042
Worker	5.9211	3.2110	34.8271	0.1545	25.7336	0.0913	25.8249	6.8251	0.0840	6.9090		15,423.1075	15,423.1075	0.2151		15,428.4837
Total	**7.6740**	**71.6955**	**53.5970**	**0.3506**	**30.7550**	**0.1599**	**30.9149**	**8.2719**	**0.1495**	**8.4214**		**36,498.0380**	**36,498.0380**	**1.4580**		**36,534.4878**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7528	68.4846	18.7699	0.1961	5.0214	0.0686	5.0900	1.4468	0.0655	1.5123		21,074.9305	21,074.9305	1.2429		21,106.0042
Worker	5.9211	3.2110	34.8271	0.1545	25.7336	0.0913	25.8249	6.8251	0.0840	6.9090		15,423.1075	15,423.1075	0.2151		15,428.4837
Total	**7.6740**	**71.6955**	**53.5970**	**0.3506**	**30.7550**	**0.1599**	**30.9149**	**8.2719**	**0.1495**	**8.4214**		**36,498.0380**	**36,498.0380**	**1.4580**		**36,534.4878**

3.5 Building Construction - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7286	67.8091	18.5746	0.1958	5.0217	0.0659	5.0875	1.4469	0.0629	1.5098		21,050.1244	21,050.1244	1.2439		21,081.2229
Worker	5.4961	2.9454	32.7441	0.1516	25.7336	0.0853	25.8189	6.8251	0.0784	6.9035		15,136.3351	15,136.3351	0.1959		15,141.2324
Total	**7.2247**	**70.7545**	**51.3186**	**0.3474**	**30.7553**	**0.1511**	**30.9064**	**8.2720**	**0.1414**	**8.4133**		**36,186.4595**	**36,186.4595**	**1.4398**		**36,222.4553**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7286	67.8091	18.5746	0.1958	5.0217	0.0659	5.0875	1.4469	0.0629	1.5098		21,050.1244	21,050.1244	1.2439		21,081.2229
Worker	5.4961	2.9454	32.7441	0.1516	25.7336	0.0853	25.8189	6.8251	0.0784	6.9035		15,136.3351	15,136.3351	0.1959		15,141.2324
Total	**7.2247**	**70.7545**	**51.3186**	**0.3474**	**30.7553**	**0.1511**	**30.9064**	**8.2720**	**0.1414**	**8.4133**		**36,186.4595**	**36,186.4595**	**1.4398**		**36,222.4553**

3.5 Building Construction - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7064	67.1981	18.4019	0.1956	5.0219	0.0634	5.0853	1.4470	0.0605	1.5075		21,032.9510	21,032.9510	1.2433		21,064.0331
Worker	5.1604	2.7344	30.8954	0.1491	25.7336	0.0798	25.8134	6.8251	0.0734	6.8984		14,889.6202	14,889.6202	0.1790		14,894.0956
Total	**6.8668**	**69.9325**	**49.2973**	**0.3446**	**30.7555**	**0.1431**	**30.8987**	**8.2721**	**0.1339**	**8.4060**		**35,922.5712**	**35,922.5712**	**1.4223**		**35,958.1287**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.7064	67.1981	18.4019	0.1956	5.0219	0.0634	5.0853	1.4470	0.0605	1.5075		21,032.9510	21,032.9510	1.2433		21,064.0331
Worker	5.1604	2.7344	30.8954	0.1491	25.7336	0.0798	25.8134	6.8251	0.0734	6.8984		14,889.6202	14,889.6202	0.1790		14,894.0956
Total	**6.8668**	**69.9325**	**49.2973**	**0.3446**	**30.7555**	**0.1431**	**30.8987**	**8.2721**	**0.1339**	**8.4060**		**35,922.5712**	**35,922.5712**	**1.4223**		**35,958.1287**

3.5 Building Construction - 2035

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

3.5 Building Construction - 2036

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2036

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2036

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

3.5 Building Construction - 2037

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2037

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2037

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

3.5 Building Construction - 2038

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2038

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2038

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

3.5 Building Construction - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6867	66.6713	18.2664	0.1954	5.0222	0.0613	5.0835	1.4471	0.0586	1.5057		21,021.2657	21,021.2657	1.2416		21,052.3058
Worker	4.8745	2.5700	29.3328	0.1470	25.7336	0.0749	25.8085	6.8251	0.0689	6.8939		14,679.9295	14,679.9295	0.1649		14,684.0518
Total	**6.5611**	**69.2414**	**47.5992**	**0.3424**	**30.7558**	**0.1362**	**30.8919**	**8.2721**	**0.1274**	**8.3996**		**35,701.1951**	**35,701.1951**	**1.4065**		**35,736.3577**

3.5 Building Construction - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1970	6.8903	16.1185	0.0310		0.0737	0.0737		0.0737	0.0737		2,897.5471	2,897.5471	0.1041		2,900.1503
Total	**1.1970**	**6.8903**	**16.1185**	**0.0310**		**0.0737**	**0.0737**		**0.0737**	**0.0737**		**2,897.5471**	**2,897.5471**	**0.1041**		**2,900.1503**

3.5 Building Construction - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6466	64.8342	18.0790	0.1959	5.0227	0.0552	5.0779	1.4473	0.0527	1.5000		21,102.8233	21,102.8233	1.2425		21,133.8866
Worker	3.8666	2.0546	24.5747	0.1405	25.7336	0.0581	25.7917	6.8251	0.0534	6.8785		14,039.0045	14,039.0045	0.1226		14,042.0695
Total	**5.5132**	**66.8888**	**42.6537**	**0.3364**	**30.7563**	**0.1133**	**30.8696**	**8.2723**	**0.1062**	**8.3785**		**35,141.8278**	**35,141.8278**	**1.3651**		**35,175.9560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1970	6.8903	16.1185	0.0310		0.0737	0.0737		0.0737	0.0737	0.0000	2,897.5471	2,897.5471	0.1041		2,900.1503
Total	**1.1970**	**6.8903**	**16.1185**	**0.0310**		**0.0737**	**0.0737**		**0.0737**	**0.0737**	**0.0000**	**2,897.5471**	**2,897.5471**	**0.1041**		**2,900.1503**

3.5 Building Construction - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.6466	64.8342	18.0790	0.1959	5.0227	0.0552	5.0779	1.4473	0.0527	1.5000		21,102.8233	21,102.8233	1.2425		21,133.8866
Worker	3.8666	2.0546	24.5747	0.1405	25.7336	0.0581	25.7917	6.8251	0.0534	6.8785		14,039.0045	14,039.0045	0.1226		14,042.0695
Total	**5.5132**	**66.8888**	**42.6537**	**0.3364**	**30.7563**	**0.1133**	**30.8696**	**8.2723**	**0.1062**	**8.3785**		**35,141.8278**	**35,141.8278**	**1.3651**		**35,175.9560**

3.6 Paving - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164		2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**		**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0223	0.0118	0.1416	8.1000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		80.9009	80.9009	7.1000e-004		80.9186
Total	**0.0223**	**0.0118**	**0.1416**	**8.1000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**80.9009**	**80.9009**	**7.1000e-004**		**80.9186**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164	0.0000	2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**	**0.0000**	**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0223	0.0118	0.1416	8.1000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		80.9009	80.9009	7.1000e-004		80.9186
Total	**0.0223**	**0.0118**	**0.1416**	**8.1000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**80.9009**	**80.9009**	**7.1000e-004**		**80.9186**

3.6 Paving - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164		2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**		**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0223	0.0118	0.1416	8.1000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		80.9009	80.9009	7.1000e-004		80.9186
Total	**0.0223**	**0.0118**	**0.1416**	**8.1000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**80.9009**	**80.9009**	**7.1000e-004**		**80.9186**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0112	3.6566	15.8177	0.0281		0.1164	0.1164		0.1164	0.1164	0.0000	2,656.5168	2,656.5168	0.0893		2,658.7489
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0112**	**3.6566**	**15.8177**	**0.0281**		**0.1164**	**0.1164**		**0.1164**	**0.1164**	**0.0000**	**2,656.5168**	**2,656.5168**	**0.0893**		**2,658.7489**

3.6 Paving - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0223	0.0118	0.1416	8.1000e-004	0.1483	3.3000e-004	0.1486	0.0393	3.1000e-004	0.0396		80.9009	80.9009	7.1000e-004		80.9186
Total	**0.0223**	**0.0118**	**0.1416**	**8.1000e-004**	**0.1483**	**3.3000e-004**	**0.1486**	**0.0393**	**3.1000e-004**	**0.0396**		**80.9009**	**80.9009**	**7.1000e-004**		**80.9186**

3.7 Architectural Coating - 2041

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003		281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**		**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2041

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7739	0.4112	4.9187	0.0281	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,809.9583	2,809.9583	0.0245		2,810.5717
Total	**0.7739**	**0.4112**	**4.9187**	**0.0281**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,809.9583**	**2,809.9583**	**0.0245**		**2,810.5717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003	0.0000	281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**	**0.0000**	**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2041

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7739	0.4112	4.9187	0.0281	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,809.9583	2,809.9583	0.0245		2,810.5717
Total	**0.7739**	**0.4112**	**4.9187**	**0.0281**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,809.9583**	**2,809.9583**	**0.0245**		**2,810.5717**

3.7 Architectural Coating - 2042

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003		281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**		**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2042

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7739	0.4112	4.9187	0.0281	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,809.9583	2,809.9583	0.0245		2,810.5717
Total	**0.7739**	**0.4112**	**4.9187**	**0.0281**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,809.9583**	**2,809.9583**	**0.0245**		**2,810.5717**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1149	0.7270	1.7923	2.9700e-003		7.4300e-003	7.4300e-003		7.4300e-003	7.4300e-003	0.0000	281.4481	281.4481	9.9000e-003		281.6957
Total	**0.1149**	**0.7270**	**1.7923**	**2.9700e-003**		**7.4300e-003**	**7.4300e-003**		**7.4300e-003**	**7.4300e-003**	**0.0000**	**281.4481**	**281.4481**	**9.9000e-003**		**281.6957**

3.7 Architectural Coating - 2042

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7739	0.4112	4.9187	0.0281	5.1507	0.0116	5.1623	1.3661	0.0107	1.3768		2,809.9583	2,809.9583	0.0245		2,810.5717
Total	**0.7739**	**0.4112**	**4.9187**	**0.0281**	**5.1507**	**0.0116**	**5.1623**	**1.3661**	**0.0107**	**1.3768**		**2,809.9583**	**2,809.9583**	**0.0245**		**2,810.5717**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	55.1813	275.2493	635.1896	3.1046	423.0173	1.4135	424.4308	112.7977	1.3145	114.1122		316,051.4036	316,051.4036	9.4507		316,287.6701
Unmitigated	55.1813	275.2493	635.1896	3.1046	423.0173	1.4135	424.4308	112.7977	1.3145	114.1122		316,051.4036	316,051.4036	9.4507		316,287.6701

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,497.61	2,713.64	2300.53	6,354,699	6,354,699
Apartments Mid Rise	2,979.20	2,862.72	2625.28	7,401,015	7,401,015
Condo/Townhouse	34.86	34.02	29.04	86,181	86,181
General Light Industry	2,613.05	494.87	254.93	6,513,510	6,513,510
Industrial Park	822.33	299.80	87.89	1,905,069	1,905,069
Government (Civic Center)	4,866.46	0.00	0.00	8,162,312	8,162,312
Mobile Home Park	39.92	40.00	34.88	99,658	99,658
Single Family Housing	866.32	901.81	784.42	2,184,951	2,184,951
Strip Mall	24,482.37	23,222.90	11285.53	28,521,953	28,521,953
Office Park	54,380.90	7,809.52	3619.04	96,566,590	96,566,590
Total	93,583.02	38,379.27	21,021.55	157,795,938	157,795,938

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Apartments Mid Rise	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
General Light Industry	13.00	5.00	5.00	59.00	28.00	13.00	92	5	3
Industrial Park	13.00	5.00	5.00	59.00	28.00	13.00	79	19	2
Government (Civic Center)	13.00	5.00	5.00	75.00	20.00	5.00	50	34	16
Mobile Home Park	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Strip Mall	13.00	5.00	5.00	16.60	64.40	19.00	45	40	15
Office Park	13.00	5.00	5.00	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Apartments Mid Rise	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Condo/Townhouse	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
General Light Industry	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Industrial Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Government (Civic Center)	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Mobile Home Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Single Family Housing	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Strip Mall	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535
Office Park	0.617814	0.024228	0.201503	0.100888	0.010115	0.003910	0.012592	0.020425	0.002295	0.001008	0.004008	0.000680	0.000535

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055
NaturalGas Unmitigated	3.7590	34.0011	27.4486	0.2050		2.5971	2.5971		2.5971	2.5971		41,006.8225	41,006.8225	0.7860	0.7518	41,250.5055

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	10590	0.1142	0.9759	0.4153	6.2300e-003		0.0789	0.0789		0.0789	0.0789		1,245.8869	1,245.8869	0.0239	0.0228	1,253.2906
Apartments Mid Rise	10604	0.1144	0.9772	0.4158	6.2400e-003		0.0790	0.0790		0.0790	0.0790		1,247.5338	1,247.5338	0.0239	0.0229	1,254.9473
Condo/Townhouse	307.776	3.3200e-003	0.0284	0.0121	1.8000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003		36.2089	36.2089	6.9000e-004	6.6000e-004	36.4241
General Light Industry	27095.5	0.2922	2.6564	2.2314	0.0159		0.2019	0.2019		0.2019	0.2019		3,187.7073	3,187.7073	0.0611	0.0584	3,206.6503
Government (Civic Center)	7817.24	0.0843	0.7664	0.6438	4.6000e-003		0.0583	0.0583		0.0583	0.0583		919.6748	919.6748	0.0176	0.0169	925.1400
Industrial Park	5399.86	0.0582	0.5294	0.4447	3.1800e-003		0.0402	0.0402		0.0402	0.0402		635.2774	635.2774	0.0122	0.0117	639.0525
Mobile Home Park	372.468	4.0200e-003	0.0343	0.0146	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003		43.8197	43.8197	8.4000e-004	8.0000e-004	44.0801
Office Park	275538	2.9715	27.0135	22.6914	0.1621		2.0530	2.0530		2.0530	2.0530		32,416.2218	32,416.2218	0.6213	0.5943	32,608.8552
Single Family Housing	7246.36	0.0782	0.6678	0.2842	4.2600e-003		0.0540	0.0540		0.0540	0.0540		852.5135	852.5135	0.0163	0.0156	857.5796
Strip Mall	3586.82	0.0387	0.3517	0.2954	2.1100e-003		0.0267	0.0267		0.0267	0.0267		421.9784	421.9784	8.0900e-003	7.7400e-003	424.4860
Total		**3.7590**	**34.0011**	**27.4486**	**0.2050**		**2.5971**	**2.5971**		**2.5971**	**2.5971**		**41,006.8225**	**41,006.8225**	**0.7860**	**0.7518**	**41,250.5055**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	10.59	0.1142	0.9759	0.4153	6.2300e-003		0.0789	0.0789		0.0789	0.0789		1,245.8869	1,245.8869	0.0239	0.0228	1,253.2906
Apartments Mid Rise	10.604	0.1144	0.9772	0.4158	6.2400e-003		0.0790	0.0790		0.0790	0.0790		1,247.5338	1,247.5338	0.0239	0.0229	1,254.9473
Condo/Townhouse	0.307776	3.3200e-003	0.0284	0.0121	1.8000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003		36.2089	36.2089	6.9000e-004	6.6000e-004	36.4241
General Light Industry	27.0955	0.2922	2.6564	2.2314	0.0159		0.2019	0.2019		0.2019	0.2019		3,187.7073	3,187.7073	0.0611	0.0584	3,206.6503
Government (Civic Center)	7.81724	0.0843	0.7664	0.6438	4.6000e-003		0.0583	0.0583		0.0583	0.0583		919.6748	919.6748	0.0176	0.0169	925.1400
Industrial Park	5.39986	0.0582	0.5294	0.4447	3.1800e-003		0.0402	0.0402		0.0402	0.0402		635.2774	635.2774	0.0122	0.0117	639.0525
Mobile Home Park	0.372468	4.0200e-003	0.0343	0.0146	2.2000e-004		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003		43.8197	43.8197	8.4000e-004	8.0000e-004	44.0801
Office Park	275.538	2.9715	27.0135	22.6914	0.1621		2.0530	2.0530		2.0530	2.0530		32,416.2218	32,416.2218	0.6213	0.5943	32,608.8552
Single Family Housing	7.24636	0.0782	0.6678	0.2842	4.2600e-003		0.0540	0.0540		0.0540	0.0540		852.5135	852.5135	0.0163	0.0156	857.5796
Strip Mall	3.58682	0.0387	0.3517	0.2954	2.1100e-003		0.0267	0.0267		0.0267	0.0267		421.9784	421.9784	8.0900e-003	7.7400e-003	424.4860
Total		**3.7590**	**34.0011**	**27.4486**	**0.2050**		**2.5971**	**2.5971**		**2.5971**	**2.5971**		**41,006.8225**	**41,006.8225**	**0.7860**	**0.7518**	**41,250.5055**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392
Unmitigated	170.5857	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286	0.0000	139.7603	139.7603	0.1352	0.0000	143.1392

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.6480					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	149.5924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3452	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286		139.7603	139.7603	0.1352		143.1392
Total	**170.5857**	**0.8891**	**77.1605**	**4.1100e-003**		**0.4286**	**0.4286**		**0.4286**	**0.4286**	**0.0000**	**139.7603**	**139.7603**	**0.1352**	**0.0000**	**143.1392**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.6480					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	149.5924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3452	0.8891	77.1605	4.1100e-003		0.4286	0.4286		0.4286	0.4286		139.7603	139.7603	0.1352		143.1392
Total	**170.5857**	**0.8891**	**77.1605**	**4.1100e-003**		**0.4286**	**0.4286**		**0.4286**	**0.4286**	**0.0000**	**139.7603**	**139.7603**	**0.1352**	**0.0000**	**143.1392**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Plan Morro Bay
CalEEMod Calculations

Table LU-2 (Excerpt)			
Land Use Designation	**Acres (approximate)**	**Total Estimated Dwelling Units -2040**	**Non-residential Square Feet -2040**
Residential	752	6,521	—
Commercial	281	540	10,155,892
Industrial	37	—	799,468
Waterfront Commercial/ Industrial	6	—	256,760
Mixed Use	34	271	1,178,119
Open Space & Agriculture	7,570	15	—
Public/Institutional	153	—	371,651
Total (2040)	8,833	7,347	12,761,890
Existing (2016) Totals	8,833	6,414	6,778,070
Change, 2016-2040	—	**933**	**5,983,820**

Project Net Change				
	Acres*	**DU**	**Non-residential square feet**	**Increase in Non-residential acreage**
Residential	752	828		
Commercial	281	69	4,761,915	109
Industrial	37		374,856	9
Waterfront Commercial/ Industrial	6		120,390	3
Mixed Use	34	34	552,399	13
Open Space & Agriculture	7,570			
Public/Institutional	153		174,260	4
				137

*Calculated by taking total change and weighting for each specific use (i.e., Total Change * specific use amount in 2040/ total amount in 2040)*
**No change in acres*

Residential Unit Calculations							
				HOUSING UNIT TYPES			
Source of Data		**Total**	**Single Detached**	**Single Attached**	**Two to Four**	**Five Plus**	**Mobile Homes**
2016 DOF, E-5 Report*	**Existing Dwelling Units**	6,414	4,585	369	446	528	486
Table LU-2	**Residential Land Use Designation Net Change**	107	76	6	7	9	8
Table LU-2	**Commercial + Mixed Use + Ag Designations Net Change**	811			371	440	
Table LU-2	**Ag Designation Net Change**	15	15				
	Total (entered into CalEEMod)	933	**91**	**6**	**379**	**448**	**8**
	Land Use Designation Assigned in CalEEMod		Single-family housing	Condo/townhouse	apartments low-rise	mid-rise apartments	mobile home community

**http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/*

Non-Residential Square Footage Calculations	
	Non-residential Area (square feet) Net Change
Commercial	4,761,915
Industrial	374,856
Waterfront Commercial/ Industrial	120,390
Mixed Use	552,399
Public/Institutional	174,260

Calculated by taking total change and weighting for each specific use
*(i.e., Total Change * specific land use amount in 2040/ total amount in 2040)*

Table 7.1
Morro Bay Existing On-The-Ground Land Use

Land Use Designation	Sum of Acres	Percent of Area
Single-Family Residential	605.53	14.03%
Multiple-Family Residential	39.51	0.92%
Downtown	31.27	0.72%
Commercial Retail/Office	63.34	1.47%
Commercial Service/Industrial	74.61	1.73%
School	75.93	1.76%
Major Public Facility	99.97	2.32%
Public Facility/Public Land	26.46	0.61%
Cultural Facility/Religious Facility/Event Center	19.42	0.45%
Visitor-Serving	19.79	0.46%
Community Park/Regional Park/Golf Course/Other Recreation	388.10	8.99%
Open Space Area/Conservation Area/Riparian Area	397.59	9.21%
State Park/Beach	2,139.06	49.55%
Undeveloped	54.02	1.25%
Agriculture (Other)	216.82	5.02%
Agriculture (Grazing/Ranchland)	54.14	1.25%
Road/Other	11.11	0.26%
Total	4,316.70	100.00%

Source: San Luis Obispo Council of Governments 2016.

CalEEMod Assumptions

Project emissions were modeled as the net change between existing conditions and 2040 development capacity.

Determining dwelling units, square footages, and acreages for input into CalEEMod

<u>Residential</u>

- Dwelling units. The net change in dwelling units (du) resulting from the project (933 units), also referred to as "project" units, was allocated to different housing types in CalEEMod (single-family housing, condo/townhouse, apartments low-rise, apartments mid-rise, and mobile home communities) using existing 2016 housing unit data provided by the Department of Finance (DOF) and reasonable assumptions, as described below.
    - The project units under the residential land use designation were determined by subtracting the number of units under the mixed-use, commercial, and open space & agriculture designations under 2040 conditions (826 du) from the total net change in dwelling units (933 du; therefore: 933 dy - 826 du = 107 du). The resulting 107 du were allocated across the different residential types by weighting each category based on 2016 DOF data (e.g., for single family detached housing (SFH), $Project_{SFH}$ du = $Project_{Total}$ du * 2016_{SFH} du/ 2016_{total} du).
    - For project units under the commercial and mixed-use designations, it was assumed that all housing would be multi-family and project dwelling units were allocated between apartments low-rise and apartments mid-rise by weighting using 2016 DOF data for two to four units (categorized as apartments low-rise for CalEEMod) and five plus units (classified as mid-rise apartments).
    - All 15 units included under the agricultural/open space designation were assumed to be single-family detached units.
- Square footages and lot acreages were kept as CalEEMod defaults.

<u>Non-residential</u>

- Non-residential square footage was determined by taking the project non-residential area (5,983,820 sf) and allocating the total area across the different land use designations by weighting each designation based on the 2040 total areas (e.g., for commercial, $Project_{COM}$ sf = $Project_{Total}$ sf * 2040_{COM} sf/ 2040_{total} sf).
- The various land use designations were modeled under the following CalEEMod land use sub-types:
    - Commercial = Office Park
    - Industrial = General Light Industry
    - Waterfront Commercial/Industrial = Industrial Park
    - Mixed Use = Strip Mall
    - Public/Institutional = Government (Civic Center)
- Lot acreages were kept as CalEEMod defaults.

Appendix D

Bio ESHA Report and Habitat Table

CITY OF MORRO BAY

ENVIRONMENTALLY SENSITIVE HABITAT AREA (ESHA) REVIEW AND CURRENT CONDITIONS MAPPING

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EXECUTIVE SUMMARY

Rincon Consultants, Inc. (Rincon), in cooperation with Michael Baker International (Michael Baker), is assisting the City of Morro Bay (City) to conduct data review and analysis of the current extent and locations of Environmentally Sensitive Habitat Area (ESHA) resources within the City's coastal zone. The goal of the review and data analysis is to assist the City in updating its Local Coastal Program (LCP), obtain mapping approval by the California Coastal Commission (Commission) as part of the City's LCP update, and provide updated maps of potential ESHA under current conditions to better aid planning staff reviewing projects that have the potential to impact ESHA.

Rincon evaluated and overlaid existing the biological resource information and previous ESHA mapping on recent aerial imagery to refine outdated mapping polygons, identify undeveloped areas or areas with no recently mapped ESHA information that have a moderate to high potential to contain ESHA habitats, and review existing data documenting presence and distribution of special status wildlife, plants, and sensitive habitats. These data sources are outlined in more detail below. Field reconnaissance surveys were also conducted for field verification.

Seventeen special status wildlife, sixteen special status plant species, and three special status vegetation communities are documented in California Natural Diversity Database (CNDDB) as occurring within the City's coastal zone. Federally designated critical habitat for south-central California coast steelhead (*Oncorhynchus mykiss*), California red-legged frog (*Rana draytonii*), Morro shoulderband snail (*Helminthoglypta walkeriana*), tidewater goby (*Eucyclogobius newberryi)*, Pacific leatherback sea turtle (*Dermochelys coriacea*), and western snowy plover (*Charadrius alexandrinus nivosus*) also occur within the City's coastal zone. Based on the existing biological resource information and previous ESHA mapping, 16 ESHA types have been determined. These areas fall into three broad categories: aquatic resources and wetland habitats; other sensitive natural communities; and breeding and overwintering sites (roosts, certain nests, and rookeries). These types are described in more detail in Section 4.2 below.

Please note that the graphic information provided portrays the various biological resource boundaries as accurately as possible, but should not be interpreted to constitute site-specific mapping throughout the Morro Bay coastal zone, as site access was limited. This data is only a cartographic representation of the existing environment, evaluated in the context of existing published datasets, and should not be used on its own without field determination procedures to establish precise boundary locations. Conditions on the ground control permit and appeal jurisdictional boundary locations, based on Coastal Act definitions, regardless of how accurate the mapped boundary may be.

1. INTRODUCTION

1.1 PURPOSE

Rincon Consultants, Inc. (Rincon), in cooperation with Michael Baker International (MBI), is assisting the City of Morro Bay (City) to conduct data review and analysis of current extent and locations of Environmentally Sensitive Habitat Area (ESHA) resources within the City's coastal zone. The goal of the review and data analysis is to assist the City in updating its Local Coastal Program (LCP), obtain mapping approval by the California Coastal Commission (Commission) as part of the City's LCP update, and provide updated maps of potential ESHA under current conditions to better aid planning staff reviewing projects that have the potential to impact ESHA.

This report summarizes the methodology used to conduct the review and data analysis, a brief description of the habitats that occur within the Morro Bay coastal zone, and a summary of the updated mapped ESHA based on current conditions within the Morro Bay coastal zone. An analysis of potential effects to ESHA resulting from climate change and associated sea level rise, and a projection of its future effects on ESHA, will be provided under separate cover.

Under the California Coastal Act of 1976 (Coastal Act), activities such as land development, public infrastructure projects, and maintenance within the coastal zone are typically subject to regulatory oversight. The authority for regulating such activities varies throughout the coastal zone. In tide lands and certain non-tidal areas of the coastal zone, the Commission has retained permit authority. In areas of the coastal zone within San Luis Obispo County, permit authority resides with the local governing agency, including San Luis Obispo County for the unincorporated areas, and the coastal municipalities of Pismo Beach, Grover Beach, and Morro Bay. Each of these local jurisdictions has an adopted LCP that provides guidance on land uses and permit requirements consistent with the applicable LCP, as well as the Coastal Act, to protect and enhance resources within the coastal zone.

1.2 REGULATORY DEFINITIONS OF ESHA, WETLANDS AND MARINE RESOURCES

Relevant Coastal Act policies concerning ESHA, wetlands, and marine resources are found in Coastal Act Sections 30107.5, 30121, 30230, 30231, and 30240 and Section 13577(b) of the California Code of Regulations (CCR).

Coastal Act Section 30107.5 Environmentally Sensitive Area

> *"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

To ensure consistency with the Coastal Act, it is important to include the definitions of wetlands found in Coastal Act Section 30121 and CCR Section 13577(b). In addition, the Commission will also consider identification of a species or habitat as rare when there is other compelling evidence of rarity such as consideration for listing as rare, threatened or endangered under the California or Federal Endangered Species Acts and/or evidence of rarity in published academic studies.

The Coastal Act criteria for determining whether a vegetation community qualifies as an ESHA are based upon the habitat's ecological importance, including the rarity or function of the habitat. The California Department of Fish and Wildlife (CDFW) (2010) List of California Terrestrial Natural Communities provides an inventory of California's natural communities and identifies those that are considered rare because of their highly limited distribution. These rare communities may or may not contain individual species that are rare, threatened, or endangered, but would still be considered ESHA by the Commission.

Coastal Act Section 30121 Wetland

> *"Wetland" means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.*

CCR Section 13577(b) (in part)

> *Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate.*

Based on the Coastal Act definition, areas can be classified as "wetlands" within the coastal zone by exhibiting any one of the three wetland parameters used by the U.S. Army Corps to define

wetland areas (U.S. Army Corps of Engineers uses a three-parameter definition). The Coastal Act definition of wetland does not distinguish between wetlands according to their quality. Thus, under the Coastal Act, poorly functioning or degraded areas that meet the definition of wetlands are subject to wetland protection policies.

Section 30230 Marine Resources; Maintenance

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231 Biological Productivity; Water Quality

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30240 Environmentally Sensitive Habitat Areas; Adjacent Developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas. (Amended by Ch. 285, Stats. 1991.)

2. METHODOLOGY

2.1 OVERVIEW

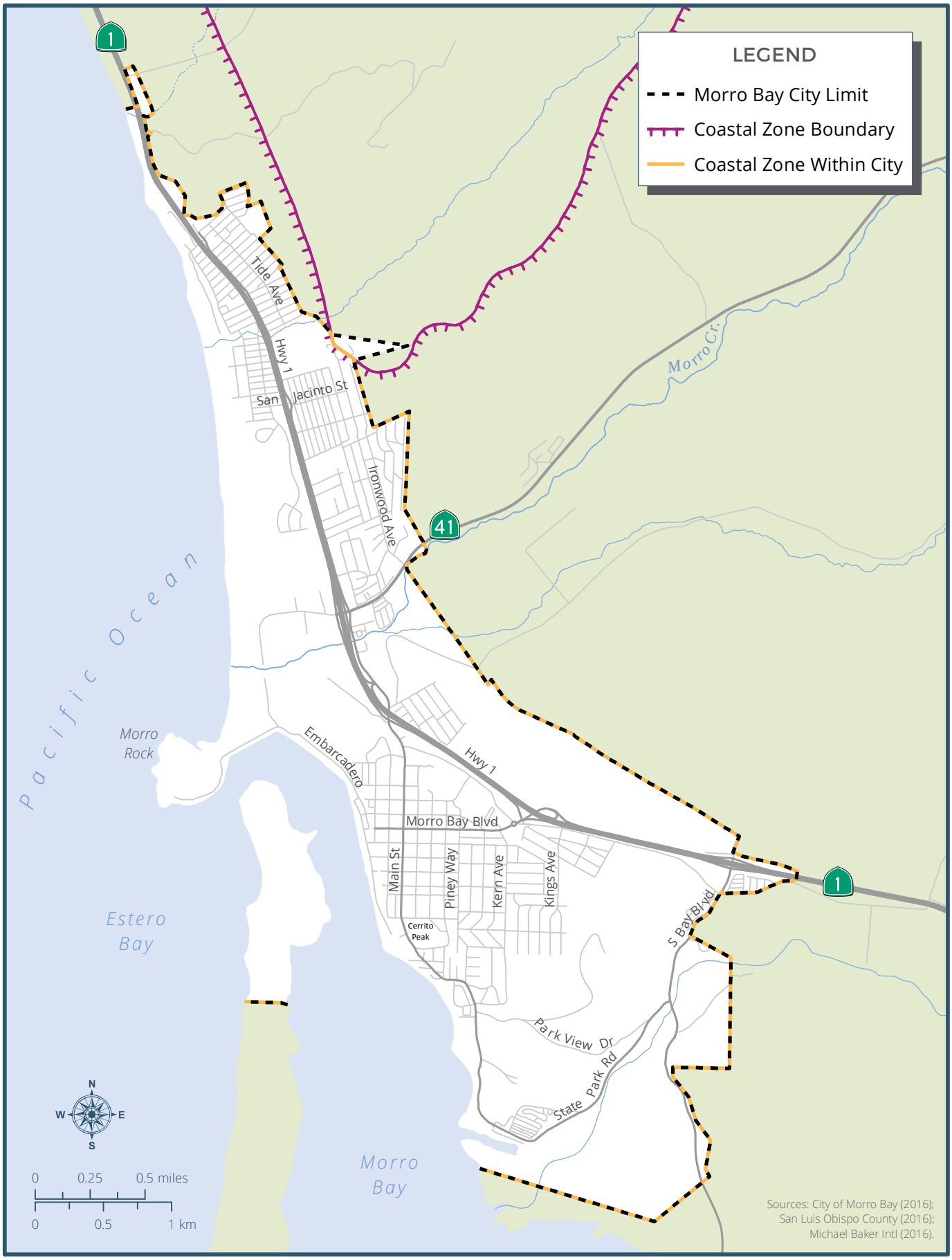
Rincon compiled and reviewed available biological resource mapping data within the City's coastal zone. Specifically, the area included in data analysis is limited to the portions of the City that are contained within the designated coastal zone between Toro Creek Road to the north and pickleweed marsh near the outlets of Chorro and Los Osos Creeks into the Morro Bay Estuary to the south (Figure 1). Rincon also reviewed ESHA mapping for adjacent jurisdictions within the County of San Luis Obispo where they adjoin the City.

Rincon evaluated and overlaid the existing biological resources information and previous ESHA mapping on recent aerial imagery to refine outdated mapping polygons, identify undeveloped areas or areas with no recently mapped ESHA information that have a moderate to high potential to contain ESHA habitats, and review existing data documenting presence and distribution of special status wildlife, plants, and sensitive habitats. These data sources are outlined in more detail below.

Rincon then performed preliminary mapping of ESHA boundaries based on desktop analysis of high-resolution, current aerial photographs and other published datasets. Rincon then conducted a field reconnaissance survey from publicly accessible roads and public lands to evaluate if existing conditions were consistent with the general mapped boundaries, and annotated draft maps. ESHA features were then revised and mapped using Geographic Information Systems (GIS) software, and attribute information for ESHA within the Morro Bay coastal zone was compiled using a combination of field observations regarding existing conditions in the study area, and supporting evidence from a variety of publicly available datasets. The existing published datasets vary in regards to scale, methodology and purpose, and were used as a baseline to support more specifically and consistently mapped ESHA boundaries.

Accessible areas with potential ESHA and sites adjacent to ESHA, as well as rare habitats with high level of sensitivity, were selected for field verification. Field reconnaissance surveys were conducted on May 22, 23, and 24, 2017. The field reconnaissance surveys did not constitute a definitive study to confirm the presence or absence of federal or state listed rare, endangered, threatened or fully protected species (i.e. special status species), nor did the surveys include formal delineation of wetlands and other waters. Protocol surveys to determine the presence or absence of special status species were not performed as part of this analysis.

Based on the above methodology, potential ESHA polygons and stream centerlines were generated using Arc Map 10.3. (These are provided as a separate enclosure with this report.)



Plan MORRO BAY

FIGURE 1

City of Morro Bay Coastal Zone Area

Mapping criteria was generally conducted based on a minimum mapping unit of 0.10 acre and further reduced based on existing site conditions (i.e. breaks in features at existing roads, changes in vegetation structure, the City's coastal zone boundary, and distinction on recent aerial photographs) and publicly available GIS data. Stream features lacking visible riparian canopy or wetland vegetation are depicted as centerlines due to lack of access for more specific mapping that would be necessary for ordinary high water mark (OWHM) and top of bank mapping. Approximately 3,767 acres comprise the Morro Bay coastal zone and therefore, were included in this review. Once the preliminary ESHA polygons were generated, existing information previously reviewed to aide in generating the polygons, including data from the California Natural Diversity Database (CNDDB; CDFW 2017), U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) designated final critical habitat polygons (2017a; 2017), USFWS National Wetlands Inventory (NWI; 2017b), United States Geological Survey (USGS) National Hydrography Dataset (NHD; 2017), and other datasets were overlaid to integrate supporting documentation for ESHA designation into the shapefile attributes. Published maps in reports, including map products in annual eelgrass survey reports by the Morro Bay National Estuary Program (MBNEP), were also referenced.

Based on the above methodology, potential ESHA polygons and stream centerlines were generated using Arc Map 10.3. (These are provided as a separate enclosure with this report.) Mapping criteria was generally conducted based on a minimum mapping unit of 0.10 acre and further reduced based on existing site conditions (i.e. breaks in features at existing roads, changes in vegetation structure, the City's coastal zone boundary, and distinction on recent aerial photographs) and publicly available GIS data. Stream features lacking visible riparian canopy or wetland vegetation are depicted as centerlines due to lack of access for more specific mapping that would be necessary for ordinary high water mark (OWHM) and top of bank mapping. Approximately 3,767 acres comprise the Morro Bay coastal zone and therefore, were included in this review. Once the preliminary ESHA polygons were generated, existing information previously reviewed to aide in generating the polygons, including data from the California Natural Diversity Database (CNDDB; CDFW 2017), U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) designated final critical habitat polygons (2017a; 2017), USFWS National Wetlands Inventory (NWI; 2017b), United States Geological Survey (USGS) National Hydrography Dataset (NHD; 2017), and other datasets were overlaid to integrate supporting documentation for ESHA designation into the shapefile attributes. Published maps in reports, including map products in annual eelgrass survey reports by the Morro Bay National Estuary Program (MBNEP), were also referenced.

The biological productivity of the near-shore portion of the ocean is dependent on upstream activities that effect habitat and water quality. In accordance with the Commission's guidance, Marine Resources as defined in Section 30230 can be considered ESHA. Offshore resources are not included in this dataset of mapped potential ESHA; however, they are awarded the same protection by the Commission, and the condition of the contributing watershed is directly and indirectly linked to water quality and habitat conditions in receiving offshore waters. Thus, offshore marine resources were considered in reviewing potential ESHA.

2.2 SOURCE INFORMATION

The desktop review included existing environmental literature and other pertinent information, including but not limited to:

- A Manual of California Vegetation, Second Edition (Sawyer et al. 2009)
- Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986)
- CNDDB (CDFW 2017a)
- Online Biological Spatial Data Server (BIOS; CDFW 2017b)
- Calflora "What Grows Here" Online Botanical Database (2017)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (2017)
- USFWS NWI Wetlands Mapper (2017a)
- USFWS Critical Habitat Portal (and relevant published shapefiles) (2017b)
- NMFS Critical Habitat on the West Coast (and relevant published shapefiles) (2017a)
- NMFS Essential Fish Habitat Mapper (2017b)
- CDFW BIOS Habitat Connectivity Mapper (and associated shapefiles) (2017b)
- City of Morro Bay General Plan/LCP (1988; 1982, as amended)
- Atlas of Sensitive Species of Morro Bay Area (Sims 2010)
- Morro Bay Eelgrass Reports (MBNEP 2013)

Detailed information on methodology used to derive the source information is available in the source information reports, plans or at the websites listed in Section 6, References of this report. Below is a brief summary of the methodology used to generate shapefiles and other map datasets supporting the sources reviewed to support this mapping effort. Refer to Section 3 for results of database and literature reviews, as well as maps depicting the locations of resources presented by these source data sets. As noted in the following detailed discussion, map scales and methodology among these data sources varied and level of accuracy is not consistent across all datasets.

2.2.1 USFWS National Wetlands Inventory

The USFWS objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. This dataset represents the extent, approximate location and type of wetlands and deepwater habitats in the United States and its Territories. These data delineate the areal extent of wetlands and surface waters as defined by Cowardin et al. (1979). The maps are prepared on a national scale, from the analysis of high altitude imagery, and contain a level of error on a local scale. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis. The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground-truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

This dataset should be used in conjunction with the Wetlands Project Metadata layer, which contains project-specific wetlands mapping procedures and information on dates, scales and emulsion of imagery used to map the wetlands within specific project boundaries. The present goal of the USFWS is to provide the citizens of the United States and its Territories with current geospatially referenced information on the status, extent, characteristics and functions of wetlands, riparian, deepwater and related aquatic habitats in priority areas to promote the understanding and conservation of these resources.

This dataset was used as a reference to support more refined mapping based on aerial photo interpretation and features observable from public rights of way and publicly accessible sites.

Exclusions - Certain wetland habitats are excluded from the NWI mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

By policy, the USFWS also excludes certain types of "farmed wetlands" as may be defined by the Food Security Act or that do not coincide with the Cowardin et al. (1979) definition. Contact the USFWS Regional Wetland Coordinator for additional information on what types of farmed wetlands are included on wetland maps.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

2.2.2 National Hydrography Dataset

The National Hydrography Dataset (NHD), a component of the USGS National Map, is a digital geospatial dataset that defines the general location of surface waters in the United States. The NHD provides mapping of the nation's drainage networks, including rivers, streams, drainages, lakes, ponds, coastlines, dams, and canals, with a resolution of 1:24,000 scale or better. These datasets are updated quarterly and used in general mapping of surface water systems (USGS 2017).

2.2.3 Critical Habitats

Critical habitat is a term used in the federal Endangered Species Act (ESA) and defined as a specific geographic area (or areas) that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. These areas provide notice to the public and land managers of the importance of these areas to the conservation of a listed species. Special protections and/or restrictions are possible in these areas when Federal funding, permits, licenses, authorizations, or actions occur or are required.

When a species is proposed for listing as endangered or threatened under the ESA, the USFWS or NMFS, depending on the species, must consider whether there are areas of habitat believed to be essential to the species' conservation. An area is designated as "critical habitat" after the USFWS or NMFS publishes a proposed rule in the Federal Register and receives and considers public comments on the proposal. The final boundaries of the critical habitat are also published in the Federal Register. Critical habitat is mapped on varying scales and may include areas that are not currently occupied by the species but that will be needed for its recovery. The final boundaries of the critical habitat area, once identified, are published in the Federal Register and accessible to the public. Due to varying scales of mapping efforts and lack of on the ground access, a margin of error is inherent; thus, detailed on-the-ground inspection of any particular site may provide more information regarding a specific site's suitability to support a particular listed species.

The USFWS is responsible for designation of critical habitat for terrestrial species, freshwater aquatic species, and certain fur-bearing ocean mammals, including sea otters. The NMFS of the National Oceanic and Atmospheric Association (NOAA) is responsible for establishing critical habitat for protection of sensitive marine species such as such as whales, sea turtles, corals, and anadromous species including steelhead and salmon. They aim to provide vital services, including the conservation of protected resources and healthy ecosystems.

2.2.4 Marine Mammal Protection Act and Magnuson-Stevens Fishery Conservation and Management Act

The NMFS also administers the Marine Mammal protection Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Under the Marine Mammal Protection Act and the ESA, the NMFS works to recover and protect sensitive marine (and anadromous) wildlife. Under the Magnuson-Stevens Act, the NMFS requires regional fishery management councils to identify the Essential Fish Habitat (EFH) which is identified in a fisheries management plan. EFH is broadly defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. The open ocean including and north of Morro Rock as well as Morro Bay is considered EFH pursuant to the EFH Mapper (NMFS, 2017). EFH in these areas includes but is not limited to groundfish, such as sole, flounder and sanddab, which is currently or has historically been occupied by such species (Pacific Fishery Management Council, 2016).

2.2.5 Habitat Connectivity Maps

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The California Essential Habitat Connectivity Project: A Strategy for Conserving Connected California (Spencer et al. 2010) and Penrod et al. (2010) have evaluated critical wildlife movement corridors throughout California that have been identified as priority areas for conservation. Essential Connectivity Areas (ECAs) represent the most critical wildlife movement areas for long-term conservation of California's sensitive wildlife species; however, it should be noted that ECAs do not represent an exhaustive list of movement corridors in the state and they are presented on a City or County scale. ECAs are large, continuous areas, and individual ECAs may overlap one another without clearly defined boundaries.

2.2.6 CDFW California Natural Diversity Database

The CNDDB aims to provide the most current information and to track the location and condition of all reported occurrences of California's special status species, which include those species that are listed as rare, threatened, or endangered by the CDFW or the USFWS, or are candidates for state and/or federal listing by the CDFW and/or USFWS, or have been designated as "fully protected" or "species of special concern" by the CDFW. The CNDDB also includes information on other species that are tracked by CDFW, that do not fall into any of the categories cited above. The CNDDB also includes a database and spatial dataset of the status and locations of known occurrences of California's rare species and natural community types.

The CNDDB is a dynamic system with information continually being added and upgraded. The CNDDB contains over 84,000 locational records for over 2,500 elements (plant taxa, animal taxa, and natural communities). A location record is referred to as Element Occurrence, and is a site that contains an individual, population, nest site, den, or stand of a special status element. Populations, individuals, or colonies located within 1/4 mile of each other generally constitute a single occurrence, sometimes with multiple parts.

The documentation of these occurrences serves as a guideline and background for designating suitable habitat for special status species. The CNDDB provides the date and meter accuracy of each occurrence to allow further analysis and application of the documented information. Quality of occurrence mapping varies from occurrence to occurrence, based upon the source data submitted.

2.2.7 Morro Bay General Plan/LCP

The California Coastal Act of 1976 requires each coastal jurisdiction in California to prepare and update a LCP to govern future development along the coast. The LCP includes concerns such as land use, archaeology, agriculture, and visual resources, among others. The Morro Bay LCP Land Use Plan was certified in 1982. Subsequent amendments were submitted to update the LCP following the initial certification. A comprehensive plan update was initiated in 2000 but was never certified by the Commission. The Morro Bay General Plan was adopted in 1988 and outlined physical development of the City. Land use, circulation, housing, conservation, open space, noise, and safety were all outlined in the plan.

Chapter Twelve (XII) of the Morro Bay LCP addresses ESHAs within the coastal zone of the City. The ESHAs specified in this document are discussed further in Section 3.1. Mapping produced as part of the planning efforts completed in the 1980s are also discussed in Section 3.1. An updated, complete GIS-based map of ESHAs in Morro Bay was not produced.

Additionally, a baseline report describing habitats in Morro Bay was prepared as part of the current General Plan/LCP Update. See Chapter 9 of the Baseline Assessment Chapters submitted for the Morro Bay General Plan Update for details.

2.2.8 Atlas of Sensitive Species of Morro Bay Area

The MBNEP hosts a number of publications on their website related to biological resources in the Morro Bay area. These include a 2010 Atlas of Sensitive Species of Morro Bay Area (Sims 2010), the purpose of which was to compile all available information on natural resources found in the Morro Bay area and assist in prioritizing conservation of sensitive species. This document consisted of research and analysis of references including CNDDB, peer-reviewed technical flora and fauna guides and texts, available herbaria, online databases, CDFW records and other public information. Field work was also done to confirm the presence or absence of many specials status species in the area. The project included areas around the Morro Bay Estuary and Morro Bay watershed, including the City of Morro Bay, and the town of Los Osos and Baywood Park.

2.2.9 Morro Bay Eelgrass Report

The MBNEP monitors eelgrass (*Zostera marina*) and other intertidal vegetation on an annual or biennial frequency via multispectral aerial imagery and digital classification (MBNEP 2013). The MBNEP publishes periodic reports on the status of eelgrass, including comparisons of mapping and transect studies done dating back to 2007. The most recent report published is from 2013.

2.3 MAPPING

Polygons, centerlines, and attribute information for ESHAs within the Morro Bay coastal zone were compiled using the above summarized publicly available datasets in addition to an independent reconnaissance-level field survey and intensive desktop analysis by Rincon (May 2017) based on previously listed criteria outlined in Section 1, with reference to previously listed published datasets.

3. RESULTS

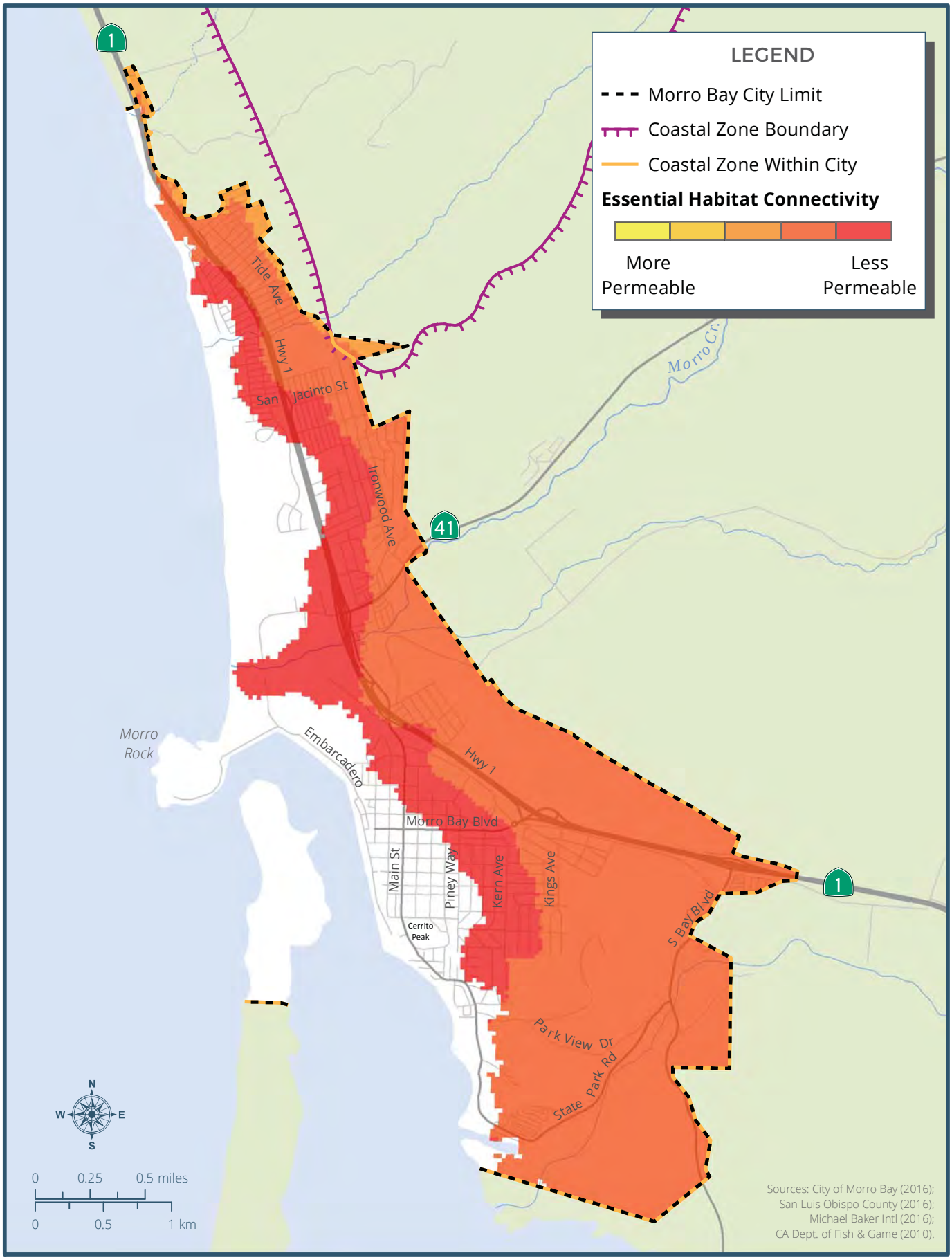
A geographic area can be designated ESHA due to the presence of individual species of plants or animals, or the presence of a particular habitat. Second, for an area to be designated as ESHA, the species or habitat must be either rare, or especially valuable, or determined to be easily disturbed or degraded by human activities. In this section, we first present results of the database queries, literature reviews, and field surveys that support ESHA determination, and then synthesize the information into updated ESHA categories and mapping. Updated current ESHA extent is presented on updated maps as well as updated spatial datasets in shapefile format. Attribute information within the spatial dataset includes vegetation communities and other habitats, occurrences of special status species supported by these habitats, critical habitat locations, and known or potential wetlands and waters. ESHA as depicted within the GIS submittal can serve as an illustrative tool to help identify potential biological resources.

ESHA information provided in this submittal is not intended to be an exhaustive compilation of the habitat areas that meet the ESHA definition; therefore, requirements for conducting site-specific biological evaluations and field observations to identify ESHA and other sensitive biological resources are required prior to project development approval. Following completion of the mapping of ESHAs, ESHAs will be buffered by an agreed upon buffer, typically a minimum of 50-100 feet. While exact policy is still being developed, typically, LCPs require that sites with mapped ESHA areas or areas that fall within the specified buffer of potential ESHA require site-specific biological evaluations and field observations to identify ESHA and other sensitive biological resources prior to project development approval.

Below is a summary of database and literature review findings, followed by a description of the updated ESHA determinations.

3.1 QUERY AND LITERATURE REVIEW RESULTS

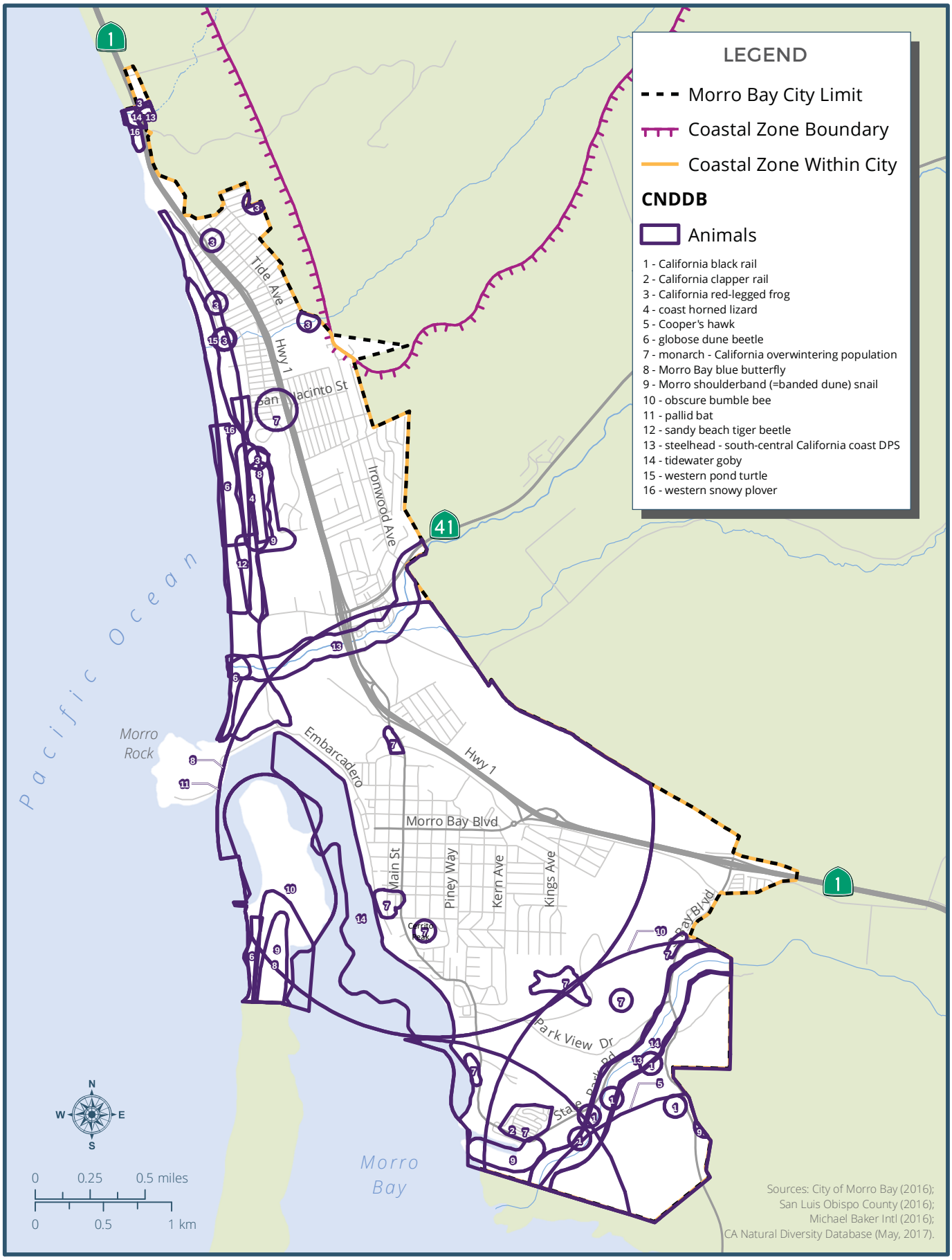
As noted previously, Rincon evaluated and overlaid mapped wetland and vegetation information on the recent aerial imagery available from a variety of sources, including the County of San Luis Obispo. Maps depicting the locations of resources presented by these source data sets are included as Figures 2 through 6.



Plan MORRO BAY

FIGURE 2

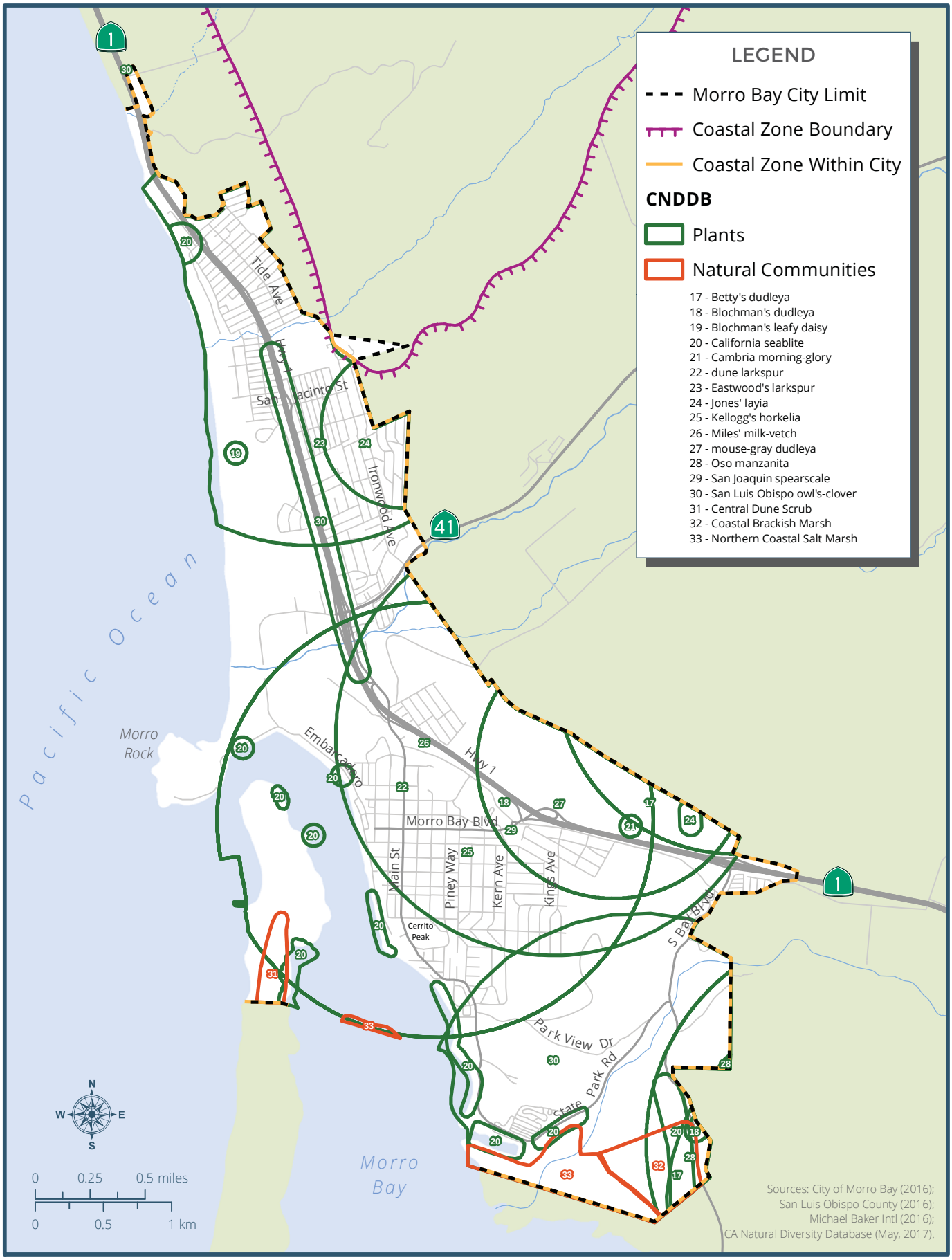
Essential Habitat Connectivity



Plan MORRO BAY

FIGURE 3A

Special Status Species and Sensitive Natural Communities, as Reported by CNDDB



Plan MORRO BAY

FIGURE 3B

Special Status Species and Sensitive Natural Communities, as Reported by CNDDB

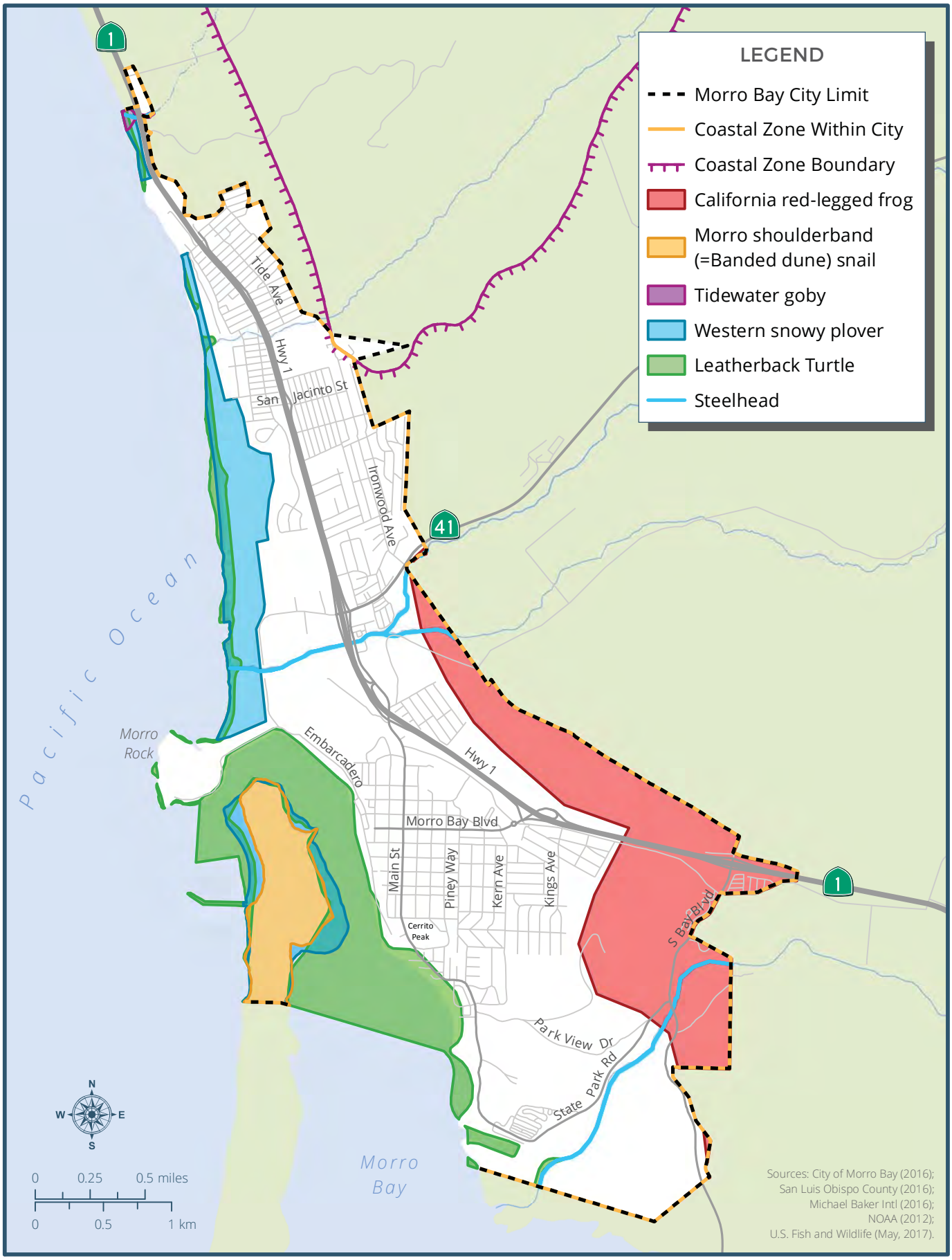


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FIGURE 4

Designated Critical Habitats

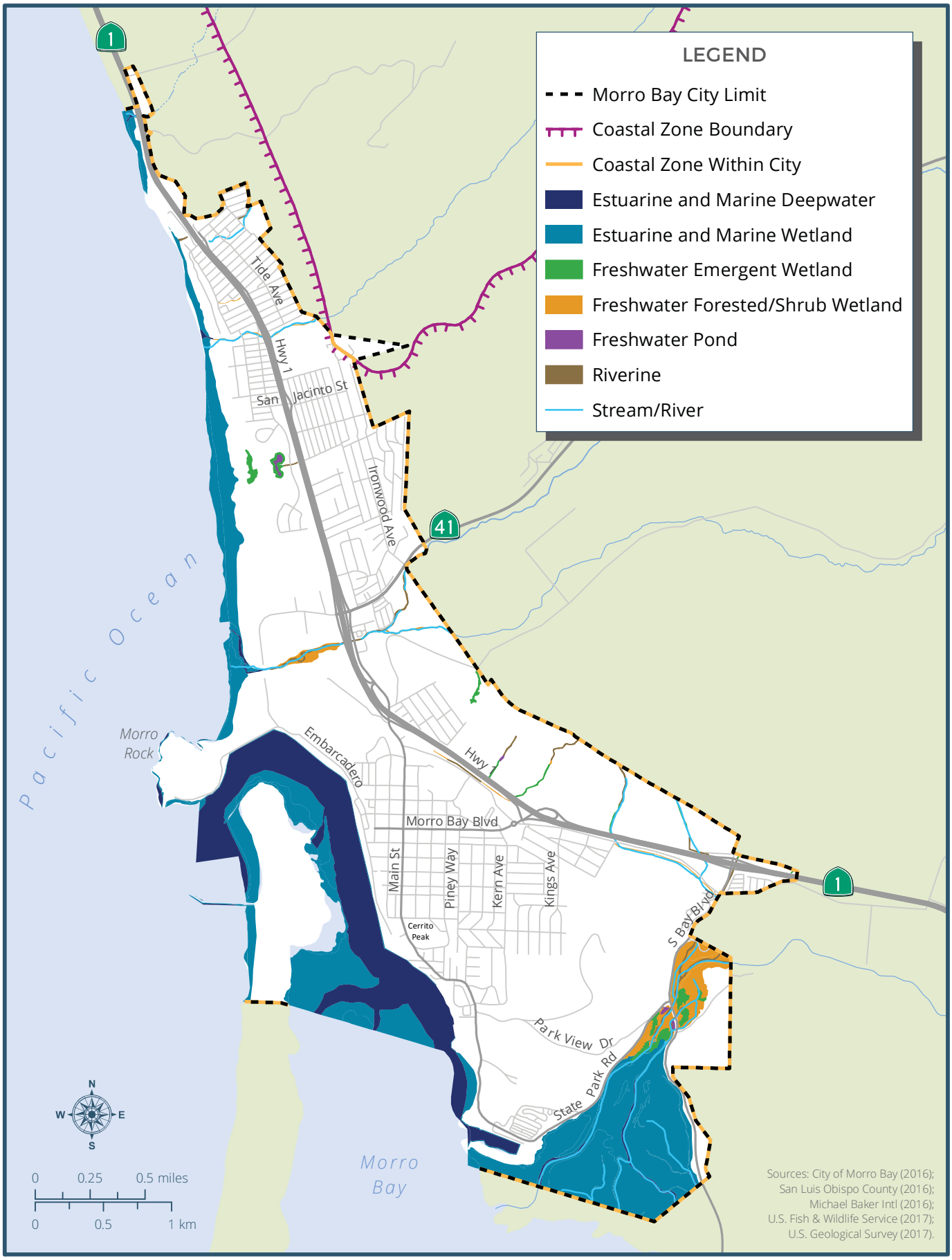

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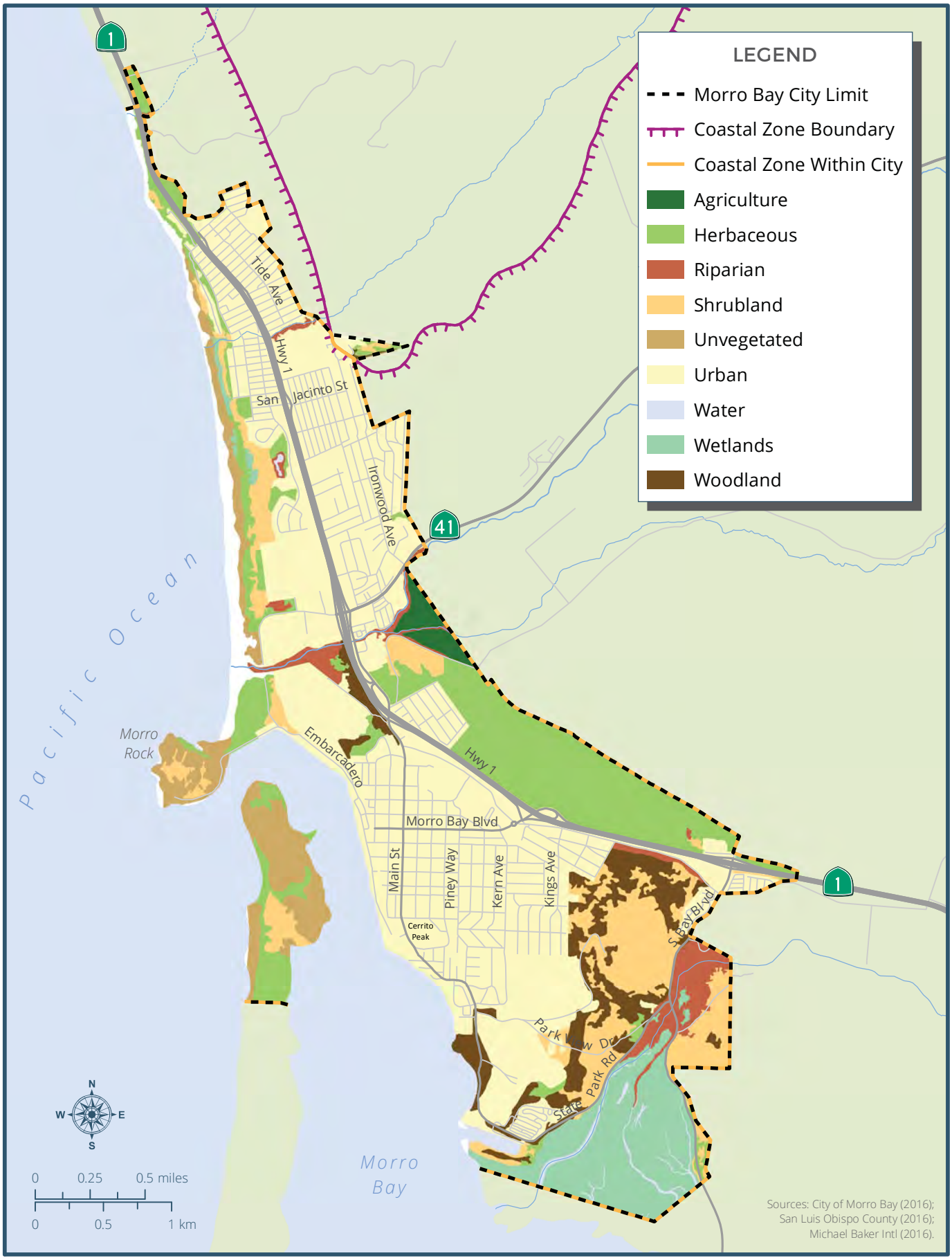
FIGURE 5

Aquatic Resources as reported by NWI and NHD



Plan MORRO BAY

FIGURE 6

Terrestrial and Shallow-Water Habitats

3.1.1 NWI and NHD

NWI documents four wetland community types within the City's coastal zone: freshwater emergent wetland, freshwater forested/shrub wetland, estuarine and marine wetland, and estuarine and marine deepwater wetland. Additionally, riverine types are identified. The NHD identifies coastal streams, including both perennial and seasonal features, as well as the bay and estuary, and the Pacific Ocean (Figure 5).

3.1.2 Designated Critical Habitats

Final designated critical habitat for the following species occurs within the City's coastal zone: steelhead (*Oncorhynchus mykiss*), California red-legged frog (*Rana draytonii*), Morro shoulderband snail (*Helminthoglypta walkeriana*), tidewater goby (*Eucyclogobius newberryi)*, Pacific leatherback sea turtle (*Dermochelys coriacea*), and western snowy plover (*Charadrius alexandrinus nivosus*) (Figure 4). Records for steelhead, California red-legged frog, Morro shoulderband snail, tidewater goby, and western snowy plover are reported from the Morro Bay coastal zone. Suitable habitat for federally listed species within federally designated critical habitat is expected to be ESHA, even if the species has not been previously documented as occurring in particular locations.

It should be noted that critical habitat for Pacific leatherback sea turtle along the Pacific coast, including the vicinity of Morro Bay, was designated on the basis of prey base. Pacific leatherback are specialists that consume jellyfish, including brown sea nettle (*Chrysaora fuscescens*) and other scyphomedusae of the order Semaeostomeae, such as moon jellies (*Aurelia labiata*) (NFMS 2012a, 2012b). Two populations of Pacific leatherback are recognized: the Western population breeds on tropical islands in the western Pacific islands, including Indonesia, Papau New Guinea, and the Solomon Islands, and migrates extreme distances between breeding and foraging grounds, which include coastal waters along the west coast of North America; the Eastern population breeds on tropical beaches in Mexico and Central America, and forages primarily in tropical waters of the eastern Pacific Ocean (NMFS 2012b). Pacific leatherbacks are not known or expected to breed on beaches in Morro Bay. Additionally Pacific leatherbacks do not typically pursue prey farther than the mean lower low water and thus are not expected from shallow water habitats of the immediate shore of the Morro Bay coastal zone (including the intertidal zone). Pacific leatherback could occur in the marine environment offshore, in deeper waters adjacent to areas evaluated for ESHA, as they have been reported foraging in the deeper coastal waters of Estero Bay marine environment, based on telemetry data, fishery interaction data, and aerial surveys (NFMS 2012b).

3.1.3 Habitat Connectivity

Wildlife movement corridors can be both large and small scale. Regionally, the Morro Bay coastal zone is located at the edge of an identified ECA, as mapped in the report, California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (2010). This ECA that connects Natural Landscape Blocks such the Los Padres National Forest

and other relatively intact natural areas. This essential habitat connectivity is mapped as somewhat permeable along the eastern edges of the Morro Bay coastal zone, and less permeable in developed areas (Figure 2). The immediate coast and coastal strand were not mapped as part of this ECA in the available larger scale habitat connectivity models. ECAs are mapped based on coarse ecological condition indicators, rather than the needs of particular species and thus serve the majority of species in each region.

Small scale habitat corridors are also present in the Morro Bay coastal zone, and include drainages and other topographic features that facilitate movement, and contiguous areas of natural vegetation, including the coastal dunes and Black Hill Natural Area. Perennial streams, wetlands, shallow bays and estuaries, including Morro Creek and Morro Bay Estuary, provide potential fish and other aquatic wildlife movement habitat. At the local scale, areas of natural vegetation, including drainages, provide important movement opportunities for wildlife, particularly where these features connect blocks of natural vegetation interspersed with developed areas, and therefore, have been utilized for guidance regarding ESHA, although habitat connectivity alone does not constitute an ESHA determination.

3.1.4 Special Status Species

It has been established that the Commission will consider presence of a rare plant and/or wildlife species (when there is other compelling evidence of rarity such as consideration for listing as rare, threatened or endangered under the California or federal Endangered Species Acts and/or evidence of rarity in published academic studies) to signify an area as ESHA. For the purposes of this analysis, “Special Status Species” includes the following:

- Species listed as threatened or endangered under the federal ESA;
- Species listed as rare, threatened, or endangered under the California ESA;
- Species considered “Fully Protected” or “Species of Special Concern” by the CDFW that were documented as occurring in the Morro Bay General Plan/LCP (1982); and
- Plants ranked California Rare Plant Rank (CRPR) 1 or 2 in the CNDDB and/or CNPS Online Inventory of Rare and Endangered Plants. Some CRPR 3 and 4 species are also considered when they are part of an unusual plant community, on an unusual substrate, at type localities, and when locally designated as species of concern.

Seventeen special status wildlife species, sixteen special status plant species, and three special status vegetation communities are documented in the CNDDB as occurring within the City’s coastal zone as shown on Figure 3. See Appendix B for a complete list of Sensitive Species, Natural Communities, and Designated Critical Habitats reported to occur in the vicinity, as reported by the CNDDB.

Of these, listed species documented within the City's coastal zone include salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*), California seablite (*Suaeda californica*), Morro shoulderband snail, tidewater goby, and western snowy plover. Morro Creek and Chorro Creek are designated critical habitat for south-central California coast steelhead.

Open space areas within the City's coastal zone with documented occurrences of listed or rare species or special status habitats are considered potential ESHA. While individual occurrences of the above mentioned species may not indicate the presence of ESHA, their presence could indicate the overall high quality and value of the habitat in which the species is observed.

3.1.5 Previously Described ESHA

The City of Morro Bay first adopted an approved LCP in 1982. Habitat areas as described in the 1982 City of Morro Bay LCP (MBLCP) were grouped into four broad categories: coastal wetlands, coastal streams/riparian habitats, rare or endangered wildlife habitats, and rare or endangered plant communities. The following criteria were used to establish ESHA:

1. unique, rare or fragile communities which should be preserved to ensure their survival in the future;
2. rare and endangered species habitats that are also protected by state and federal laws;
3. specialized wildlife habitats which are vital to species survival;
4. outstanding representative natural communities which have an unusual variety or diversity of plant and animal species; and
5. areas with outstanding educational values that should be protected for scientific research and educational uses now and in the future.

These ESHAs were referenced in the text and shown at a large scale within the document. No pre-existing spatial data were available for these maps, so the map was georectified and the data were hand-digitized into ArcGIS in shapefile format. Each of the previously identified ESHA types is summarized in the following sections.

Coastal Wetlands

The original MBLCP included three habitat types generally consisting of coastal wetlands: wetland, estuary, and open coastal water. These habitat types were defined in the MBLCP as follows:

a. Wetland: lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes; swamps, mudflats and fens.

b. Estuary: coastal water body usually semi-enclosed by land, but which has open, partially obstructed or intermittent exchange with the ocean and in which ocean water is at least occasionally diluted by fresh water runoff from the land. The salinity may be periodically increased above the open ocean by evaporation. In general, the boundary between "wetland" and "estuary" is the line of extreme low water.

c. "Open coastal water" or "coastal water" refers to the open ocean.

Morro Bay and the Morro Bay Estuary comprise the primary wetland areas within the City. The bay is primarily a shallow lagoon with two freshwater creeks (Chorro and Los Osos) draining into it. Tidal waters also fill the bay, flowing through the bay entrance and southward to fill the bay. The intertidal area is saltmarsh and mudflat. Morro Bay is separated from Estero Bay, by an approximately 4-mile long sandbar which extends north/northeastward from the Irish Hills to the mouth of the bay near Morro Rock. Morro Bay is the interior, enclosed bay to the east (inland) side of the sandbar, and Estero Bay is the outer bay that forms the coast of the Pacific Ocean along the west edge of the Morro Bay coastal zone. Morro Bay is tidal and directly connected to the Pacific Ocean through a channel that is maintained through periodic dredging south of Morro Rock. A portion of Morro Bay is maintained for harbor uses. The remainder includes coastal wetlands, tidal marshes, mudflats, freshwater marshes and related bodies of water. Morro Bay and Morro Bay Estuary serve as an important link between oceanic and terrestrial ecosystems. A sensitive and delicate balance exists between the tidal flushing of the bay and the nutrient-rich freshwater runoff which retains the productivity of these systems.

Coastal Streams/Riparian Habitats

The MBLCP included two habitat types within coastal streams/riparian habitats: stream or river, and riparian habitat, and defines these habitat types as follows:

a. Stream or River: natural watercourse as designated by a solid line or dash and three dots symbol shown on the USGS map most recently published, or any well-defined channel with distinguishable bed and bank that shows evidence of having contained flowing water as indicated by scour or deposit of rock, sand, gravel, or other debris.

b. Riparian Habitat: an area of riparian vegetation consists of an association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other bodies of fresh water.

Toro Creek, Alva Paul Creek, Morro Creek, Little Morro Creek, Chorro Creek, and other unnamed creeks are present in the MBLCP area. Freshwater streams serve as an important coastal resource. The Chorro and Los Osos creeks drain into Morro Bay Estuary from the upland areas of large watersheds. The combined estuary at the mouth of these two perennial creeks is a significant habitat in the bay. Unlike the Chorro and Los Osos creeks, Morro Creek is intermittent, and several other creeks within the City are ephemeral (they do not run year round).

Many of the creeks that do not drain into the estuary drain directly into Estero Bay (the Pacific Ocean).

Rare or Endangered Habitats

The original MBLCP considers both rare and endangered wildlife habitats and rare or unusual plant communities within this category and includes three distinct areas within Morro Bay within this habitat type: Morro Rock, Black Hill Natural Area, and Fairbanks Point.

Morro Rock

Morro Rock is located at the mouth of the bay and is the northern-most visible volcanic plug in a chain of plugs that extend from Islay Hill in the City of San Luis Obispo to Morro Rock. The Rock is connected to the mainland via a strand composed of fill materials, much of it dredged from the bay during past operations. The Rock is a known peregrine falcon nest site.

Black Hill Natural Area

This upland area of Morro Bay State Park is located southeast of the City. The clubhouse and golf course are located to the southwest of Black Hill. The dominant community is coastal sage scrub. Rare plants, including Jones' layia (*Layia jonesii*), are known to occur in this natural area reserve.

Fairbanks Point

Located at the southern end of the City limits and adjacent to Morro Bay State Park is Fairbanks Point. The grove of eucalyptus trees located at Fairbanks Point served as a major nesting site for herons when the previous ESHA mapping was designated. With decline of the eucalyptus grove due to salt buildup from guano, the species composition using the rookery site has shifted to cormorants. In 1971, 74 active nests of the great blue heron were counted. A count conducted in 1972 indicated 100 nests of the black-crowned night heron were located here. In 2017, this rookery was occupied by active cormorant nests.

Integration of Previously Described ESHA

Previously designated ESHA was reviewed for inclusion in the updated map set. As noted above, the previous map set did not exist in GIS-compatible format, and the level of resolution of some mapped areas was low. Updated ESHA maps considered previous documentation of resources that constitute ESHA, while updating maps to have better resolution and integration into GIS-based systems.

Note that despite updated mapping efforts, unmapped ESHA may still be present, and onsite review of potential ESHA and delineation of actual ESHA boundaries may be necessary to evaluate site-specific conditions.

3.1.6 Other Sensitive Natural Communities

In addition to tracking special status species, the CNDDB also includes some data on sensitive natural communities, although this portion of the database is not currently updated. CDFW has shifted to an updated vegetation classification system, and maintains a List of California Terrestrial Natural Communities (2010). Sensitive natural communities include

- Sensitive natural communities as documented by the CNDDB;
- Rare vegetation alliances and associations ranked State Rarity ranks S1 through S3, as listed in the CDFW List of California Terrestrial Natural Communities (2010); and
- Other unique, sensitive, or fragile habitats, including shallow bay and eelgrass beds, rookeries, monarch aggregation sites, and special status raptor nest sites.

Central Dune Scrub, Coastal Brackish Marsh, and Northern Coastal Salt Marsh are sensitive natural communities reported by the CNDDB in the area. Under the updated classification used in the 2010 CDFW List of California Terrestrial Natural Communities, additional rare vegetation alliances present or likely to be present include dune mats, silver dune lupine - mock heather dune scrub, pickleweed mats, bulrush marshes and salt marsh bulrush marshes, sand dune sedge swaths, iris-leaved rush seeps, and salt rush swales.

The MBNEP eelgrass monitoring program has documented the decline of the local eelgrass populations between 2007 and 2013, and maps where the populations previously/currently occur were referenced. These maps were used as a baseline to establish ESHA within the bay itself. Eelgrass habitat was mapped in combination with shallow bay and mudflat areas.

As previously noted, Morro Rock is a known nest site for peregrine falcons. The nest site is used year after year by the now recovered peregrine falcon.

Finally, although eucalyptus trees are not native to California and in fact are often invasive, stands of eucalyptus along the coast can provide unique habitats for wildlife in some situations. Rookery sites that are used year after year as communal nest sites are known in Morro Bay, as previously noted. Additionally, some groves provide monarch overwintering habitats used each year during late fall and winter months. Where eucalyptus stands provide this unique habitat for these wildlife species, they may be considered ESHA.

3.1.7 Vegetation Maps and Site Survey Results

Morro Bay has a wide diversity of tree (hardwood and coniferous forests, oak woodlands), shrub (chaparrals, coastal scrubs), and herbaceous (grasslands and herbaceous communities) terrestrial habitat types, as well as aquatic habitat types. The vegetation communities and wildlife habitats described as occurring in the City are based on the CDFW's California Wildlife Habitat Relationship (CWHR) classification system (CDFW 2008).

The County of San Luis Obispo also produced a general vegetation map classifying general vegetation types such as woodland, shrubland, grassland, and aquatic habitats (Figure 6). These data were reviewed as part of the ESHA update.

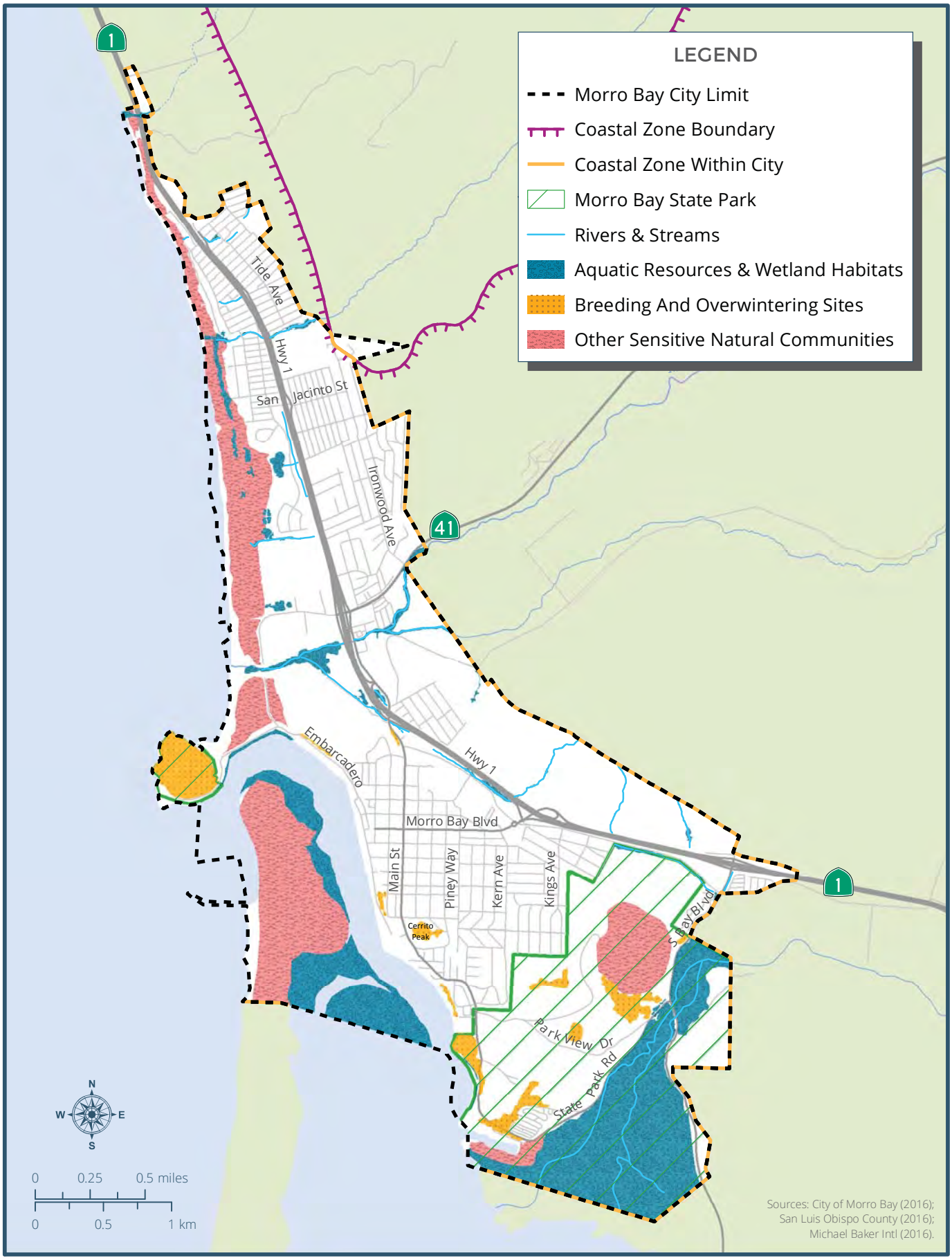
Additionally, during field surveys, vegetation communities and other habitats such as rock outcrops were evaluated to the extent feasible from public vantage points with reference to current mapping standards. In addition to urban and developed land cover types, a number of native plant communities were documented, including:

- Arroyo willow (*Salix lasiolepis*) thickets
- Dune mats
- Silver dune lupine – mock heather scrub
- Other coastal scrubs, including bluff scrub
- Pickleweed (*Salicornia* spp.) mats
- Other brackish wetlands
- Freshwater wetlands, including bulrush and rush wetlands
- Dune wetlands
- Sedge swaths

Representative photos taken during the surveys are included as Appendix A.

3.2 UPDATED ESHA DETERMINATION

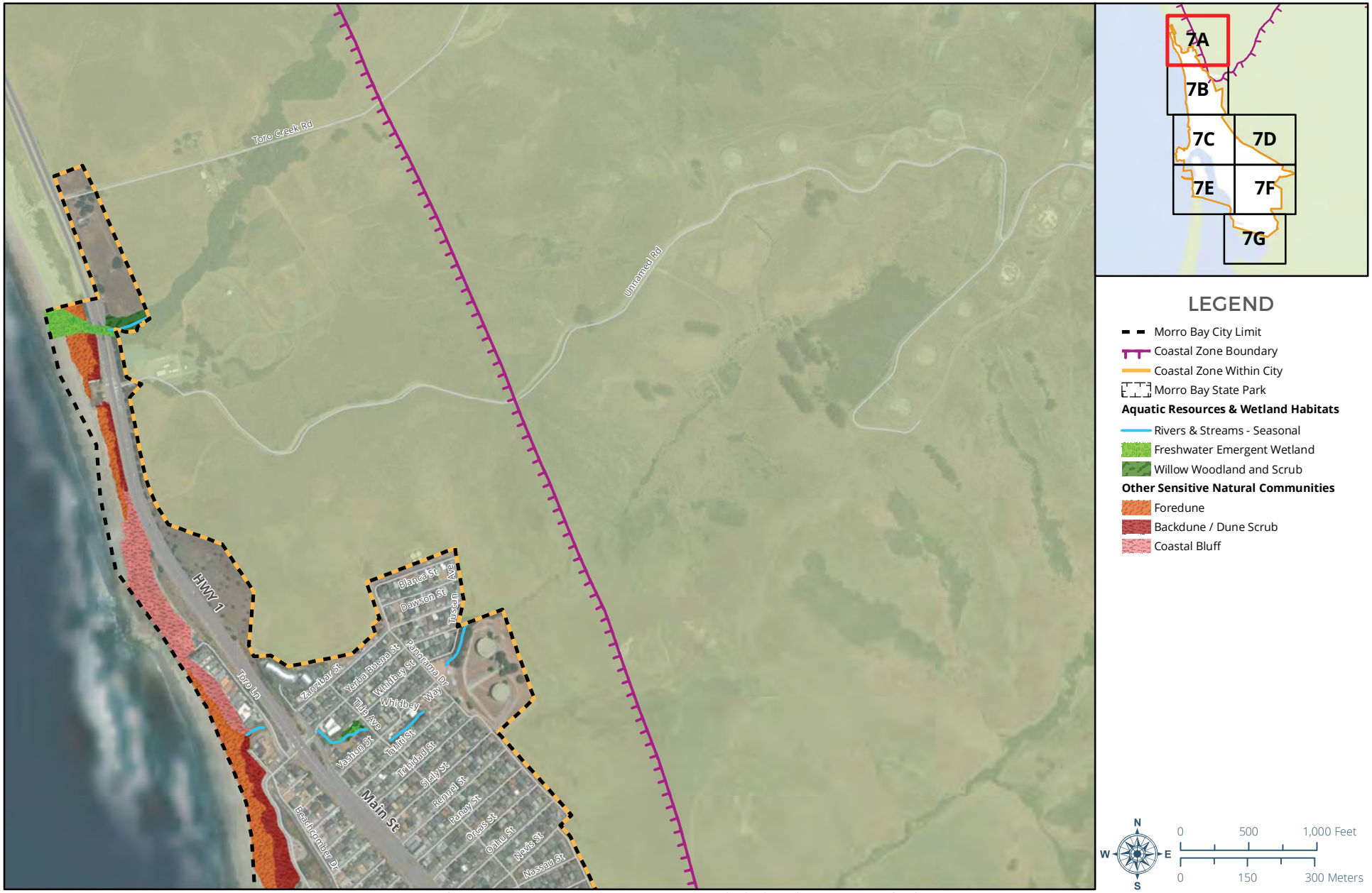
Within the City's coastal zone, approximately 1,006 acres of mapped potential ESHA were identified (please see GIS submittal package and figures), exclusive of drainages where only centerlines were mapped. To provide continuity with the 1982 plan, while including all best available data, ESHAs were grouped into three general habitat communities/categories: aquatic resources and wetland habitat; other sensitive natural communities; and breeding and overwintering sites. The mapped ESHAs are depicted in Figure 7, which includes a mapbook of finer scale maps in addition to an overview sheet. Within these broad habitat categories, more detailed community data (such as dune scrub, river/stream and monarch overwintering roosts, etc.) are included and described below, as well as provided with the attribute information. Several of the vegetation communities that occur in the City's coastal zone are designated as high priorities for conservation by CDFW, and are easily disturbed or degraded by human activity, and therefore are presumed to meet the definition of ESHA under the Coastal Act.



Plan MORRO BAY

FIGURE 7

Environmentally Sensitive Habitat Area Mapbook



Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

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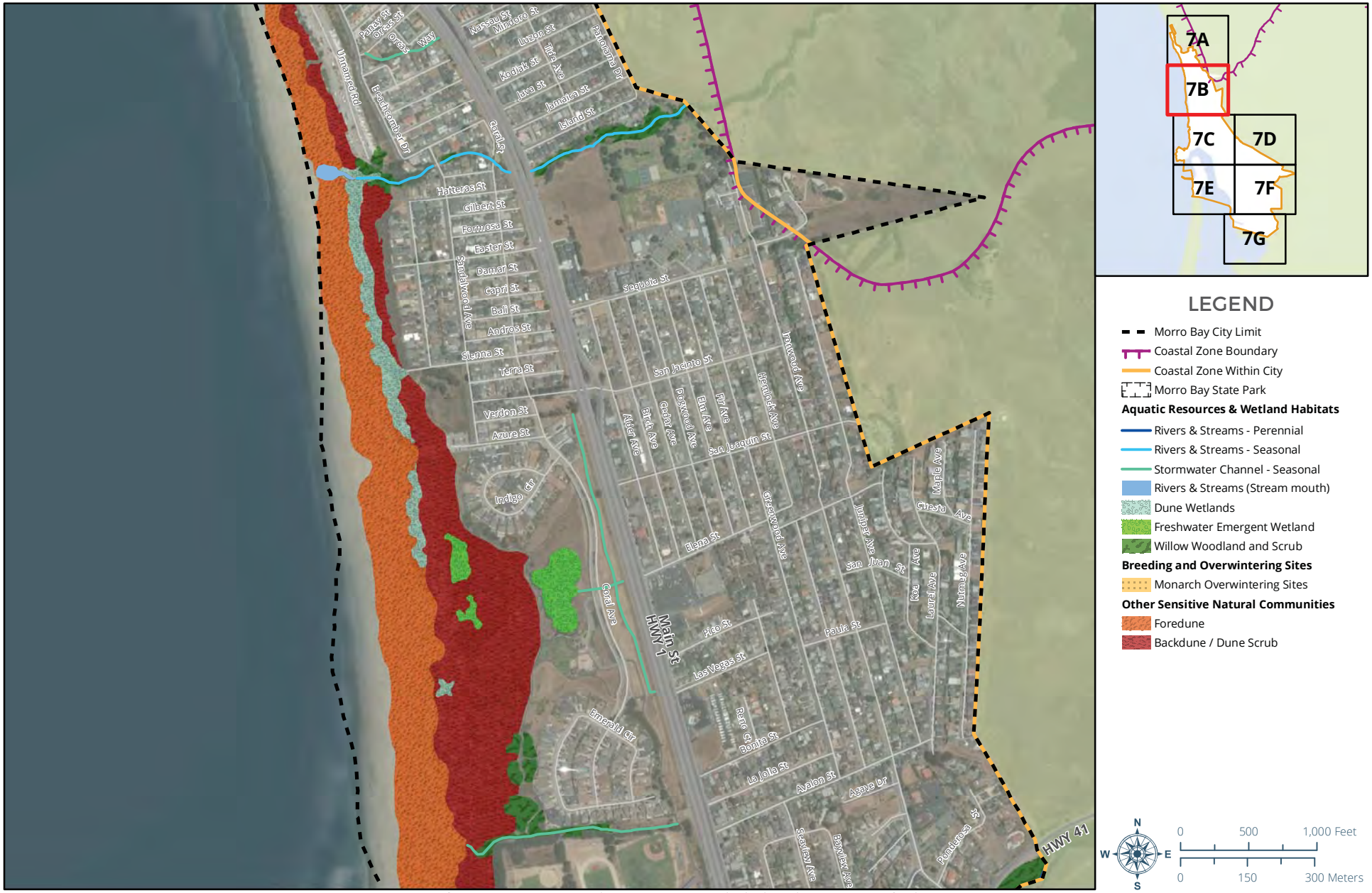
FIGURE 7A

Environmentally Sensitive Habitat Area Mapbook

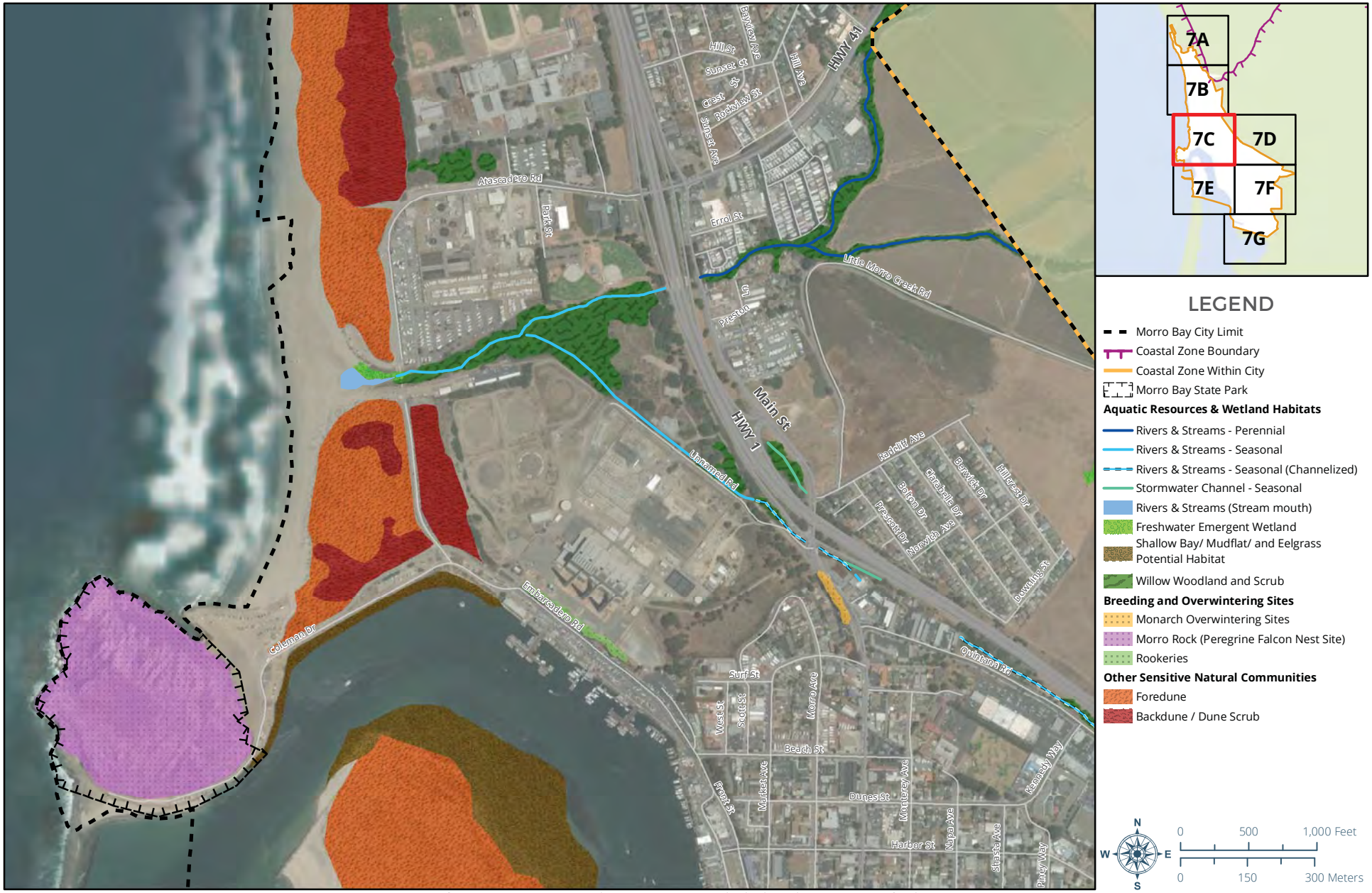


Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

FIGURE 7B

Environmentally Sensitive Habitat Area Mapbook

Plan MORRO BAY

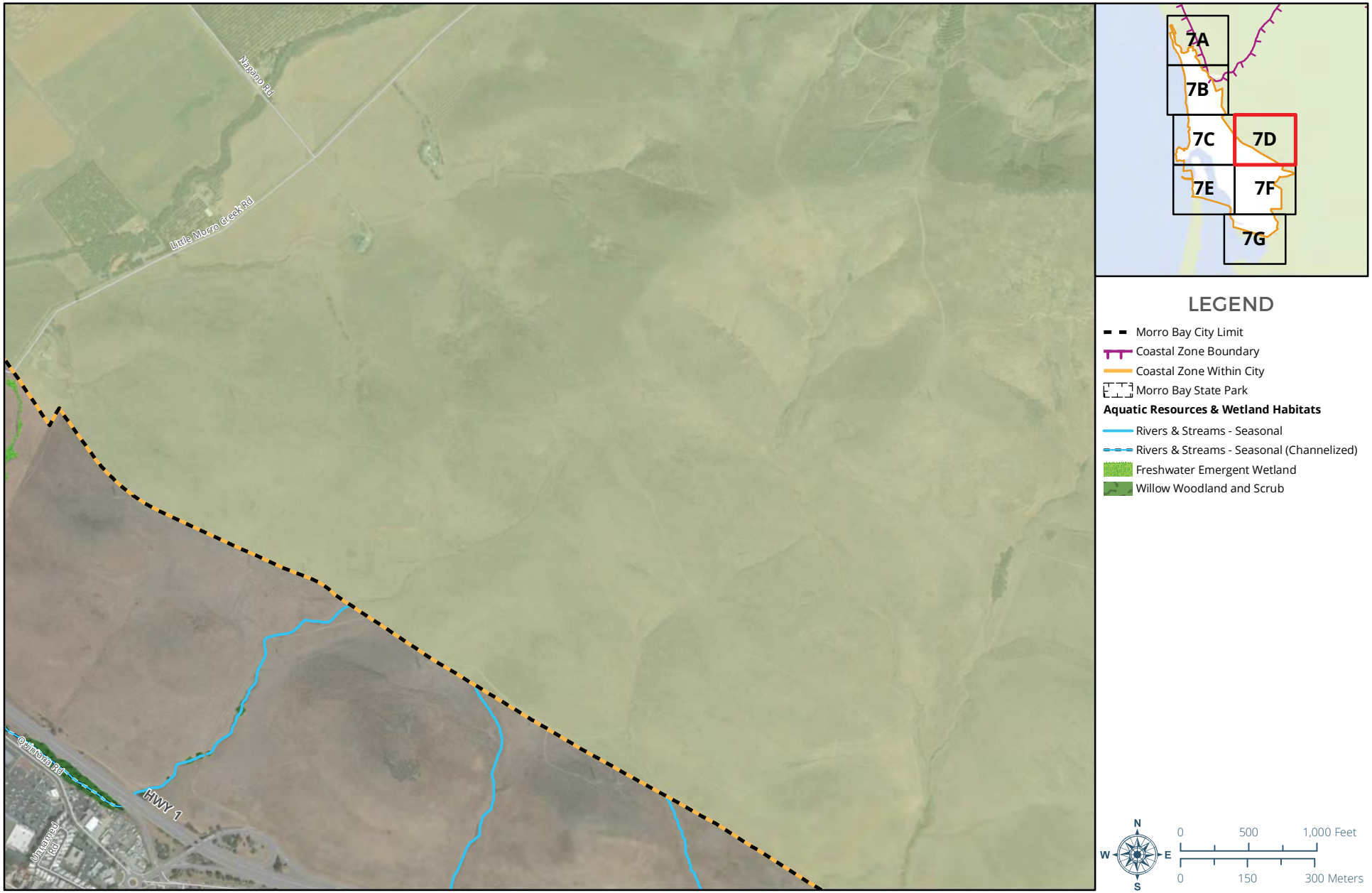


Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

Plan MORRO BAY

FIGURE 7C

Environmentally Sensitive Habitat Area Mapbook

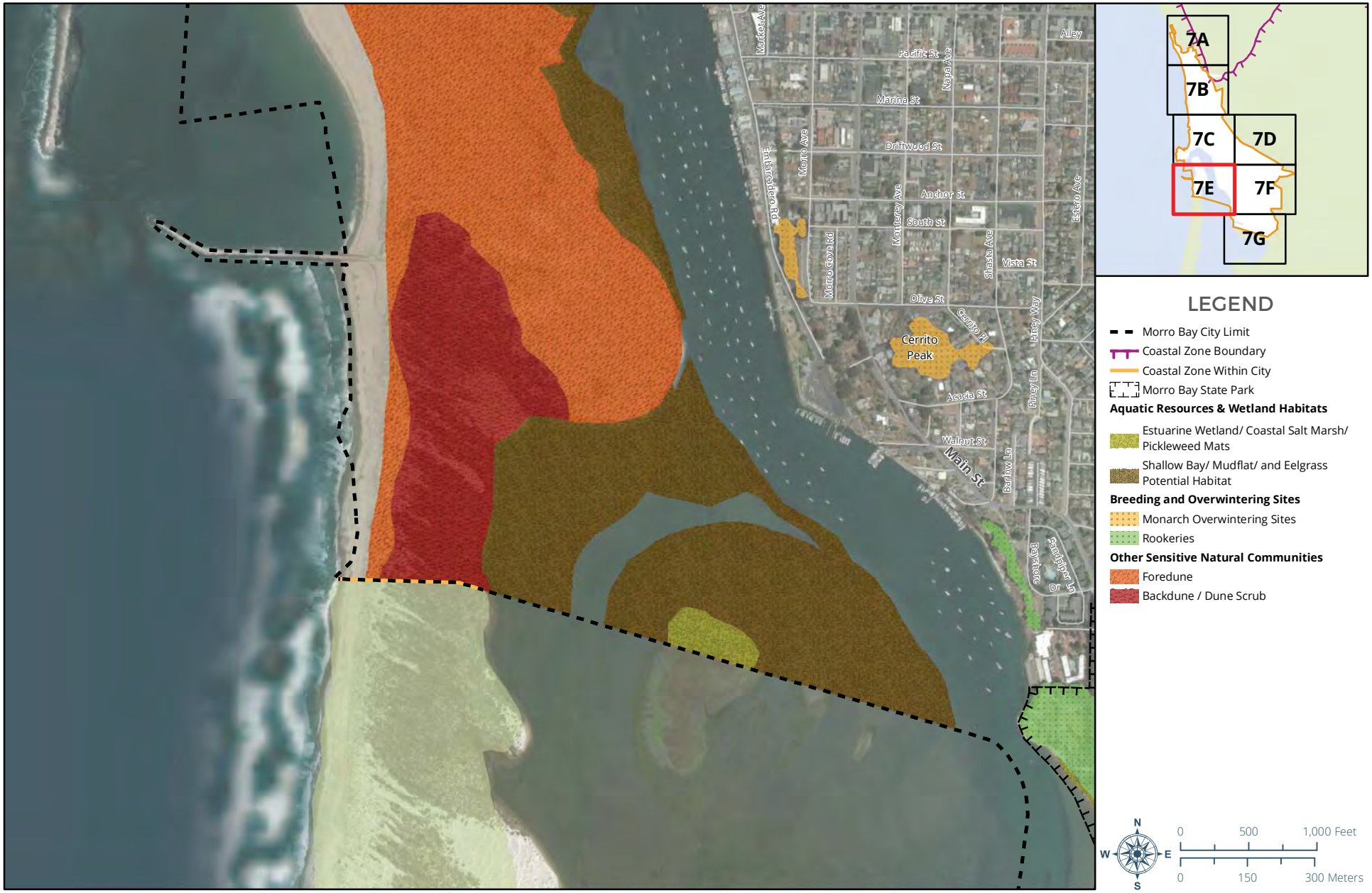


Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

Plan MORRO BAY

FIGURE 7D

Environmentally Sensitive Habitat Area Mapbook

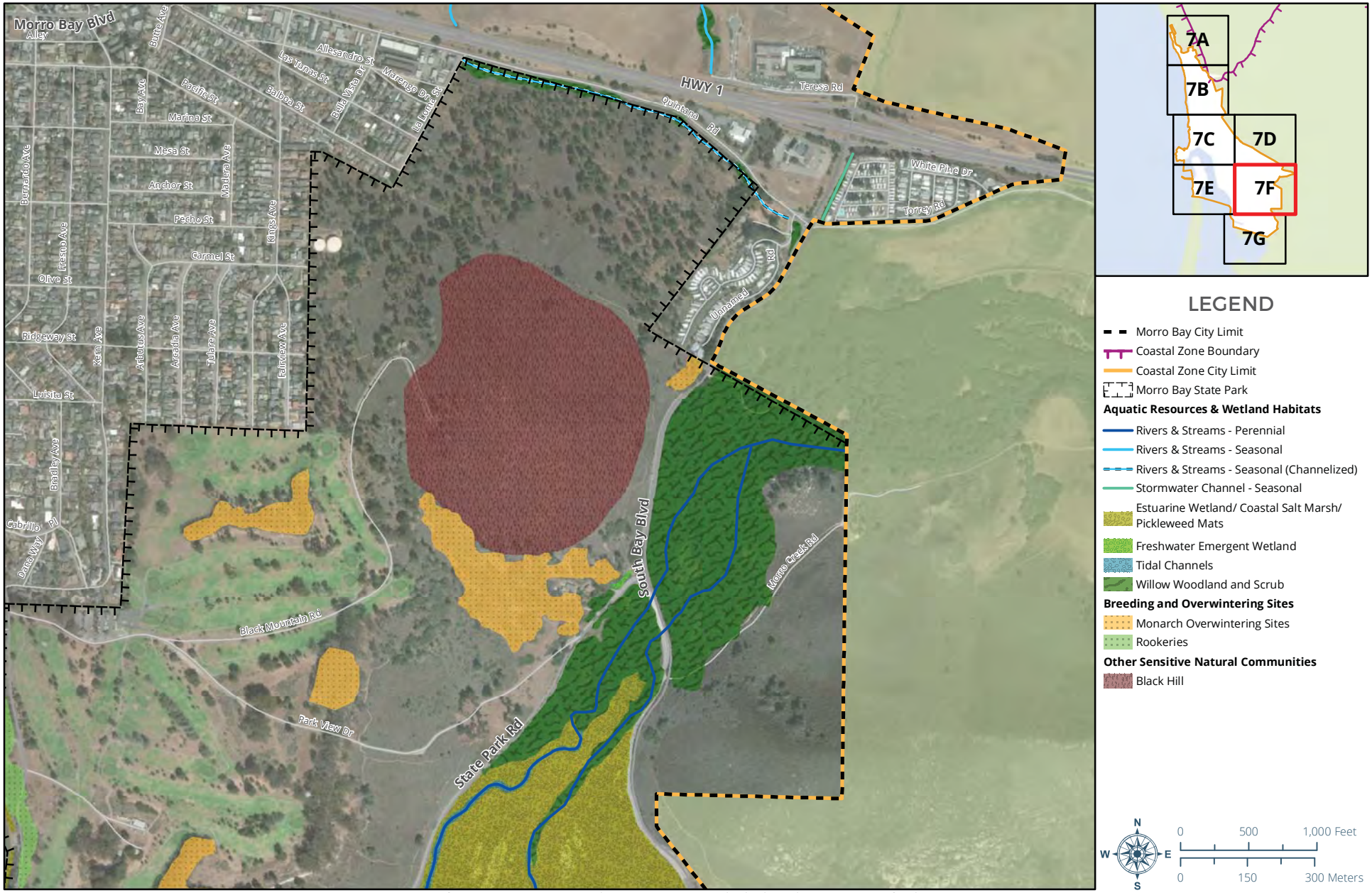


Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

Plan MORRO BAY

FIGURE 7E

Environmentally Sensitive Habitat Area Mapbook

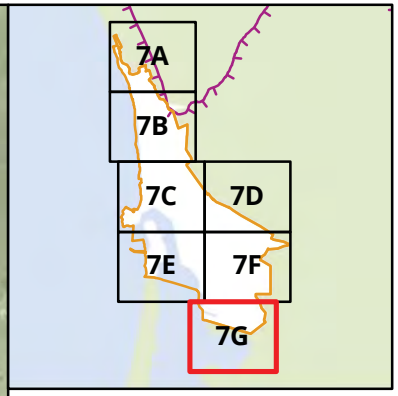


Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

Plan MORRO BAY

FIGURE 7F

Environmentally Sensitive Habitat Area Mapbook



LEGEND

- Morro Bay City Limit
- Coastal Zone Boundary
- Coastal Zone Within City
- Morro Bay State Park

Aquatic Resources & Wetland Habitats

- Rivers & Streams - Perennial
- Estuarine Wetland/ Coastal Salt Marsh/ Pickleweed Mats
- Tidal Channels

Breeding and Overwintering Sites

- Monarch Overwintering Sites
- Rookeries

Other Sensitive Natural Communities

- Backdune / Dune Scrub

N W E S

0 500 1,000 Feet

0 150 300 Meters

Sources: City of Morro Bay (2016); San Luis Obispo County (2016); Michael Baker Intl (2016); CA Dept of Parks & Recreation (2016); ESRI (2017).

FIGURE 7G

Environmentally Sensitive Habitat Area Mapbook

Plan MORRO BAY

Based on the sources and queries described above, the below described ESHA determinations have been established.

3.2.1 Aquatic Resources and Wetland Habitats

Several aquatic habitats are present within the City's coastal zone, including freshwater streams, riparian areas, and wetlands, as well as dune wetlands, coastal salt marshes and pickleweed mats, shallow bay and mudflats.

Rivers and Streams

Several creeks and their tributaries flow through the City and terminate into the Morro Bay estuary or directly into the Pacific Ocean within the City's coastal zone. These waterways include Chorro Creek, Morro Creek, Alva Paul Creek, and Toro Creek as well as several unnamed creeks with a bed and bank.

Willow riparian woodland and willow scrub often occurs along both perennial and intermittent streams. Some of these areas overlap portions of California red-legged frog, steelhead, and tidewater goby critical habitat. The multi-layered riparian vegetation, available water supply, and vegetative cover make these areas essential habitat for several special status species. Smaller streams may lack riparian canopy, but provide groundwater recharge, seasonally wet habitat, and also convey water, nutrients, and potential pollutants to the bay and the ocean, thus influencing quality of downstream receiving waters.

Creeks and Tributaries

Chorro Creek, Morro Creek, Alva Paul Creek, and Toro Creek are all located within the City's coastal zone. Morro Creek, the largest creek in the City's coastal zone terminates into the ocean. Morro Creek and Toro Creek form seasonal sand bars at the mouth of the streams that block direct flow to the sea during summer months, creating a lagoon between the river mouth and the Pacific Ocean. A large number of waterfowl and shorebirds use the temporary lagoon as a migratory stop-over and breeding ground. The lagoon also provides a habitat for a number of fish species, including the federally endangered and state threatened tidewater goby. This and other creeks and waterways provide suitable habitat for fish, bird and plant species. These areas should be considered ESHA in the updated LCP.

Note that some segments of these stream features were realigned and/or channelized in the past adjacent to Highway 1. These streams are noted using different symbology on the attached figures, because highly constrained stream features along roadways and channelized reaches typically require periodic maintenance for public safety and floodway protection, limiting their peak habitat quality. These stream segments are identified as "channelized" to differentiate these features from the natural watercourses that constitute ESHA.

Additionally, a number of stormwater channels that are visible on aerial photographs are also identified on the attached maps. These features convey runoff from roads and developed areas during storms. These features are not natural watercourses but some features do convey water into natural wetlands and waterways. These channels are identified as stormwater channels to differentiate these features from the natural watercourses that constitute ESHA.

Willow Woodland and Willow Scrub

Willow woodland and scrub habitats are areas in which riparian vegetation dominates and forms dense thickets commonly associated with floodplains and banks. These habitats are dominated by arroyo willow (*Salix lasiolepis*) and are common around the freshwater wetlands and waterways within the City's coastal zone. Other common species found in this habitat include coyote brush *(Baccharis pilularis)*, poison oak (*Toxicodendron diversilobum*), and dock (*Rumex* sp.). Note that willow stands are also found as components of back dune wetland complexes where they are not directly associated with streams. These sites are typically consistent with the Commission definition of wetlands due to the dominance of hydrophytic (i.e., water-loving) plant life.

Estuary and Shallow Bay

Shallow Bay, Mudflat and Eelgrass Habitat

The shallows of Morro Bay and the associated estuary consist of a varying degree of brackish water. These waters are a mixture of tidal waters of the Pacific Ocean and freshwaters from surrounding watersheds. These waters provide nesting and foraging habitat for many bird species in the area, as well as abundant fish habitat. These areas also provide suitable habitat for marine mammals such as otters and seals. Brackish waters also contain areas of steelhead designated critical habitats near mouths of certain creeks.

The shallow waters of Morro Bay support threatened populations of eelgrass, and provide abundant foraging habitat for coastal bird species. The eelgrass beds are essential nurseries and foraging habitat for fish and crustaceans.

Tidal Channels

At the mouth of the major streams, larger tidal channels are evident and interspersed with coastal salt marsh (identified below). The majority of these channels have non-vegetated beds and are largely exposed at low tide, allowing foraging habitat for coastal bird species and other wildlife.

Wetlands

Estuarine Wetlands, Coastal Salt Marsh, and Pickleweed Mat

The delta at the mouths of Chorro and Los Osos creeks is primarily vegetated with a pickleweed (*Salicornia pacifica*; also called *Sarcocornia pacifica* in some references) mat wetland. These wetlands are tidally influenced, and soils are saline due to the tidal waters. Pickleweed marsh is the dominant natural community where Chorro Creek terminates into Morro Bay estuary. This community most closely resembles the *Sarcocornia [=Salicornia] pacifica (Salicornia depressa*) Herbaceous Alliance, as defined by Sawyer et al. (2009). This alliance is ranked S3 under State Rarity rankings and thus is considered a special status vegetation community by CDFW. The marsh is influenced by seasonal variations of fresh, brackish, and saline water and the level of the water table that occurs close to or at the surface for at least part of the growing season. Common species in this community include pickleweed (*Salicornia virginica*), California saltbrush (*Atriplex californica*), spearscale (*A. triangularis*), slough sedge (*Carex obnupta*), saltgrass (*Distichlis spicata*), giant rush (*Juncus acutus*), creeping rush (*J. lesueurii*), sea lavender (*Limonium californicum*), coastal silverleaf (*Potentilla anserine),* American three-square (*Scirpus americanus*), common three-square (*S. pungens*), and arrowgrass (*Triglochin concinna*).

Other brackish and salt marsh habitats are present, including areas that provide suitable habitat for the endangered California seablite, a vascular plant that colonizes the upper portion of the intertidal zone. There is some overlap between suitable habitats for this species and eelgrass, so where both are present, the features were mapped with eelgrass. Additionally, coastal brackish marsh includes areas at mouths of streams where salt marsh bulrush and other salt-tolerant emergent hydrophytes are dominant, as well as potentially suitable habitat for another listed plant, salt marsh bird’s beak.

In addition to including an S3-ranked sensitive natural community, these marshes provide essential habitat for many species known to utilize the marsh. This ESHA provides important nesting and breeding habitat for avian and aquatic species, as well as suitable habitat for special status plant species, as mentioned above, that include the federally and state endangered salt marsh bird's-beak and federally endangered California seablite.

Dune Wetlands

Dune wetlands occur under two general scenarios – they often occur where fresh water from rivers or streams accumulates behind a sandbar at the mouth of a coastal stream, and they can also occur where perched groundwater accumulates in low lying backdune areas, often due to lenses within the dune that restrict water movement, not directly tied to the mouth of a river or stream. The soils in these areas have slow drainage and form mesic environments with nutrient rich soils and high potential to support wetland vegetation. These communities are can be found where Alva Paul Creek enters the coastal natural communities within the City’s coastal zone, and in low lying areas in the backdune of the dune complex along the coast. Dune wetlands are

dominated by sand dune sedge (*Carex pansa*), spiny rush (*Juncus acutus*), and brownheaded rush (*Juncus phaeocephalus*), with inclusion of arroyo willow and understory of dock, and coastal silverweed. These dune wetlands contain suitable habitat for special status plant species and provide nesting, foraging, and refuge for wildlife species.

Freshwater Emergent Wetlands

Multiple freshwater emergent wetlands are located within the Morro Bay coastal zone. These areas are dominated by wetland vegetation such as dock, brownheaded rush, and tule (*Schoenoplectus acutus*). Freshwater emergent wetlands are found both at springs and seasonal drainages and provide habitat for avian and special status plant species. Some of these wetlands also include areas of California red-legged frog critical habitat. A constructed wetland with open water patches interspersed with cattail (*Typha* sp.), California bulrush (*Schoenoplectus californicus*), and willows is also included in this type.

3.2.2 Other Sensitive Natural Communities

A variety of non-wetland sensitive natural communities are present within the City's coastal zone, providing essential habitat for many sensitive species in the area. These communities overlap in part with critical habitats for western snowy plover and Morro shoulderband snail (USFWS/NMFS 2017) and provide suitable habitat for many special status plants known to occur in the vicinity. Four types are described: foredune, backdune/ dune scrub, coastal bluff, and the Black Hill Natural Area. Each of these areas is discussed in detail below.

Foredune

The foredune natural community occurs where sand begins to accumulate and stabilize, with increased plant cover and diversity. This community occurs between the coastal strand and the backdune and stabilized dune scrub community. The predominant vegetation is dune mat, a sensitive natural community dominated by sand verbena (*Abronia maritima),* beach sand verbena *(Abronia umbellata)* and beach bur (*Ambrosia chamissonis*). Other common species include yarrow (*Achillea millefolium),* coastal sagewort *(Artemisia pycnocephala),* spearscale *(Atriplex* spp.), sea rocket (*Cakile maritima),* beach primrose (*Camissonia cheiranthifolia),* seaside daisy (*Erigeron glaucus),* and seaside golden yarrow (*Eriophyllum staechadifolium).* Foredune communities in Morro Bay are most closely associated with the *Ambrosia chamissonis-Abronia maritima-Cakile maritima* Association of the *Abronia latifolia - Ambrosia chamissonis* Herbaceous Alliance, an S3 ranked Sensitive Natural Community, as defined by Sawyer et al. (2009).

In addition to being a S3-ranked sensitive natural community, most of this ESHA overlaps with the western snowy plover critical habitat and provides essential habitat for other special status species, such as globose dune beetle (*Coelus globosus*), sandy beach tiger beetle (*Cicindela hirticollis gravida*), and legless lizard (*Anniella pulchra*). The foredune also contains suitable

habitat for many special status plant species such as Eastwood's larkspur (*Delphinium parryi* ssp. *eastwoodiae*) and coast woolly-heads (*Nemacaulis denudata* var. *denudata*). This community also provides abundant foraging habitat for many special status wildlife species in the coastal zone.

Backdune and Stabilized Dune with Dune Scrub

The stabilized dune and backdune natural community contains an increased abundance of herbaceous and woody vegetation. Some species previously mentioned in the foredune community are present. Dune scrub communities occur in stabilized coastal dune areas with higher water retention, more organic matter, and less salt (Sims 2010). Dune Scrub is the most abundant and diverse of the coastal natural communities and is dominated by shrubs of varying composition across the Morro Bay coastal zone. Dominant plant species in this community include: California sagebrush (*Artemisia californica)*, coyote brush, heather (*Ericameria ericoides)*, seaside golden yarrow, and beach lupine (*Lupinus chamissonis).* This community most closely resembles the *Lupinus chamissonis* - *Ericameria ericoides* Shrubland Alliance (S3), as defined by Sawyer et al. (2009). Site-specific studies have previously been used in the Morro Bay coastal zone to identify extent of backdune, stabilized dune and dunescrub.

In addition to being a S3 -ranked sensitive natural community, the dune scrub ESHA contains regions of the western snowy plover and Morro shoulderband snail critical habitats, and provides abundant nesting and foraging habitat for other avian and special status wildlife species. This community also provides suitable habitat for many special status plant species including Eastwood's larkspur, California seablite, and Blochman's leafy daisy (*Erigeron blochmaniae*).

Within the area analyzed in this LCP, invasive plant species, such as iceplant and European beach grass, often occur in the dune scrub community. This degrades the quality of this ESHA type; however, presence of invasive plant species does not eliminate the potential for special status species to occur in this community.

Coastal Bluff Scrub

In limited locations within the Morro Bay coastal zone, coastal bluffs are present at the transition between the beach, certain dune communities, and upland terraces. Although some of the bluff area is developed, some areas retain native vegetation consisting of bluff scrub, with sagebrush and coastal goldenbush (*Isocoma menziesii*) as well as spearscale. Vegetation in this community is adapted to strong winds, salt spray and thin soils. Coastal bluff provides an important transition between the beach, dune communities, when present, and upland inland habitats. Some areas are degraded with presence and dominance of invasive plant species.

Black Hill Natural Area

Black Hill supports a mixture of coastal sage scrub, chaparral, and annual and native grassland communities with scenic views over the estuary and south bay. The dominant community is coastal sage scrub. The site provides habitat for a variety of native birds and other wildlife. Rare plants, including Jones' layia, are known to occur in this natural area reserve. This location was previously identified as an important natural reserve area, and should be retained as ESHA in this update on the basis of continued presence of natural vegetation and habitat for special status plants and wildlife.

3.2.3 Breeding and Overwintering Sites

Morro Bay contains areas of known roosts, nests, and rookeries that are not associated with sensitive native vegetation. Morro Rock is a known peregrine falcon nest site. These areas are essential for the survival and reproduction of the above species and are reused year after year. These breeding and overwintering sites should therefore be considered ESHA in the updated LCP.

As previously noted, documented monarch overwintering roosts are identified in groves scattered throughout the coastal zone of Morro Bay, including a eucalyptus grove at Cerrito Peak and groves on State Park land. Not all eucalyptus groves support monarch overwintering habitats, and monarchs are known to use other tree species including Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) as well as other large natives (Pelton et al. 2016), though no such sites are documented in Morro Bay at this time. Suitable groves for monarch overwintering provide a specific microclimate with high humidity, dappled light, access to water, and shelter from high winds and freezing temperatures (Pelton et al. 2016). These groves typically have dense trees and often occur on south- to west-facing slopes, which provide the most solar radiation (Leong et al. 2004 as cited in Pelton et al. 2016). The conditions within groves change over time as trees die and fall and new trees reach maturity. These changes in turn affect the microclimate of the stands. As stand health and suitability changes, monarchs may select new, more suitable overwintering locations not identified within this analysis, and abandon old sites. Thus, site-specific, appropriately timed surveys for overwintering monarch ESHA must be completed for project sites with potentially suitable groves. Site-specific studies have previously been used in the Morro Bay coastal zone to evaluate sites with potential and with old and vague records to determine if monarch overwintering roost habitats are present (e.g. Frey and Stevens 2007). Surveys for overwintering monarchs should be scheduled between mid-November through late-January for best detection.

A known heron, egret and cormorant rookery, now occupied primarily by cormorants, is located at Fairbanks Point. In 2017, heron and egret rookeries were located at Bayshore Park in eucalyptus and Monterey cypress trees, and in cypress and eucalyptus trees along the Embarcadero in front of the former power plant.

Heron rookeries may be occupied for many years, and increase in size as more birds build nests and occupy the site (Vermont Fish and Wildlife Department 2002). Rookeries are generally located near suitable feeding and foraging habitat for the birds that occupy and nest within the rookery. One study in Minnesota found that the median flight distance between a rookery and feeding sites was 2.7 kilometers for great blue herons, and 13.5 kilometers for great egrets (Custer and Galli 2002). Double-crested cormorants must also nest within close distance of a reliable source of food (Palmer 1962 as cited in Zeiner et al. 1990). Herons and cormorants generally prefer rookery sites with tall trees (Zeiner et al. 1990). Human disturbance around rookery sites can have varying effects on birds nesting within the rookery, and these effects can vary based on the size of the rookery, the degree of habituation to human activity, and the stage of the nesting cycle (Vermont Fish and Wildlife Department 2002). A study of heron rookeries in urban and rural landscapes in coastal British Columbia found that heron nesting productivity was negatively affected as human activities near the colonies increased (Vennesland and Butler 2004).

Although the current location of documented roosts and rookeries are provided in this analysis, the locations of these ESHAs are subject to change. Within active rookeries, the salt buildup from guano gradually causes the health decline and eventual loss of the eucalyptus stand. Without new recruitment of young trees under the dead and dying trees, eventually the stand will no longer support standing tall trees, live or dead, and suitability for nesting may decline. Similarly, as trees die and fall within known monarch overwintering roosts, the microclimate of the stands changes. As stand health and suitability declines, the known roosts and rookeries will likely migrate to new, more suitable locations not identified within this analysis. Implementation of seasonally timed surveys will aide in the identification of new roosts and rookeries, and determination of rookeries that are no longer in use.

4. OTHER ATTRIBUTE INFORMATION

Please note that the graphic information provided portrays the various biological resource boundaries as accurately as possible. This data is only a cartographic representation of the existing environment and should not be used on its own without field determination procedures to establish a precise boundary location. Conditions on the ground control permit and appeal jurisdictional boundary locations, based on Coastal Act definitions, regardless of how accurate the mapped boundary may be. It is important to emphasize that all adopted maps come with the following disclaimer:

> *Potential ESHA maps are not an exhaustive compilation of the habitat areas that meet the ESHA definition and are for planning assessments only. Site-specific biological evaluations and field observations to identify ESHA and other sensitive resources and potential impacts, including cumulative impacts, should be conducted at the time of proposed development or plan amendment application. Conditions on the ground control permit and appeal jurisdictional boundary locations, regardless of the accuracy of mapped boundaries.*

5. CONCLUSION

The proposed map changes to the City's ESHA mapping focused on improving ESHA identification within the Morro Bay coastal zone and expanding mapped habitat areas by including areas previously excluded due to lack of resource information (e.g., new records of special status species occurrences are now available). Figure 8 depicts a comparison of previous ESHA mapping, digitized from the MBLCP, with current ESHA mapping. The majority of revisions are the result of present-day availability of more published datasets, including higher resolution aerial photograph base maps. These data allowed for more precise mapping of stream centerlines, better distinction among existing plant community boundaries, and additional data that was not available when original ESHA maps were drawn, including extent of habitat suitable for eelgrass, California seablite, and other sensitive resources.

The ESHA information provided in this submittal is not intended to be an exhaustive compilation of the habitat areas that meet the ESHA definition. To ensure that all ESHAs within the City's coastal zone were considered, designated ESHAs may be buffered by a minimum of 50-100 feet, depending upon the habitats present and the proposed development. Buffers will be finalized in the LCP. The ESHAs and areas that fall within this buffer from potential ESHAs will require site-specific biological evaluations and field observations to identify ESHA and other sensitive biological resources prior to project development approval.

Updated ESHA information will improve ESHA identification, utilizing the best available information early in the development review stage. The data included within this submittal was produced in order to achieve consistency with the Coastal Act and are based on the latest available scientific information and precedential decisions. However, the Commission may require mandatory site reviews for projects that have the potential to impact ESHA, and provisions that require avoidance of resource impacts to be pursued for development before mitigation measures are implemented as an additional means of achieving compliance with the Coastal Act. These assurances along with the updated mapped ESHA are required for the LCP Update to be found consistent with Coastal Act Sections 30230, 30231, and 30240.

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FIGURE 8

ESHA Update Comparison Map

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APPENDIX A. PHOTOGRAPHS – MAY 2017 CONDITIONS

Photograph 1. View of dune wetland. Photo facing south.

Photograph 2. View of foredune natural community. Photo facing southwest.

Photograph 3. View of the foredune (left) natural community, adjoining the coastal strand. Photo facing south.

Photograph 4. View of backdune dune scrub natural community in the foreground. Photo facing north.

Photograph 5. View of Morro Creek, at coastal outlet. Photo facing east.

Photograph 6. View of Morro Creek, at coastal outlet. Freshwater emergent wetland seen at right. Photo facing west.

Photograph 7. Example of seasonal drainage and willow scrub within LCP area. Photo facing southeast.

Photograph 8. View of rookery at Fairbanks Point. Photo facing northwest.

Photograph 9. View of pickleweed marsh in Morro Bay Estuary. Photo facing southeast.

Photograph 10. View of pickleweed marsh in Morro Bay Estuary. Photo facing west.

APPENDIX B. SPECIAL STATUS SPECIES KNOWN TO OCCUR ON OR IN THE VICINITY OF THE LCP AREA

Table B-1. Special Status Species Known to Occur on or in the Vicinity of the LCP Area

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Plants			
Arctostaphylos morroensis Morro manzanita	Threatened/-- G1 / S1 1B.1	Bloom period: December-March. Requires fine sands within maritime chaparral, cismontane woodland, pre-Flandrian dunes, and coastal scrub. Elevations: 5-205 meters.	**Moderate Potential**: Suitable habitat exists within coastal scrub of LCP. CNDDB documents three occurrences of this species in within 1 mile of the LCP. Specifically in Baywood Park (CNDDB 2014) and along the northern fork of the Crespi Loop trail in Morro Bay State Park (CNDDB 2015).
Arctostaphylos osoensis Oso manzanita	--/-- G1 / S1 1B.2	Bloom period: February-March. Grows in chaparral and in cismontane woodland on dacite porphyry buttes. Narrowly endemic to the mountains North of Los Osos Valley, San Luis Obispo County. Elevations: 300-500 meters.	**Moderate Potential.** CNDDB documents one occurrence of this species along the outer boundary of the 1 mile buffer zone. Specifically, at the intersection of the Crespi Trail and Chumash Trail, east of South Bay Boulevard (CNDDB 2015). The LCP contains limited habitat within the required elevational range of this species.
Astragalus didymocarpus var. *milesianus* Miles' milk-vetch	--/-- G5T2 / S2 1B.2	Bloom period: March-June. Clay substrates within coastal scrub. Elevations range: 20-90 meters.	**Moderate Potential**. Suitable habitat present within scrub habitats of LCP. Limited suitable soils present. CNDDB document one occurrence of this species within the LCP and one occurrence within the 1 mile buffer. Although these occurrences are dated prior to 1970, suitable habitat for this species occurs within the clay soils of the scrub habitat of the LCP.

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Bryoria spiralifera twisted horsehair lichen	--/-- G3 / S1S2 1B.1	Endemic to the west coast of North America, ranging from San Luis Obispo County northward to Coos County, Oregon in communities ranging from maritime coniferous forest to maritime chaparral and dune communities (CALS 2008).	**Moderate Potential**. CNDDB documents one occurrence of this species within the 1 mile buffer of the LCP. This occurrence is located in the Elfin Forest of Los Osos (CNDDB 1991). Suitable habitat for this species occurs within the forested and chaparral habitats of the LCP, specifically on the pines in Black Hill Natural Area.
Calystegia subacaulis ssp. *episcopalis* Cambria morning-glory	--/-- G3T2 / S2 4.2	Bloom period: April-May. Rhizomatous, perennial herb that occurs in chaparral, cismontane woodland, and sparse to dense grassland covering sloped or flat areas in clay-rich soils; restricted to outer South Coast ranges in SLO and Santa Barbara Counties. Elevations: 60-500 meters.	**Moderate Potential.** Suitable habitat for this species occurs within the chaparral, woodland, and grassland habitats within the LCP. This species is documented within the chaparral, woodland, and grassland habitats 0.6 miles north of Black Hill summit (CNDDB 1995).
Castilleja densiflora var. *obispoensis* San Luis Obispo owl's-clover	--/-- G5T2 / S2 1B.2	Bloom period: April. Grows in valley and foothill grasslands. Occurs in Arroyo Grande, Pismo Beach, Port San Luis, San Luis Obispo, Lopez Mountain, Morro Bay, Cayucos, San Simeon, Pico Creek, Cambria, Piedras Blancas, and Burro Mountain. Elevations: 10-400 meters.	**High Potential**. CNDDB documents two occurrences of this species within the LCP. Suitable habitat for this species occurs within the grasslands, meadows, and seeps. Elements of suitable habitat present within LCP.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	Endangered/Endangered G4?T1 / S1 1B.2	Bloom period: May-October. Requires coastal salt marshes that line bays and estuaries. Elevations: 0-10 meters.	**High Potential.** This species was documented in close proximity to the LCP, in Montana de Oro State Park, by CNDDB in 2008. Suitable habitat for this species occurs within the marsh, and coastal dune habitats within the LCP.
Delphinium parryi ssp. *blochmaniae* dune larkspur	--/-- G4T2 / S2 1B.2	Chaparral, coastal dunes (maritime). On rocky areas and dunes. 15-375 m.	**High Potential**. Elements of suitable habitat present within LCP. CNDDB documents one occurrence of this species within the LCP (CNDDB 1899). The chaparral and coastal dune habitats within the LCP provide suitable habitats for this species.

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Delphinium parryi ssp. *eastwoodiae* Eastwood's larkspur	--/-- G4T2 / S2 1B.2	Chaparral, valley and foothill grassland. Serpentine. Openings. 60-640 m.	**High Potential.** CNDDB documents one occurrence of this species within the LCP (CNDDB 1960). The serpentine influenced chaparral and grassland habitats within the LCP provide suitable habitats for this species.
Dithyrea maritima beach spectaclepod	--/Threatened G1 / S1 1B.1	Coastal dunes, coastal scrub. Sea shores, on sand dunes, and sandy places near the shore. 3-65 m.	**Moderate Potential**. This species was documented in close proximity to the LCP, in Montana de Oro State Park, by CNDDB in 2008. Suitable habitat for this species occurs within the sandy coastal dune habitats within the LCP.
Dudleya abramsii ssp. *bettinae* Betty's dudleya	--/-- G4T2 / S2 1B.2	Coastal scrub, valley and foothill grassland, chaparral. On rocky, barren exposures of serpentine within scrub vegetation. 20-250 m.	**Moderate Potential**. CNDDB documents two occurrences of this species within the LCP. Suitable habitat for this species occurs with the serpentine influenced scrub, grassland, and chaparral habitats within the LCP.
Dudleya abramsii ssp. *murina* mouse-gray dudleya	--/-- G4T2 / S2 1B.3	Chaparral, cismontane woodland, valley and foothill grassland. Serpentine outcrops. 25-535 m.	**Moderate Potential**. CNDDB documents one occurrence of this species within the rolling hills on the north side of the LCP (1988). Suitable habitat for this species occurs with the serpentine influenced woodland, grassland, and chaparral habitats within the LCP.
Dudleya blochmaniae ssp. *blochmaniae* Blochman's dudleya	--/-- G3T2 / S2 1B.1	Coastal scrub, coastal bluff scrub, chaparral, valley and foothill grassland. Open, rocky slopes; often in shallow clays over serpentine or in rocky areas with little soil. 5-450 m.	**High Potential**. CNDDB documents one occurrences of this species within the LCP, and six occurrences within 1 mile of the LCP boundary. Suitable habitat for this species occurs with the serpentine influenced scrub, grassland, and chaparral habitats within the LCP.
Erigeron blochmaniae Blochman's leafy daisy	--/-- G2 / S2 1B.2	Coastal dunes, coastal scrub. Sand dunes and hills. 3-45 m.	**High Potential.** Species known to occur in Montana De Oro State Park (Sims 2010). Suitable habitat within the sand dunes and hills of coastal dune and scrub habitat within the City's Coastal Zone.

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Extriplex joaquinana San Joaquin spearscale	--/-- G2 / S2 1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with Distichlis spicata, Frankenia, etc. 1-835 m.	**Moderate Potential**. Suitable habitat present within Dune wetlands of LCP.
Horkelia cuneata var. *sericea* Kellogg's horkelia	--/-- G4T1? / S1? 1B.1	Closed-cone coniferous forest, coastal scrub, coastal dunes, chaparral. Old dunes, coastal sandhills; openings. 5-215 m.	**Moderate Potential**. Elements of suitable habitat present within coastal scrub and chaparral of LCP.
Layia jonesii Jones' layia	--/-- G2 / S2 1B.2	Chaparral, valley and foothill grassland. Clay soils and serpentine outcrops. 5-400 m.	**Present**. Suitable habitat present in chaparral and grassland habitats with clay and serpentine influence within LCP. This species is known to occur on Black Hill within the LCP (LCP 1982).
Monardella sinuata ssp. *sinuata* southern curly-leaved monardella	--/-- G3T2 / S2 1B.2	Coastal dunes, coastal scrub, chaparral, cismontane woodlands. Sandy soils. 0-300 m.	**Moderate Potential**. Suitable habitat present within dune, scrub and chaparral habitats within LCP.
Nemacaulis denudata var. *denudate* coast woolly-heads	--/-- G3G4T2 / S2 1B.2	Coastal dunes. 0-100 m.	**Moderate Potential**. Suitable habitat present within coastal dune and scrub habitat within LCP
Suaeda californica California seablite	Endangered/-- G1 / S1 1B.1	Marshes and swamps. Margins of coastal salt marshes. 0-5 m.	**Present**. Known to occur along margins of Morro Bay estuary within the City's Coastal Zone (Sims 2010; CNDDB). Suitable habitat present in estuary and associated marsh.
Sulcaria isidiifera splitting yarn lichen	--/-- G1 / S1 1B.1	Coastal scrub. On branches of oaks and shrubs in old growth coastal scrub. 20-55 m.	**Moderate Potential**. Suitable habitat present in coastal scrub habitat within LCP.
Vegetation Communities			
Central dune scrub	--/--/-- tracked by CDFW as sensitive natural community	A dense coastal scrub community of scattered shrubs, subshrubs, and herbs generally less than 1m tall.	**Present.**

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Coastal brackish marsh	--/--/-- tracked by CDFW as sensitive natural community	Dominated by perennial, emergent, herbaceous monocots to 2m tall. Cover is often complete and dense. Similar to Coastal Salt Marshes, but brackish from freshwater input. Usually at the interior edges of coastal bays and estuaries or in coastal lagoons.	**Present.**
Northern coastal salt marsh	--/--/-- tracked by CDFW as sensitive natural community	Highly productive, herbaceous and suffructescent, salt-tolerant hydrophytes forming moderate to dense cover and up to 1m tall. Usually found along sheltered inland margins of bays, lagoons, and estuaries. These hydric soils are subject to regular tidal inundation by salt water for at least part of each year.	**Present.**
Invertebrates			
Bombus caliginosus obscure bumble bee	--/-- G4? / S1S2	Coastal areas from Santa Barbara county to north to Washington state. Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.	**High Potential.** Majority of preferred food plants present within LCP.
Cicindela hirticollis gravida sandy beach tiger beetle	--/-- G5T2 / S2	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	**High Potential.** Suitable habitat present in the Dune communities of the LCP.
Coelus globosus globose dune beetle	--/-- G1G2 / S1S2	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico. Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	**High Potential**. Suitable habitat present within LCP along foredune natural community. Species known to occur on sandspit at the south of the LCP.
Danaus plexippus pop. 1 monarch - California overwintering population	--/-- G4T2T3 / S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Present**. This species is known to occur within the LCP. CNDDB documents 9 occurrences of monarch overwintering populations.

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Plebejus icarioides moroensis Morro Bay blue butterfly	--/-- G5T2 / S2	Inhabits stabilized dunes & adjacent areas of coastal San Luis Obispo & NW Santa Barbara counties. Larval food plant thought to be Lupinus chamissonis.	**High Potential**. CNDDB documents three occurrences of this species within the LCP. The required host plant species is present in the coastal scrub habitat.
Fish			
Eucyclogobius newberryi tidewater goby	FE / -- SSC G3 / S3	Occurs in brackish and freshwater shallow lagoons and slow-moving lower stream reaches. Requires fairly calm and still waters, but not stagnant. Avoids open areas with strong currents or wave action.	**Present.** USFWS reports that the mouth and lower reach of Toro Creek, which is designated critical habitat, was occupied at the time designated critical habitat was updated in 2013 (78 FR 8745 8819). This species is known to occur within the project area.
Oncorhynchus mykiss irideus steelhead – Southern California DPS	FE / -- SSC G5T1Q / S1	Occurs in riparian, emergent, and palustrine habitats. Spawning and rearing occurs in cool, clear fast-flowing streams with abundant gravel or cobble and riffles. Feeds and forages in open waters within estuarine subtidal and riverine habitats. Connectivity to the Pacific Ocean is required to complete its life cycle.	**Present.** This species is known to occur within Chorro Creek, and the outlet into the Morro Bay estuary.
Amphibians			
Rana draytonii California red-legged frog	FT / -- SSC G2G3 / S2S3	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**High Potential.** Suitable habitat present within LCP. In addition to the 7 CNDDB occurrences documented within LCP, the LCP also contains designated critical habitat for this species.
Reptiles			
Anniella pulchra nigra black legless lizard	--/-- G3G4T2T3Q / S2 SSC	Sand dunes and sandy soils in the Monterey Bay and Morro Bay regions. Inhabit sandy soil/dune areas with bush lupine and mock heather as dominant plants. Moist soil is essential.	**Low Potential.** Melanistic legless lizards do occur in the LCP; however, subspecies *nigra* is now believed to occur only in the Monterey Bay region, while melanistic individuals of legless lizards in Morro Bay are now believed to be most closely related to silvery legless lizard (Parham and Pappenfuss 2008; 2010).

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Anniella pulchra silvery legless lizard	--/-- G3G4T3T4Q / S3 SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. Prefer soils with high moisture content.	**High Potential.** Suitable habitat present within LCP and reported from the dunes in the vicinity.
Emys marmorata western pond turtle	--/-- G3G4 / S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for e	**High Potential.** Suitable habitat present within creeks and wetlands of LCP. The LCP contains the year-round freshwater water and substantial aquatic vegetation.
Phrynosoma blainvillii coast horned lizard	--/-- G3G4 / S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.	**High Potential.** Elements of suitable habitat present within LCP include dunes and dune scrub.
Birds			
Accipiter cooperii Cooper's hawk	--/-- G5 / S4 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	**Moderate Potential.** CNDDB documents one occurrence of this species within the LCP. Suitable nesting habitat for this species occurs throughout the LCP.
Charadrius alexandrinus nivosus western snowy plover	Threatened/-- G3T3 / S2S3 SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Present.** This species is known to occur within the coastal dune and sand spit habitat of the City's Coastal Zone.
Laterallus jamaicensis coturniculus California black rail	--/Threatened G3G4T1 / S1 FP	Inhabits freshwater marshes, wet meadows & shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year & dense vegetation for nesting habitat.	**High Potential.** CNDDB documents one occurrence of this species within the LCP. This occurrence was documented in 2001 in the marsh/estuary region of the study area.

Scientific Name Common Name	Status [1]Fed / [2]State ESA [3]CRPR / [2]CDFW [4]G-Rank / S-Rank	Habitat Preference / Requirements	Potential for Occurrence / Basis for Determination
Rallus longirostris obsoletus California clapper rail	Endangered/Endangered G5T1 / S1 FP	Salt-water & brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Low Potential.** CNDDB document one occurrence of this species within the LCP, dated 1939. Suitable habitat occurs for this species in the pickleweed dominated marsh and estuary habitats of the LCP.
Mammals			
Antrozous pallidus pallid bat	--/-- G5 / S3 SSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low Potential.** Elements of suitable habitat present within project site; however, project site lacks preferred cliff faces and tall buildings for roosting. No occurrence records exist on or adjacent to project site.
Dipodomys heermanni morroensis Morro Bay kangaroo rat	Endangered/Endangered G3G4TH / SH FP	Coastal sage scrub on the south side of Morro Bay. Needs sandy soil, but not active dunes, prefers early seral stages.	**Low Potential.** Elements of suitable habitat present within project site; however, the species has not been seen in the wild since 1986.

Regional Vicinity refers to within a 5 mile radius of site.

FT = Federally Threatened
FC = Federal Candidate Species
FE = Federally Endangered
SE = State Endangered
ST = State Threatened
SR = State Rare
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List

CRPR (CNPS California Rare Plant Rank):
1A=Presumed Extinct in California
1B=Rare, Threatened, or Endangered in California and elsewhere
2=Rare, Threatened, or Endangered in California, but more common elsewhere
CRPR Threat Code Extension:
.1=Seriously endangered in California (> 80% of occurrences threatened / high degree and immediacy of threat)
.2=Fairly endangered in California (20-80% occurrences threatened)
.3=Not very endangered in California (<20% of occurrences threatened)

G-Rank/S-Rank = Global Rank and State Rank as per NatureServe and CDFW's CNDDB RareFind 5.

Table Crosswalk for Habitat Classifications used in the EIR, Community Baseline Assessment, the NWI, and the ESHA Report.

EIR Habitat Classification	Community Baseline Assessment Classification	Mapped as ESHA?	NWI Classification
Terrestrial Woodlands			
Coastal Oak Woodland	Coastal Oak Woodland Montane Hardwood Forest	No major stands in the coastal zone within the City. Could be present in coastal zone in other areas of the Plan Area, and depending on composition, could be ESHA.	n/a
Coniferous Woodlands	Montane Hardwood-Coniferous Forest	Some are Breeding and Overwintering sites	n/a
Eucalyptus groves	Eucalyptus Forest	Some are Breeding and Overwintering sites	n/a
Terrestrial Shrub-dominated Communities			
Chamise Chaparral	Chamise-Redshank Chaparral.	Yes - Black Hill Natural Area	n/a
Mixed Chaparral	Mixed Chaparral	Yes - Black Hill Natural Area	n/a
Coastal scrub	Coastal Scrub	Yes - Black Hill Natural Area; Coastal Bluff Scrub	n/a
Coastal dune scrub	Coastal dune scrub	Yes - Backdune and Stabilized Dune with Dune Scrub	n/a
Terrestrial Herbaceous Communities			
Foredune	included with Dune Scrub	Yes - Foredune	n/a
Annual Grasslands	Annual Grasslands	No. Typically does not meet criteria to be considered ESHA	n/a
Perennial Grasslands	Perennial Grasslands	No major stands known in the coastal zone within the City; could be present in coastal zone in other areas of the Plan Area, and depending on composition, could be ESHA	n/a
Agricultural Land Cover Types			
Pasture	Pasture	No. Typically does not meet criteria to be considered ESHA	n/a
Agricultural Fields	Agricultural Areas	No. Typically does not meet criteria to be considered ESHA	n/a
Sparsely/Non-Vegetated Terrestrial Habitats and Developed Areas			
Coastal Strand	Barren	No. Typically does not meet criteria to be considered ESHA	Adjoins edge of Marine areas
Morro Rock; Other Barren Areas	Barren	Morro Rock is a Breeding and Overwintering sites	n/a
Urban	Urban	No. Typically does not meet criteria to be considered ESHA	n/a
Drainages, Riparian Areas, Wetlands, and Other Waters			
Rivers and Streams	Streams and Riverine	Yes- Rivers and Streams/Creeks and Tributaries	Riverine; Palustrine Forested, Palustrine Scrub-Shrub, Palustrine Emergent

EIR Habitat Classification	Community Baseline Assessment Classification	Mapped as ESHA?	NWI Classification
Riparian Thickets and Woodlands	Valley Foothill Riparian Forest Montane Riparian Forest	Yes- Willow woodland and willow scrub	Palustrine Forested, Palustrine Scrub-Shrub
Estuarine Wetlands/Coastal Salt Marsh and Pickleweed Mat	Wetlands - Estuarine Saline emergent wetlands	Yes - Estuarine Wetlands, Coastal Salt Marsh, and Pickleweed Mat	Estuarine Wetlands
Freshwater Wetlands	Freshwater Emergent Wetlands	Yes- Freshwater Emergent Wetlands	Palustrine emergent and Palustrine scrub-shrub wetlands
Dune Wetlands	Freshwater Emergent Wetlands	Yes- Dune Wetlands	Palustrine emergent and Palustrine scrub-shrub wetlands
Freshwater Ponds	Freshwater Ponds	Yes in part - with Freshwater Emergent Wetlands	Palustrine and Lacustrine depending on size
Estuarine/ mudflats, tidal channels, and shallow bay, and marine open waters	Estuarine and Marine Deepwater	Yes, in part. - Shallow Bay, Mudflat and Eelgrass Habitat; Tidal Channels.	Estuarine, Marine

Sources: *Plan Morro Bay*, City of Morro Bay 2018
Community Baseline Assessment, City of Morro Bay, 2017
Environmentally Sensitive Habitat Assessment (ESHA) Baseline Report, City of Morro Bay 2017
National Wetlands Inventory, USFWS, 2018

Appendix E

Circulation Element Update Final Technical Report

Morro Bay Circulation Element Update

Draft Technical Report

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Introduction

This report describes existing and future transportation conditions in the City of Morro Bay. This includes conditions related to driving, walking, bicycling, and transit in the City as well as parking and coastal access.

This report serves as a companion document to the Circulation Element of the Morro Bay General Plan Update. It describes the technical analysis results under Existing, Buildout, and Buildout Plus Project conditions.

Existing conditions reflect the current roadway network and traffic volumes collected in 2016. Buildout conditions reflect buildout of the City's current General Plan land uses. Buildout Plus Project reflects the updated General Plan land uses proposed as a part of the current update.

Analysis Methods

Intersection Analysis

The level of service thresholds for intersections and the pedestrian, bicycle, and transit modes based on the 6th Edition Highway Capacity Manual (HCM) are presented in Table 1.

Table 1: Intersection Level of Service Thresholds

Signalized Intersections[1]		Stop Sign Controlled Intersections[2]		Two-Way Stop Sign Controlled[3]		Pedestrian, Bicycle, and Transit Modes[4]	
Control Delay (seconds/vehicle)	Level of Service	Control Delay (seconds/vehicle)	Level of Service	Control Delay (seconds/vehicle)	Level of Service	LOS Score	Level of Service
≤ 10	A	≤ 10	A	≤ 5	A	≤ 2.00	A
> 10 - 20	B	> 10 - 15	B	> 5 - 10	B	> 2.00-2.75	B
> 20 - 35	C	> 15 - 25	C	> 10 - 20	C	> 2.75-3.50	C
> 35 - 55	D	> 25 - 35	D	> 20 - 30	D	> 3.50-4.25	D
> 55 - 80	E	> 35 - 50	E	> 30 - 45	E	> 4.25-5.00	E
> 80	F	> 50	F	> 45	F	> 5.00	F

1. Source: Exhibit 18-4 of the 2010 *Highway Capacity Manual.*
2. Source: Exhibits 19-1 and 20-2 of the 2010 Highway Capacity Manual.
3. Source: Exhibits 19-2 of the 2010 Highway Capacity Manual.
4. Source: Exhibit 16-5 and 16-6 of the 2010 Highway Capacity Manual, assuming 60 ft^2/p for pedestrian mode.

The study intersections were analyzed with the Synchro 10 software package applying the HCM 6th Edition methods.

Segment Analysis

The study roadway segments were evaluated for auto, transit, pedestrians, and bicycles using the LOS+ software, which applies the HCM 2010 methods. The LOS score thresholds are shown in Table 2.

Table 2: Roadway Segment Level of Service Thresholds

Auto, Pedestrian, Bicycle, and Transit Modes, Segments	
LOS Score	Level of Service
≤ 2.00	A
> 2.00-2.75	B
> 2.75-3.50	C
> 3.50-4.25	D
> 4.25-5.00	E
> 5.00	F

1. Source: Exhibits 16-5 and 16-6 of the 2010 Highway Capacity Manual, assuming 60 ft^2/p for pedestrian mode

Existing Conditions

This section is divided into the following subsections: 1) automobile intersection operations, 2) segment operations, 3) neighborhood traffic, 4) goods movement, 5) vehicle miles traveled, 6) collisions, 7) parking, 8) walking, 9) bicycling, and 10) transit

1. Automobile Intersection Operations

Traffic counts were collected at the study intersections in 2016 and are shown on Figure 1. Automobile intersection operations are typically described in terms of average delay experienced per vehicle during the peak hour of travel. The delay per vehicle correlates to an LOS grade ranging from LOS A for free-flowing conditions to LOS F for highly congested conditions. The City does not have a formal LOS threshold defining acceptable operations, but historically has applied the Caltrans target of LOS C or better. Operations at key intersections in the City in March 2016 are shown in Table 3 during the Saturday midday and weekday PM peak hours.

Table 3: Level of Service at Key Intersections (2016)

Intersection	Peak Hour	V/C[1]	Delay[2]	LOS
1. San Jacinto Street/ Highway 1	Week PM	0.77	18.2	B
	Sat MID	0.72	17.1	B
2. San Jacinto Street/ Main Street[3]	Week PM	-	6.7 (13.9)	- (B)
	Sat MID	-	5.0 (10.0)	- (A)
3. State Route 41/ Highway 1 SB Ramps[3]	Week PM	0.40	**7.5 (28.7)**	**- (D)**
	Sat MID	0.30	6.7 (18.2)	- (C)
4. State Route 41/ Main Street	Week PM	0.99	**37.6**	**E**
	Sat MID	0.82	**28.3**	**D**
5. Beach Street/ Main Street	Week PM	0.52	13.9	B
	Sat MID	0.75	23.9	C
6. Morro Bay Boulevard/ Quintana Road	Week PM	0.70	12.7	B
	Sat MID	0.59	10.7	B

1. Volume to capacity ratio reported for worst movement.
2. HCM 2010 average control delay in seconds per vehicle.
3. For side-street-stop controlled intersections the worst approach's delay is reported in parentheses next to the overall intersection delay.
Note: Unacceptable operations shown in bold text.

The intersection of SR 41/Main Street (#4) operates at LOS E during the weekday PM peak hour and LOS D during the Saturday midday peak hour. These are below the Caltrans target of LOS C or better. This all-way stop-controlled intersection and nearby ramps have been under study for improvements through the Caltrans project development process and a roundabout is now planned. The southbound approach to the SR 41/Highway 1 southbound ramps intersection (#3) operates at LOS D during the weekday PM peak hour. All other intersections perform at or above LOS C.

Figure 1: Existing Volumes

Existing Peak Hour Volumes

1.

				↳ 97(80)	
↳ 7(11)	↓ 657(695)	↱ 55(48)	Highway 1	← 18(13)	
				↰ 128(91)	
				San Jacinto St	
7(15) ↳				↱ 44(45)	↑ 623(755)	↱ 242(144)
15(22) →						
43(61) ↴						

2.

				↳ 9(9)	
↳ 75(59)	↓ 60(50)	↱ 3(6)	Main St	← 59(51)	
				↰ 9(13)	
				San Jacinto St	
112(58) ↳				↱ 107(90)	↑ 87(91)	↱ 21(12)
100(56) →						
94(93) ↴						

3.

				← 144(108)	
↳ 26(44)	↓ 7(11)	↱ 64(69)	Highway 1 SB Ramp	↰ 329(262)	
				State Route 41	
83(85) →					
86(81) ↴					

4.

				↳ 49(62)	
↳ 160(95)	↓ 138(114)	↱ 42(57)	Main St	← 262(287)	
				↰ 144(230)	
				State Route 41	
92(53) ↳				↱ 77(72)	↑ 188(158)	↱ 244(202)
251(227) →						
37(55) ↴						

5.

				↳ 21(22)	
↳ 180(286)	↓ 272(318)	↱ 24(18)	Main St	← 7(15)	
				↰ 1(2)	
				Beach St	
201(249) ↳				↱ 29(63)	↑ 249(263)	↱ 5(12)
10(28) →						
43(105) ↴						

6.

				↳ 246(238)	
↳ 91(136)	↓ 3(3)	↱ 258(240)	Quintana Rd	← 466(386)	
				↰ 10(11)	
				Morro Bay Blvd	
76(64) ↳				↱ 2(6)	↑ 3(4)	↱ 20(10)
474(404) →						
4(5) ↴						

Legend:

xx(yy) - PM(Sat Mid) Peak Hour Traffic Volumes

(x) - Study Intersection

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2. Roadway Segment Operations

Roadway segment operations in 2016 are described for pedestrians, bicycles, and vehicles in Table 4. The Embarcadero north of Pacific Street, Morro Bay Boulevard west of Quintana Road, and Main Street south of Radcliff Drive are short segments, with a high number of stops per mile, decreasing their auto performance. Main Street south of Radcliff Drive and westbound SR 41 east of Main Street have high free-flow speeds and no sidewalks, resulting in pedestrian LOS D. All other segments perform at or above LOS C. The City and Caltrans do not have LOS thresholds for pedestrian and bicycle facilities.

Table 4: Roadway Segment Operations (2016)

Segment	Peak Hour	Direction	Pedestrian		Bicycle		Vehicle		
			LOS Score[1]	LOS[1]	Score[1]	LOS[1]	V/C Ratio	Score[1]	LOS[1]
Embarcadero - North of Beach Street	Week PM	NB	2.10	B	4.00	B	0.10	3.28	C
		SB	1.51	A	2.76	C	0.10	3.02	C
	Sat MID	NB	2.48	B	3.02	C	0.18	3.28	C
		SB	1.77	A	2.97	C	0.15	3.02	C
Embarcadero - North of Pacific Street	Week PM	NB	1.32	A	2.86	C	0.08	3.72	D
		SB	1.16	A	2.74	B	0.07	3.72	D
	Sat MID	NB	1.51	A	3.38	C	0.09	3.72	D
		SB	1.43	A	3.46	C	0.10	3.72	D
Embarcadero - South of Pacific Street	Week PM	NB	1.13	A	2.54	B	0.05	3.28	C
		SB	1.12	A	2.68	B	0.06	3.28	C
	Sat MID	NB	1.32	A	3.12	C	0.07	3.28	C
		SB	1.27	A	3.12	C	0.07	3.28	C
Morro Bay Boulevard - West of Quintana Road	Week PM	EB	2.37	B	2.43	B	0.24	3.62	D
		WB	2.53	B	2.50	B	0.28	3.62	D
	Sat MID	EB	2.27	B	2.38	B	0.22	3.62	D
		WB	2.47	B	2.47	B	0.26	3.62	D
Main Street - South of Radcliff Drive	Week PM	NB	2.56	B	2.34	B	0.17	3.28	C
		SB	3.79	D	2.48	B	0.23	3.02	C
	Sat MID	NB	3.04	C	2.58	B	0.25	3.28	C
		SB	3.94	D	2.55	B	0.24	3.02	C
State Route 41 - East of Main Street	Week PM	EB	3.39	C	0.75	A	0.23	3.16	C
		WB	3.32	C	0.71	A	0.22	3.16	C
	Sat MID	EB	3.31	C	0.71	A	0.21	3.16	C
		WB	3.56	D	0.82	A	0.26	3.16	C

1. HCM 2010 pedestrian/bicycle score and LOS
2. Embarcadero - North of Pacifc Street, Morro Bay Boulevard - West of Quintana Road, and Main Street - South of Radcliff Drive are short segments, increasing their stops per mile. This is the likely cause of their poor Vehicle LOS.
3. Main Street - South of Radcliff Drive SB and State Route 41 - East of Main Street WB have high Freeflow Speeds and no sidewalks. These are the likely causes of their poor Pedestrian LOS.

3. Neighborhood Traffic

There are a variety of different neighborhood types throughout Morro Bay. Most neighborhoods are served by a well-defined grid of local streets. This grid system spreads traffic by providing a variety of routes to destinations.

Some collector streets pass through residential areas. While traffic volumes along these corridors are well below the roadway's carrying capacity, the adjacent residences can be impacted by excessive vehicle volumes and speeds. Table 5 summarizes the volumes and speeds along key neighborhood roadway corridors in 2016.

Table 5: Neighborhood Roadway Traffic Conditions (2016)					
Segment	Peak Hour	Daily Traffic	Average Daily Traffic	85th Percentile Speed (mph)	Average 85th Percentile Speed (mph)
Kern Avenue - Anchor Street to Olive Street	Thursday	1365	1277	23.9	29.9
	Friday	1285		33.0	
	Saturday	1181		32.7	
Piney Way - South Street to Vista Street	Thursday	1524	1440	32.7	32.6
	Friday	1470		32.7	
	Saturday	1326		32.5	
Beachcomber Street - Mindoro Street to Luzon Street	Thursday	355	375	28.0	26.5
	Friday	353		26.4	
	Saturday	416		25.0	
Greenwood Avenue - Elena Street to San Joaquin Street	Thursday	307	258	26.3	25.5
	Friday	287		25.9	
	Saturday	180		24.4	

The roadways listed in Table 5 are classified as major collectors in the California Road Systems maps. However, they meet the criteria for a residential district as defined in Section 515 of the California Vehicle Code, and therefore have a prima facie speed limit of 25 mph. The segments of Kern Avenue and Piney Way show 85th percentile speeds of 29.9 and 32.6 mph, respectively.

4. Goods Movement

Local businesses rely on roadways and other City infrastructure, such as piers, to transport goods. The following roadways, shown on Figure CIR-4, are identified as truck routes in the City's Circulation Element:

- Main Street from Yerba Buena Street to Morro Bay Boulevard
- SR 41/Atascadero Road east of Highway 1
- Quintana Road from Main Street to Morro Bay Boulevard and east of South Bay Boulevard
- Morro Bay Boulevard from Main Street to Highway 1
- Beach Street from the Embarcadero to Main Street
- Harbor Street from the Embarcadero to Main Street
- Highway 1 through the City

Downtown and Embarcadero area businesses receive deliveries from trucks parked at curbside spaces, in off-street lots, or in designated loading zones. Community members have also expressed concern about delivery trucks occasionally parked in the middle of streets, which can create or exacerbate congestion.

Commercial fishing and aquaculture offloading occurs at a number of piers along the Embarcadero. The City operates a launch ramp facility, fish cleaning station, and wash-down area for trailered vessels. No facilities are provided for large vessel haul-outs.

5. Vehicle Miles Traveled

VMT measures travel on roadways by all types of motorized vehicles carrying passengers or cargo. Each mile traveled is counted as one vehicle mile regardless of the number of people in the vehicle. VMT is typically expressed as VMT per day. Table 6 shows daily VMT in Morro Bay as of 2016. In this table, the column titled "Daily VMT in SOI" reflects the vehicle miles traveled entirely within city limits and the City's sphere of influence. The column titled "Daily VMT in the County" reflects the vehicle miles traveled within the City's sphere of influence and those trips that either originated in San

Luis Obispo County and concluded in Morro Bay, or vice versa. The final column, "Daily VMT in State," reflects vehicle miles traveled within the City's sphere of influence, and those trips that either originated in Morro Bay and concluded anywhere in California (including San Luis Obispo County), or vice versa.

Table 6: Vehicle Miles Traveled in Morro Bay (2016)

Trip Type	Daily VMT in SOI	Daily VMT in County	Daily VMT in State
Origin and destination within City SOI	52,256	52,256	52,256
Origin only within City SOI	16,061	48,024	63,788
Destination only within City SOI	16,422	50,924	66,688
Total	84,739	151,205	182,732

1. SOI = Sphere of Influence
2. Source: SLOCOG and CA Statewide Travel Demand Models

Daily VMT is shown for trips with both an origin and destination within the City and trips with either an origin or destination in the City, but not both. A Morro Bay resident driving to dinner on the Embarcadero would have an origin and destination within the City. A Morro Bay resident driving to work in Paso Robles would have an origin only within the City, while an Atascadero resident driving to work in Morro Bay would have a destination only within the City. A Fresno resident visiting Morro Bay would have a destination only within the City, and the trip length and VMT would be adjusted to reflect the portion of the trip occurring outside of San Luis Obispo County.

VMT estimates were extracted from the SLOCOG Travel Demand Model calibrated for use in Morro Bay. The SLOCOG Model tracks trips within the County but does not reflect regional trips that continue to destinations outside of the County. The California Statewide Model was used to determine the average trip lengths for trips leaving San Luis Obispo County, which were then used to forecast the daily VMT.

Trips with an origin and destination in the City were counted as being 100 percent generated by the City. Trips that have an ending or beginning in the City were counted as being 50 percent generated by the City. Trips that pass through the City but do not begin or end within the City were excluded from the VMT analysis.

6. Collisions

The Statewide Integrated Traffic Records System (SWITRS) is a tool used by the California Highway Patrol to collect and process collision information. Injury and fatal collision hot-spots (including vehicles, pedestrians, and bicyclists) throughout the City were reviewed based on five years of collision data. Most of the collisions occur at intersections along Highway 1 and along the Main Street and Morro Bay Boulevard corridors.

The California Office of Traffic Safety compares collision rates for cities throughout the state. There are 105 cities in Morro Bay's category with a population between 10,001 and 25,000. In 2013, Morro Bay's fatal and injury collision rank was 43 of 105, indicating that 42 similar-sized cities had higher collision rates and 62 had lower rates.

The 10 intersections with the largest number of reported collisions are summarized in Table 7. Where these intersections overlap with the intersections identified in the current General Plan, those values (for the period 1982–1984) are provided as well.

Table 7: High Collision Locations in Morro Bay (2012-2014)

Intersection	2012	2013	2014	Total	1982-1984
Highway 1/Main Street	2	5	5	12	-
Quintana Road/South Bay Boulevard	5	3	4	12	2
Quintana Road/Main Street	3	2	4	9	5
Highway 1/Yerba Buena Street	3	4	2	9	4
Highway 1/San Jacinto Street	1	5	2	8	9
Highway 1/Morro Bay Boulevard	3	3	2	8	-
Quintana Road/Morro Bay Boulevard	2	2	3	7	7
Main Street/Morro Bay Boulevard	2	3	2	7	-
Main Street/SR 41	2	4	1	7	-
Embarcadero/Embarcadero	2	3	2	7	-

1. Source: California Highway Patrol 2014; City of Morro Bay 1988
2. SWITRS does not provide a precise location for all collisions, so it is unclear where the collisions at the Highway 1 intersections with Main Stret and Morro Bay Boulevard occurred.

Five locations analyzed in the 1988 General Plan are also in the top 10 collision locations between 2012 and 2014. The number of reported collisions increased at three of these intersections, and stayed the same or decreased at two locations, despite traffic volume increases.

7. Parking

The City prepared a Parking Management Plan in 2007, which focused on parking conditions Downtown and along the Embarcadero. Nearly 2,500 parking spaces are located in this study area. Of these, more than 70 percent are managed by the City. Occupancy surveys were also conducted from noon to 6:00 PM on a Tuesday preceding Memorial Day and Saturday of Memorial Day weekend of that year.

The occupancy surveys showed that parking on the Embarcadero was fully utilized and several Downtown blocks were nearly fully utilized during the peak hour of the holiday weekend. The high parking occupancy rates were short in duration and supply was available within four blocks of all surveyed areas at all times, even during a holiday weekend.

The study developed an action plan to address the temporary supply issues present during busy weekends and more effectively manage the City's parking supply. The action plan includes the following recommendations:

1. Enhance the signage program to better direct drivers to the appropriate parking areas.
2. Improve public information related to parking for different users.
3. Encourage shared parking between different land uses.
4. Encourage employee parking policies to support parking availability for visitors.
5. Expand and enhance trolley service.
6. Regulate delivery truck parking.
7. Replace parallel parking with angled parking in selected areas.
8. Enhance pedestrian facilities with a focus on connections to parking and attractions.
9. Modify time limits to more effectively utilize the parking supply.

10. Encourage public-private partnerships to effectively provide parking.
11. Monitor and adjust the Parking In-Lieu Fee program.
12. Allow the provision of pervious parking surfaces to minimize stormwater runoff.

The City is implementing the action plan as opportunities arise. As recently as June 28, 2016, the Morro Bay City Council was considering approaches to prevent parking requirements from negatively impacting economic development.

Coastal Zone Access and parking

Public parking provides access to the Coastal Zone at numerous locations in Morro Bay. More than 2,200 free public parking spaces are provided by the City in the Coastal Zone. The primary public access points are described below and shown on Figure CIR-5.

- North Point Natural Area, located at the north end of Toro Lane, provides 10 marked vehicle parking spaces on the bluff connecting to stairways and trails to the beach. These parking spaces are occasionally fully utilized, but additional curbside parking is nearby in the Morro Strand campground area.
- Beachcomber Street provides approximately one-half mile of curbside parking (roughly 100 spaces) on the bluffs above the Morro Strand campground. These spaces are frequented by surfers and other beachgoers.
- The Morro Strand campground provides five marked parking spaces for day use in addition to the camp sites.
- Beachcomber Street offers curbside parking and two informal off-street parking areas south of Alva Paul Creek.
- An off-street parking lot at the end of Azure Street provides approximately 30 parking spaces as well as a restroom for beachgoers. This parking lot connects to the Cloisters trail network.
- The Cloisters Community Park offers 28 off-street parking spaces serving the park and multiuse trails providing beach access.
- Informal dirt parking lots and curbside parking are situated along the Embarcadero north of Morro Creek. A bicycle and pedestrian bridge crosses Morro Creek to connect with the Harborwalk path.
- A dirt parking lot is located at the end of the Embarcadero just south of Morro Creek. This lot also offers parking for bikes and surreys.
- Numerous parking areas are along Coleman Drive between the Embarcadero and Morro Rock. These provide access to the Harborwalk, basketball courts, small craft launch sites at Coleman Beach, Morro Rock, and other amenities in the area. Most of the parking areas consist of dirt lots. The lot closest to the harbor mouth is closed to vehicles during high surf for public safety.
- Parking supply and demand along the Embarcadero south to the launch ramp are discussed in detail in the 2007 Parking Management Plan.
- An informal dirt parking area accommodating approximately 12 vehicles is situated on Main Street north of the Museum of Natural History. This lot is regularly used as a launching point for small boats.
- A paved parking lot is located at the Morro Bay State Park Marina serving the general public and vessel owners. This lot also provides access to estuary walking trails.

Free parking is provided at all coastal access parking locations.

8. Walking

The City's well-established grid network, mild weather, and relatively flat topography support walking and biking. The Morro Bay Bicycle and Pedestrian Master Plan (2011) describes existing conditions and identifies goals, objectives, and planned improvements to serve these modes of travel. The American Community Survey estimates that in 2014, 4.5 percent of working-age residents in Morro Bay walked to work, 1.4 percent biked to work, and 72.8 percent drove alone to work.

Pedestrian facilities consist of sidewalks, Class I paths, and crosswalks. Sidewalks are provided along the Embarcadero and along most streets in the Downtown area. Most single-family residential areas in the City lack sidewalks. Section 12.04.010 of the Municipal Code requires that new developments conform to the City's Standard Drawings and Specifications (City of Morro Bay, 1987), which require sidewalks for commercial, industrial, and high-density residential uses as well as on arterial, local, and collector roads not bordered by one or more of these land uses. Hillside streets in R1/R2 zoning are required to provide a flat, walkable surface on one side of the road.

Crosswalks

There are four types of crosswalks in the City. Signalized crossings provide marked crosswalks and pedestrian signal heads. The three signalized intersections in the City provide signalized crossings on at least two legs of the intersection.

Controlled marked crossings provide striped crosswalks with a stop or yield sign on at least one leg of the intersection. There are 44 controlled marked crossings in the City, mostly in the Downtown area. There are two controlled marked crossings across Highway 1, one at San Jacinto Street and a second at Yerba Buena Street. A crosswalk, green bike lane striping, and Rectangular Rapid Flash Beacon were recently installed near the Atascadero Road/Highway 1 southbound ramp intersection. This area experiences high pedestrian volumes due to the proximity of the high school and nearby hotels.

Uncontrolled marked crossings provide striped crosswalks at mid-block and uncontrolled locations.

Unmarked crossings constitute the remainder of crosswalks wherever two public roads intersect, per the California Vehicle Code.

The Harborwalk provides a multi-use bicycle and walking path connecting the Embarcadero to Morro Rock. This path is heavily used by locals and visitors.

Trails

The California Coastal Trail is a hiking and bicycling trail that spans from Oregon to Mexico. The California legislature formally established the trail in 2001 and provided a general alignment. There is some existing signage for the Trail along the Bayfront of the Embarcadero. Additional recreational hiking trails are provided in Morro Bay State Park. These include the Black Hill hiking areas and walking paths along the estuary near the State Park marina.

Schools

Greenwood Avenue was identified prior to 2004 as the primary walking route to the City's only elementary school, Del Mar Elementary. No sidewalks are provided on Greenwood Avenue, causing pedestrians to walk in the roadway. In 2011 the City and stakeholders applied unsuccessfully for grant

funding for segment improvements through the Cycle 3 Federal Safe Routes to School Grants program. Funding for improvements to this segment has not yet been identified.

Morro Bay High School is connected to the Beach Tract by a Class I path. Many students walk through the Main Street/SR 41/Atascadero Road intersection, which is congested during peak hours. Recent pedestrian and bicycle improvements to the Highway 1 Southbound Ramps/Atascadero Road intersection have improved conditions for student cyclists and pedestrians.

9. Bicycling

Bicycle facilities are described in four classes of facilities:

- Class I bikeways provide a completely separate right-of-way for the exclusive use of bicycles and pedestrians with a minimum of vehicular cross-flow. The Harborwalk path is an example of a Class I facility. Approximately 3.6 miles of Class I facilities exist in the City.
- Class II bike lanes consist of a striped lane for one-way bicycle travel on a street or highway. Approximately 7.1 miles of Class II bike lanes exist in the City.
- Class III bike routes are shared by motorists and bicyclists. These routes are supplemented with signs and pavement legends including sharrows. The section of Beachcomber Street south of Yerba Buena Street is an example of a Class III bike route with sharrows.
- Class IV bike lanes, often called cycle tracks or protected bike lanes, are exclusive bike facilities physically separated from vehicles. Types of separation include grade separation, flexible posts, physical barriers, or on-street parking. No Class IV bike lanes currently exist in Morro Bay.

Figure CIR-1 shows existing and proposed bike facilities in Morro Bay. In addition to the California Coastal Trail discussed above, the California Pacific Bike Route connects Vancouver, British Columbia, to Imperial Beach, California, and follows Highway 1 through Morro Bay.

10. Regional Transit

The San Luis Obispo Regional Transit Authority (RTA) is a joint powers authority providing fixed-route regional service throughout the County and serving the Morro Bay Transit Center on Harbor Street. RTA provides ADA paratransit service through the Runabout, a demand response system operating within three-quarters of a mile of all fixed-route services in the County. Figure CIR-1 shows the RTA routes.

RTA Route 12 runs from Morro Bay to San Luis Obispo with stops in Los Osos, Cuesta College, and Cal Poly. It runs on one-hour headways on weekdays and two-hour headways on weekends.

RTA Route 15 runs from Morro Bay to San Simeon with stops in Cayucos and Cambria. It operates on two- to three-hour headways on weekdays and Saturdays and four-hour headways on Sundays.

RTA ridership has consistently increased each year since 2007. Additionally, 2013 ridership is 270 percent greater than 2003 ridership.

11. Local Transit

The City operates Morro Bay Transit, which provides fixed-route service with hourly headways from 6:25 a.m. to 6:45 p.m. on weekdays and 8:25 a.m. to 4:25 p.m. on Saturdays. Curb-to-curb service is provided within three-quarters of a mile of the fixed route on a reservation basis. This route serves the

City's major campgrounds, high school, senior center, grocery store, and neighborhoods throughout the City. Figure CIR-1 shows the Morro Bay Transit routes.

The Morro Bay Trolley operates three loops from Memorial Day weekend through the first weekend in October. The routes serve north Morro Bay, Downtown, and the waterfront with headways under one hour. Stops are provided at the State Park campground, Downtown, the Embarcadero, Morro Rock, and Morro Strand campground.

Morro Bay Transit's 2013 triennial performance audit provided four recommendations:

1. Establish performance standards for all services to better track performance trends.
2. Construct a full ridership profile based on the North County Transit Surveys and additional customer feedback. This information should be used to tailor marketing and public outreach activities.
3. Consider implementing targeted public information campaigns about services to increase ridership among key populations.
4. Make it easier for riders to submit feedback about transit services.

In response to the first recommendation, the City established performance standards regarding passengers per vehicle service hour and incentivized these goals in its service contract. To the second recommendation, the City solicited feedback through both print and electronic methods in addition to conducting on-board opinion surveys and boarding/alighting counts. The City acted on the third recommendation by publicizing unmet transit needs hearings, advertising in local newspapers, visiting senior centers, using targeted marketing to tourists, and identifying a small commuter market. The City implemented the fourth recommendation by offering several methods to receive customer feedback, including an online customer feedback link and a comment form printed in the Morro Bay Transit brochure.

Morro Bay Transit Fixed Route and Call-A-Ride service saw ridership increase by about 30 percent from fiscal years 2012 to 2015. However, over the same period, Morro Bay Trolley ridership decreased by about 15 percent.

The Morro Bay Senior Citizens, Inc. operates a senior transportation shuttle on Monday through Thursday from 9:00 a.m. to 4:00 p.m. It serves destinations throughout the County.

Buildout Transportation Conditions

This section describes transportation conditions under Buildout and Buildout Plus Project conditions. Buildout conditions refer to anticipated buildout under the current General Plan. Buildout Plus Project conditions reflect conditions with the updated General Plan land uses in place.

TRAVEL FORECASTS

The SLOCOG Travel Demand Model was applied to develop future year traffic forecasts. The SLOCOG Model estimates traffic using employees for most commercial uses. Because most land use planning uses building square footage instead of employees it was necessary to convert the planned commercial square footage to an equivalent number of employees using conversion factors. The conversion factors were developed using an inventory of existing uses and existing employees using land use data provided by SLOCOG.

The Buildout Plus Project scenario includes land use changes in a number of areas of the City, with the most prominent changes planned at the power plant site, the current wastewater treatment facility, and areas adjacent to SR 41 east of Highway 1. The zoning changes on these three sites could substantially increase the traffic generated in these areas. The precise level of traffic generation will depend on the intensity and mix of land uses. Because this information is not known at this time, these parcels were assumed to develop to 80 percent of their maximum allowed intensity using the generic zoning categories. Even with these reductions, the large growth in visitor serving commercial uses would result in major shifts in regional travel patterns. The Master Plan areas will require a more detailed analysis to determine off-site transportation impacts, connections, and mitigations.

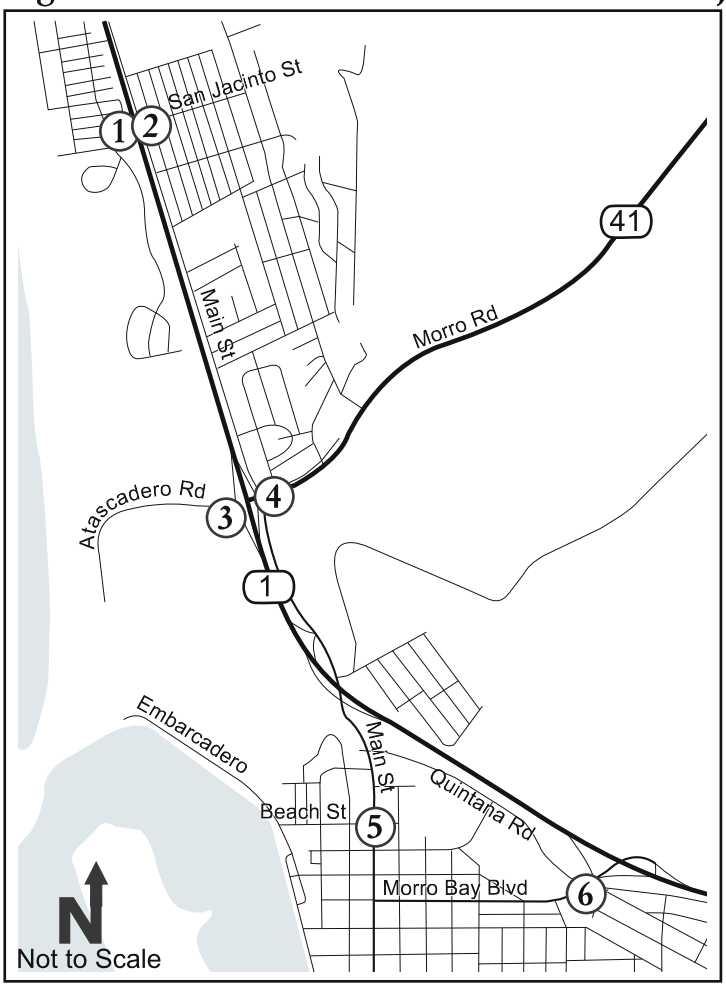
The SLOCOG link-level model outputs were extracted for the study locations and used to develop turning movement forecasts using the difference method, where the buildout model's growth over the base year is added to the base year's traffic counts. The raw forecasts were then reviewed for reasonableness and adjusted where needed to ensure conservation of flow between closely spaced intersections.

ROADWAY NETWORK IMPROVEMENTS

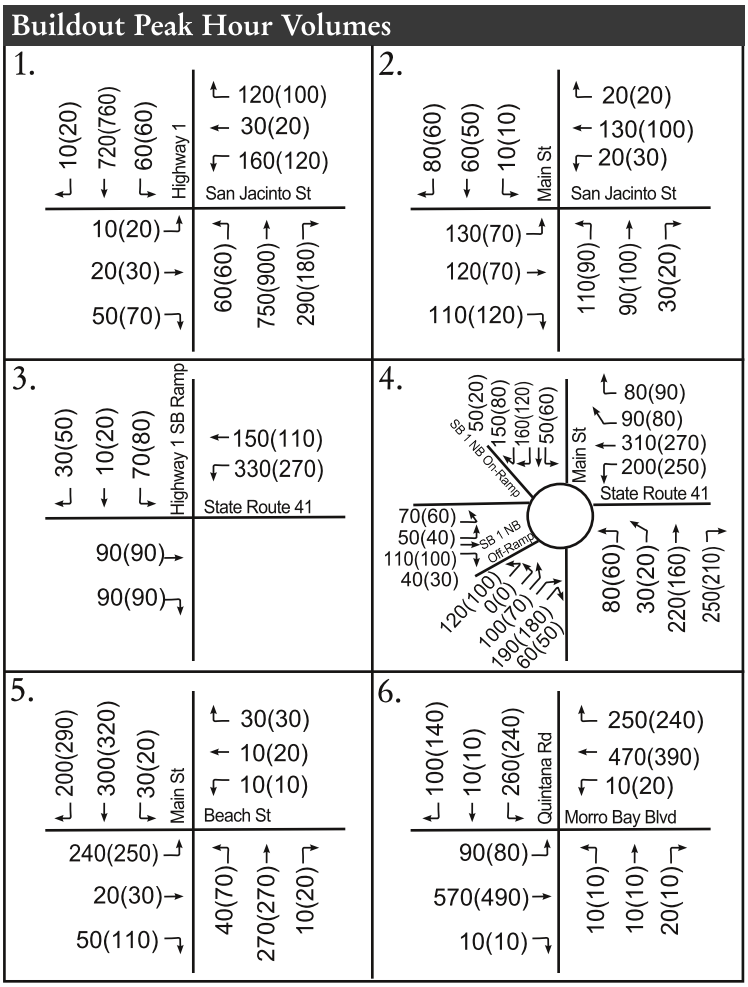
The SR 41/Main Street intersection was assumed to provide a roundabout incorporating the northbound Highway 1 on- and off-ramps consistent with the configuration described in the *State Route 1/State Route 41/Main Street Intersection Control Evaluation Step 2 Report* (Omni-Means, May 2016). This intersection was evaluated using the Sidra software package due to the six-leg configuration. The remaining intersection lane configurations and traffic control types were assumed to remain the same under Buildout conditions as Existing conditions.

Figure 2 shows the Buildout and Buildout Plus Project traffic volumes.

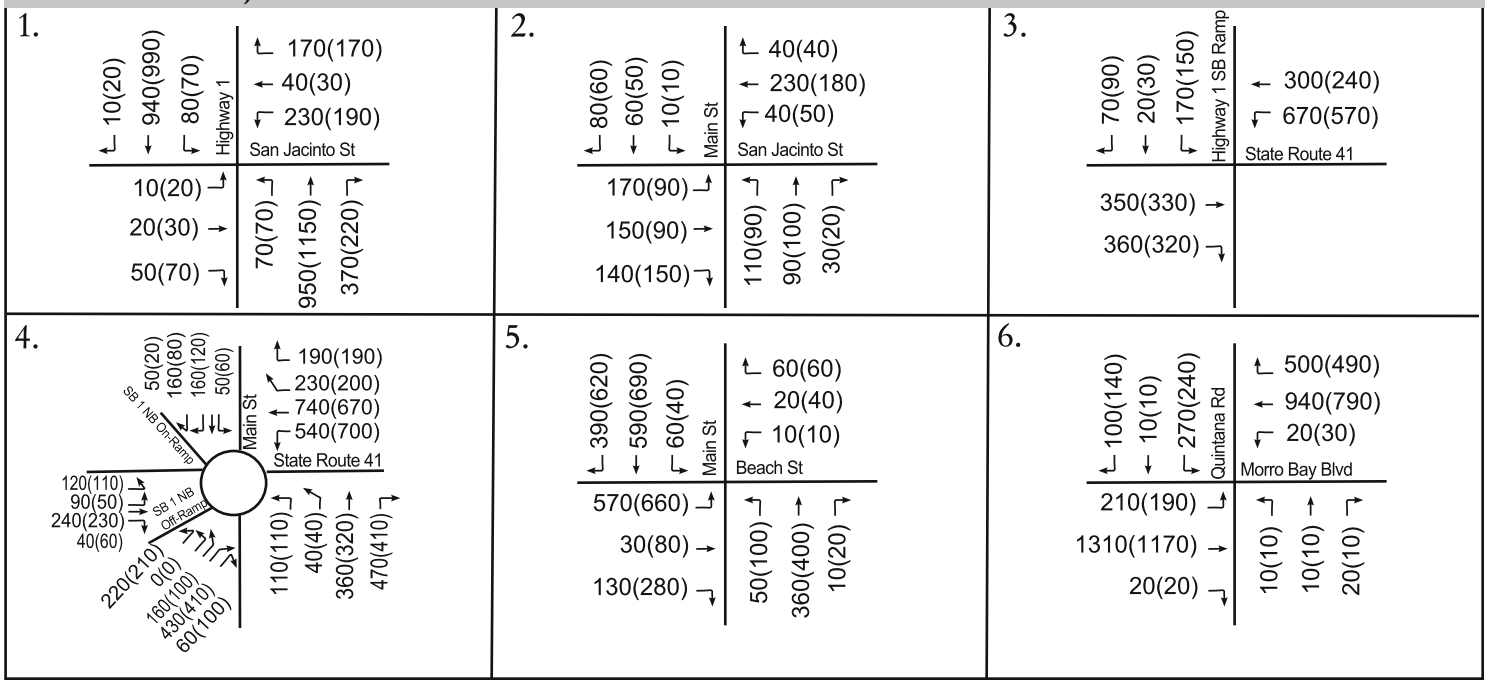
Figure 2: Buildout and Buildout Plus Project Volumes



Buildout Peak Hour Volumes



Buildout Plus Project Peak Hour Volumes



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Legend:

xx(yy) - PM(Sat Mid) Peak Hour Traffic Volumes

(x) - Study Intersection

BUILDOUT CONDITIONS

This section describes 1) intersection operations, 2) segment operations, and 3) VMT under Buildout and Buildout Plus Project conditions.

1. Intersection Operations

Figure 2 shows the Buildout and Buildout Plus Project peak hour traffic volumes. Table 8 shows the LOS for the study intersections under Buildout and Buildout Plus Project conditions, with detailed calculation sheets included in Appendix C.

Table 8: Buildout and Buildout Plus Project Intersection Auto Levels of Service

Intersection	Peak Hour	Buildout V/C[1]	Buildout Delay[2] (sec/veh)	Buildout LOS[3]	Buildout + Project V/C[1]	V/C Delta	Buildout + Project Delay[2] (sec/veh)	Buildout + Project LOS[3]
1. San Jacinto Street/ Highway 1	Week PM	0.65	23.9	C	0.77	0.12	29.3	C
	Sat MID	0.65	22.8	C	0.78	0.13	27.5	C
2. San Jacinto Street/ Main Street[3]	Week PM	-	10.8 (21.9)	C	-	-	**51.8 (152.5)**	**F**
	Sat MID	-	8.5 (15.6)	B	-	-	**70.0 (186.5)**	**F**
3. State Route 41/ Highway 1 SB Ramps[3]	Week PM	**0.47**	**8.2 (31.8)**	**- (D)**	**>1.0**	**-**	**- (>200)**	**F**
	Sat MID	0.40	7.6 (21.1)	- (C)	**>1.0**	**-**	**>200 (>200)**	**F**
4. State Route 41/ Main Street	Week PM	0.93	18.9	B	**2.91**	**1.98**	**>200**	**F**
	Sat MID	0.64	10.7	B	**4.45**	**3.81**	**>200**	**F**
5. Beach Street/ Main Street	Week PM	0.63	17.8	C	**1.72**	**1.09**	**173.8**	**F**
	Sat MID	**0.81**	**27.0**	**D**	**2.22**	**1.41**	**>200**	**F**
6. Morro Bay Boulevard/ Quintana Road	Week PM	0.86	17.8	C	**2.02**	**1.16**	**>200**	**F**
	Sat MID	0.74	13.4	B	**1.77**	**1.03**	**184.0**	**F**

1. Volume to capacity ratio reported for worst movement.
2. HCM 2010 average control delay in seconds per vehicle for SSSC, AWSC and Intersection #6 roundabout. HCM 2000 average control delay for signalized intersecctions. Sidra Analysis control delay for Intersection #4
3. For side-street-stop controlled intersections the worst approach's delay is reported in parenthesis next to the overall intersection delay. Unacceptable operations shown in bold text.

The following intersections operate below the LOS D threshold for vehicles:

- San Jacinto Street/Main Street (#2) operates at LOS F during the weekday PM and Saturday midday peak hours under Buildout Plus Project conditions.
- State Route 41/Highway 1 SB Ramps (#3) operates at LOS F on the southbound approach during the weekday PM and Saturday midday peak hours under Buildout Plus Project conditions.
- State Route 41/Main Street (#4) operates at LOS F during the weekday PM and Saturday midday peak hours under Buildout Plus Project conditions. Note that this reflects operations with the planned roundabout in place.
- Beach Street/Main Street (#5) operates at LOS F during the weekday PM and Saturday midday peak hours under Buildout Plus Project conditions.

- Morro Bay Boulevard/Quintana Road (#6) operates at LOS F during the weekday PM and Saturday midday peak hours under Buildout Plus Project conditions.

Intersection Recommendations

The addition of project traffic results in unacceptable traffic operations at five of the six study intersections during both of the analysis time periods. This is due in part to the assumption that undeveloped parcels in the City will develop to near the maximum allowed extent, when in practice many properties never develop and others develop less intensely than allowed by zoning regulations. These assumptions result in roughly doubling the total amount of non-residential square footage within the City, with much of the growth occurring near the waterfront. This level of growth would require substantial increases in the capacity of serving roadways and would likely impact intersections beyond those studied herein.

Master Plans will be required for the larger redevelopment areas that include the current wastewater treatment plant and power plant. These Master Plans will require detailed traffic studies to identify off-site impacts to transportation facilities (including Highway 1 and interchanges), the need for additional roadway connections, and other improvements. The scope of these studies will depend on the intensity of uses proposed for the sites.

The preliminary mitigations below list the needed improvements to improve service levels under Buildout Plus Project conditions. Signal warrant analysis sheets, if applicable, are included in Appendix E. None of these improvements are currently funded or included in any planning documents. They should be re-evaluated when specific land uses are proposed for the large development sites in the City.

- San Jacinto Street/Main Street (#2): It would be necessary to reconstruct this intersection and provide a roundabout or traffic signal to achieve acceptable operations.

- State Route 41/Highway 1 SB Ramps (#3): Acceptable operations could be provided by constructing a traffic signal, which is warranted. The signalized intersection would require expanding the westbound approach to include one left turn lane and a shared through-left lane; adding an eastbound right turn lane; and adding a second receiving lane on the south leg. Alternatively, a single-lane roundabout with bypass lanes could provide acceptable operations under Buildout Plus Project conditions.

- State Route 41/Main Street (#4): It would be necessary to expand the planned roundabout with additional entry and circulating lanes to provide acceptable operations under Buildout Plus Project conditions.

- Beach Street/Main Street (#5): A new vehicular connection from the power plant to Main Street near Highway 1 and across Morro Creek to Atascadero Road would reduce traffic levels at this intersection. Acceptable operations could also be provided by constructing a traffic signal, which is warranted. The signalized intersection would require expanding the southbound approach to include one left turn lane, one through lane, and one right turn lane; modifying the eastbound approach to include one left turn lane and a shared left-through-right lane; and adding a second receiving lane on the north leg. Alternatively, a single-lane roundabout with bypass lanes could provide acceptable operations under Buildout Plus Project conditions.

- Morro Bay Boulevard/Quintana Road (#6): It would be necessary to expand the roundabout with additional entry and circulating lanes to provide acceptable operations under Buildout Plus Project conditions.

The Master Plans should evaluate the need and benefit of providing a vehicular connection across Morro Creek, connecting the power plant site directly to Main Street, and impacts of redevelopment on the SR 41 and Main Street interchanges as well as Highway 1 and SR 41.

2. Segment Operations

Table 9 shows the segment operations during the weekday PM and Saturday MID peak hours under Buildout and Buildout Plus Project conditions.

The following deficiencies are reported:

Pedestrian:

- #1a Embarcadero North of Beach Street operates at LOS F in the northbound direction both with and without the project due to the lack of sidewalks, and at LOS E in the southbound direction with the project on Saturday midday due to high adjacent vehicle volumes.
- #2 Morro Bay Boulevard west of Quintana Road operates at LOS E in the eastbound direction under Buildout Plus Project conditions due to high vehicular volumes.
- #3 Main Street south of Radcliff Drive operates at LOS E or F under Buildout Plus Project conditions due to high vehicle volumes adjacent to the sidewalk and the missing sidewalk for southbound pedestrians under the Highway 1 overcrossing.
- #4 SR 41 east of Main Street operates at LOS F under Buildout and Buildout Plus Project conditions due to high vehicle volumes and speeds and a lack of sidewalks.

Bicycle: There are no deficiencies reported on the bicycle segments with and without the project.

Auto: There are no deficiencies reported on the auto segments with and without the project.

Note that intersections are typically the constraint points for vehicular capacity, not segments. Refer to the preceding Intersection Operations section for vehicular recommendations.

Table 9: Buildout and Buildout Plus Project Segment Pedestrian & Bicycle Levels of Service

Segment	Peak Hour	Direction	Pedestrian				Bicycle				Vehicle					
			Buildout		Buildout + Project		Buildout		Buildout + Project		Buildout			Buildout + Project		
			LOS Score[1]	LOS[1]	LOS Score[1]	LOS[1]	LOS Score[1]	LOS[1]	LOS Score[1]	LOS[1]	V/C Ratio	LOS Score[1]	LOS[1]	V/C Ratio	LOS Score[1]	LOS[1]
1a. Embarcadero - North of Beach Street	Week PM	NB	**2.06**	**F**	**3.27**	**F**	2.69	B	3.35	C	0.09	3.28	C	0.34	3.28	C
		SB	1.44	A	3.40	C	2.69	B	3.53	D	0.09	3.02	C	0.47	3.02	C
	Sat MID	NB	**2.41**	**F**	**4.55**	**F**	2.98	C	3.64	D	0.17	3.28	C	0.61	3.28	C
		SB	1.67	A	**4.60**	**E**	2.89	C	3.74	D	0.13	3.02	C	0.70	3.02	C
1b. Embarcadero - North of Pacific Street	Week PM	NB	1.27	A	1.64	A	2.68	B	3.53	D	0.05	3.72	D	0.11	3.72	D
		SB	1.14	A	1.74	A	2.68	B	3.73	D	0.05	3.72	D	0.17	3.72	D
	Sat MID	NB	1.39	A	1.83	A	3.04	C	3.69	D	0.07	3.72	D	0.15	3.72	D
		SB	1.41	A	2.34	B	3.43	C	4.03	D	0.09	3.72	D	0.30	3.72	D
1c. Embarcadero - South of Pacific Street	Week PM	NB	1.17	A	1.40	A	2.68	B	3.38	C	0.05	3.28	C	0.08	3.28	C
		SB	1.12	A	1.56	A	2.68	B	3.60	D	0.05	3.28	C	0.13	3.28	C
	Sat MID	NB	1.23	A	1.47	A	2.87	C	3.47	C	0.06	3.28	C	0.10	3.28	C
		SB	1.27	A	1.84	A	3.12	C	3.80	D	0.07	3.28	C	0.19	3.28	C
2. Morro Bay Boulevard - West of Quintana Road	Week PM	EB	2.60	B	**4.59**	**E**	2.53	B	2.99	C	0.29	3.62	D	0.73	3.62	D
		WB	2.72	B	3.55	D	2.57	B	2.80	C	0.32	3.62	D	0.50	3.62	D
	Sat MID	EB	2.48	B	**4.29**	**E**	2.48	B	2.94	C	0.26	3.62	D	0.65	3.62	D
		WB	2.65	B	3.44	C	2.54	B	2.77	C	0.30	3.62	D	0.47	3.62	D
3. Main Street - South of Radcliff Drive	Week PM	NB	2.47	B	**4.43**	**E**	2.28	B	2.96	C	0.14	3.28	C	0.56	3.28	C
		SB	**3.80**	**F**	**5.00**	**F**	2.49	B	2.88	C	0.22	3.02	C	0.47	3.02	C
	Sat MID	NB	2.90	C	**6.09**	**F**	2.52	B	3.21	C	0.22	3.28	C	0.86	3.28	C
		SB	**3.95**	**F**	**5.31**	**F**	2.56	B	2.94	C	0.24	3.02	C	0.51	3.02	C
4. State Route 41 - East of Main Street	Week PM	EB	**3.45**	**F**	**5.43**	**F**	0.77	A	1.29	A	0.24	3.16	C	0.66	3.16	C
		WB	**3.91**	**F**	**6.12**	**F**	0.95	A	1.39	A	0.34	3.16	C	0.80	3.16	C
	Sat MID	EB	**3.37**	**F**	**5.20**	**F**	0.74	A	1.25	A	0.22	3.16	C	0.60	3.16	C
		WB	**4.30**	**F**	**7.04**	**F**	1.06	A	1.50	A	0.41	3.16	C	0.97	3.16	C

1. HCM 2010 pedestrian/bicycle score and LOS
2. Main Street - S of Radcliff Drive SB and State Route 41 - E of Main Street WB have high Freeflow Speeds and no sidewalks; likely causes of their poor Pedestrian LOS.

Recommendations

Pedestrian:

- #1a Embarcadero North of Beach Street: provide sidewalks and a vehicular connection shifting traffic away from Beach Street for the redeveloped power plant site.
- #2 Morro Bay Boulevard: provide a landscaped buffer at least two feet wide between the sidewalk and travel lanes.
- #3 Main Street south of Radcliff Drive: continuous sidewalks would be necessary to provide acceptable pedestrian operations. This is infeasible with the current overpass width but should be accommodated if the overpass is reconstructed.
- #4 SR 41 east of Main Street: provide sidewalks with a landscaped buffer when adjacent properties are redeveloped.

3. VMT

Table 10 shows the VMT under Buildout and Buildout Plus Project conditions. The substantial land use growth evaluated under Buildout Plus Project conditions results in a major increase in VMT.

Table 10: VMT in Morro Bay (Buildout and Buildout Plus Project)

Trip Type	Daily VMT in SOI	Daily VMT in County	Daily VMT in State
Origin and destination within City SOI	63,301 (123,487)	63,301 (123,487)	63,301 (123,487)
Origin only within City SOI	18,268 (82,925)	53,405 (720,021)	71,734 (1,118,440)
Destination only within City SOI	18,535 (91,287)	58,616 (782,939)	76,945 (1,181,359)
Total	100,104 (297,699)	175,322 (1,626,447)	211,981 (2,423,286)

KEY: xx (yy) = Buildout (Buildout Plus Project) VMT
1. SOI = Sphere of Influence
2. Source: SLOCOG and CA Statewide Travel Demand Models

The increased VMT is attributable to the large increase in employment associated with significant commercial growth. Table 11 summarizes the ratio of jobs to households in Morro Bay and the County under Existing, Buildout, and Buildout Plus Project conditions using data extracted from the SLOCOG Travel Demand Model. The Buildout Plus Project scenario significantly increases the number of jobs in Morro Bay but does not provide a commensurate increase in households, which results in substantial new trips shifted to Morro Bay from other areas. This increase would be significant enough to modify regional travel patterns.

Table 11: Jobs:Household Comparisons

	Existing	Buildout No Project	Buildout Plus Project
Morro Bay Jobs/HH	0.66	0.72	2.77
SLO County Jobs/HH	0.93	0.97	1.07

Source: SLOCOG Travel Demand Model, CCTC 2018

References

City of Morro Bay. 1984. Circulation Element of the General Plan.

Institute of Transportation Engineers (ITE). 2012. Trip Generation, 9th Edition.

_____. 2014. Trip Generation Handbook.

Omni-Means. 2016. State Route 1/State Route 41/Main Street Intersection Control Evaluation (Step 2) Report.

San Luis Obispo Council of Governments. 2014. Regional Transportation Plan/Sustainable Communities Strategy.

Transportation Research Board. 2010 Highway Capacity Manual.

_____. 2016. Highway Capacity Manual, 6th Edition.

Appendix F

Energy Data

City of Morro Bay General Plan/LCP Update

Last Updated: April 13, 2020

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Rubber Tired Dozer	1	8	247	0.40	Demo	835.59
Tractors/Loaders/Backhoes	1	8	97	0.37	Demo	337.45
XXX	0	8	20	0.30	Demo	-
Concrete/Industrial Saws	1	8	81	0.73	Site Prep	83.39
Excavators	1	8	18	0.38	Site Prep	9.65
Rubber Tired Dozer	1	8	247	0.40	Site Prep	125.34
XXX	0	8	20	0.30	Site Prep	-
Graders	1	8	187	0.41	Grading	194.53
Excavators	1	8	158	0.38	Grading	152.34
Rubber Tired Dozer	1	8	247	0.40	Grading	250.68
Tractors/Loaders/Backhoes	1	8	97	0.37	Grading	101.23
XXX	0	8	20	0.30	Grading	-
Cranes	1	8	231	0.29	Building	6,232.20
Forklifts	1	8	89	0.20	Building	1,840.97
Generator Sets	1	8	84	0.74	Building	6,428.90
Tractors/Loaders/Backhoes	1	8	97	0.37	Building	3,711.92
Welders	1	8	46	0.45	Building	2,140.90
XXX	0	8	20	0.30	Building	-
Air Compressors	1	8	78	0.48	Arch Coating	176.01
XXX	0	8	20	0.30	Arch Coating	-
Pavers	1	8	130	0.42	Paving	2,978.46
Paving Equipment	1	8	132	0.36	Paving	2,592.24
Rollers	1	8	80	0.38	Paving	1,843.60
XXX	0	8	20	0.30	Paving	-
					Total Fuel Used	**30,035.39**
						(Gallons)

Construction Phase	Days of Operation
Demolition Phase	20
Site Preparation Phase	3
Grading Phase	6
Building Construction Phase	220
Paving Phase	10
Architectural Coating Phase	129
Total Days	388

WORKER TRIPS				
Constuction Phase	**MPG [2]**	**Trips**	**Trip Length (miles)**	**Fuel Used (gallons)**
Demolition	24.0	18	14.7	220.50
Site Prep Phase	24.0	18	14.7	33.08
Grading Phase	24.0	15	14.7	55.13
Building Phase	24.0	756	14.7	101871.00
Paving Phase	24.0	15	14.7	91.88
Architectural Coating Phase	24.0	151	14.7	11930.89
			Total	**114,202.46**

HAULING AND VENDOR TRIPS				
Trip Class	**MPG [2]**	**Trips**	**Trip Length (miles)**	**Fuel Used (gallons)**
HAULING TRIPS				
Demolition	7.4	18	14.7	35.76
Site Prep Phase	7.4	18	14.7	35.76
Grading Phase	7.4	15	14.7	29.80
Building Phase	7.4	756	14.7	1501.78
Paving Phase	7.4	15	14.7	29.80
Architectural Coating Phase	7.4	151	14.7	299.96
			Total	**1,932.85**
VENDOR TRIPS				
Demolition	7.4	18	14.7	715.14
Site Prep Phase	7.4	18	14.7	107.27
Grading Phase	7.4	15	14.7	178.78
Building Phase	7.4	756	14.7	330392.43
Paving Phase	7.4	15	14.7	297.97
Architectural Coating Phase	7.4	151	14.7	38694.77
			Total	**8.00**

Total Gasoline Consumption (gallons)	**114,202.46**
Total Diesel Consumption (gallons)	**31,976.25**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2018. *National Transportation Statistics 2018* . Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsentire2018q4.pdf.

City of Morro Bay General Plan/LCP Update

Last Updated: April 13, 2020

Populate one of the following tables (Leave the other blank):

Annual VMT	
Annual VMT:	122,553,269
Daily VMT	335,762

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.617814	LDA	44.39
Light Duty Truck 1 (LDT1)	0.024228	LDT1	41.58
Light Duty Truck 2 (LDT2)	0.201503	LDT2	34.65
Medium Duty Vehicle (MDV)	0.100888	MDV	25.95
Light Heavy Duty 1 (LHD1)	0.010115	LHD1	19.01
Light Heavy Duty 2 (LHD2)	0.003910	LHD2	17.32
Medium Heavy Duty (MHD)	0.012592	T6 Public	8.40
Heavy Heavy Duty (HHD)	0.020425	T7 Public	5.63
Other Bus (OBUS)	0.002295	OBUS	6.75
Urban Bus (UBUS)	0.001008	UBUS	4.69
School Bus (SBUS)	0.000680	SBUS	7.55
Motorhome (MH)	0.000535	MH	9.89
Motorcycle (MCY)	0.004008	MCY	36.85

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Light Duty Auto (LDA)		*Gasoline*	75,715,125.33		1,705,870.21
Light Duty Truck 1 (LDT1)		*Gasoline*	2,969,220.60		71407.50814
Light Duty Truck 2 (LDT2)		*Gasoline*	24,694,851.36		712599.7816
Medium Duty Vehicle (MDV)		*Gasoline*	12,364,154.20		476516.9534
Light Heavy Duty 1 (LHD1)		*Diesel*	1,239,626.32		65223.89726
Light Heavy Duty 2 (LHD2)		*Diesel*	479,183.28		27661.86798
Medium Heavy Duty (MHD)		*Diesel*	1,543,190.76		183707.0797
Heavy Heavy Duty (HHD)		*Diesel*	2,503,150.52		444373.3775
Other Bus (OBUS)		*Diesel*	281,259.75		41691.31962
Urban Bus (UBUS)		*Diesel*	123,533.70		26356.82817
School Bus (SBUS)		*Diesel*	83,336.22		11041.15335
Motorhome (MH)		*Diesel*	65,566.00		6628.874284
Motorcycle (MCY)		*Gasoline*	491,193.50		13330.18471

Total Gasoline Consumption (gallons)	**2,979,724.64**	3,786,409.03			
Total Diesel Consumption (gallons)	**806,684.40**				
VMT/gallon (gasoline)	**39.01**	**gallon/VMT (gasoline)**	**0.03**	**BTU/VMT (gasoline)**	**3,267.49**
VMT/gallon (diesel)	**7.83**	**gallon/VMT (diesel)**	**0.13**	**BTU/VMT (diesel)**	**14,015.66**

Sources:

[1] California Air Resources Board (CARB). 2015. "EMFAC2014 Web Database." December 14, 2015. https://www.arb.ca.gov/emfac/2014/ (accessed March 15, 2019).