



CITY OF MORRO BAY PUBLIC WORKS ADVISORY BOARD AGENDA

The City of Morro Bay provides essential public services and infrastructure to maintain a safe, clean and healthy place for residents and visitors to live, work and play.

REGULAR MEETING Wednesday, October 18, 2023 – 5:30 PM Veterans Memorial Hall 209 Surf Street, Morro Bay, CA

Pursuant to Assembly Bill 361 (2021-22) and Government Code section 54953 this Meeting will be conducted in a hybrid format with both in-person and virtual public participation. Ways to watch this meeting and submit public comment are provided below.

Public Participation:

Public participation is allowed in the following ways:

- *Community members may attend the meeting in person at the Morro Bay Veterans Hall.*
- *Alternatively, members of the public may watch the meeting and speak during general Public Comment or on a specific agenda item by logging in to the Zoom webinar using the information provided below. Please use the “raise hand” feature to indicate your desire to provide public comment.*

Please click the link below to join the webinar:

- <https://us02web.zoom.us/j/82722747698?pwd=aWZpTzcxTHlRTk9xaTlmWVNWRWFUQT09>
Password: 135692
- *Or Telephone Attendee: 1 (408) 638-0968 or 1 (669) 900-6833 or 1 (346) 248-7799; Webinar ID: 827 2274 7698; Password: 135692; Press *9 to “Raise Hand” for Public Comment*

- *Members of the public may watch the meeting either on cable Channel 20 or as streamed on the City [website](#).*
- *Community members are encouraged to submit agenda correspondence in advance of the meeting via email to the Public Works Advisory Board at pwab@morrobayca.gov prior to the meeting. Agenda Correspondence received at pwab@morrobayca.gov by 10 a.m. on the meeting day will be posted on the City website.*

ESTABLISH QUORUM AND CALL TO ORDER
MOMENT OF SILENCE
PLEDGE OF ALLEGIANCE
ANNOUNCEMENTS
PUBLIC WORKS DIRECTOR ANNOUNCEMENTS

PUBLIC COMMENT

Members of the audience wishing to address the Board on City business matters not on the agenda may do so at this time. For those desiring to speak on items on the agenda, but unable to stay for the item, may also address the Board at this time.

- A. CONSENT CALENDAR
Unless an item is pulled for separate action by the Public Works Advisory Board, the following actions are approved without discussion. The public will also be provided an opportunity to comment on consent agenda items.
- A-1 CAPITAL PROJECTS UPDATE
Recommendation: Information item, no action needed.
- A-2 APPROVAL OF EXCUSED ABSENCE REQUEST FOR BOARD MEMBER BEALE
Recommendation: Approve requested absence for the August 16, 2023 Public Works Advisory Board meeting.
- A-3 APPROVAL OF EXCUSED ABSENCE REQUEST FOR BOARD MEMBER ERWIN
Recommendation: Approve requested absence for the October 18, 2023 Public Works Advisory Board meeting.
- B. BUSINESS ITEMS
- B-1 PRESENTATION OF THE BASIS OF DESIGN REPORT, WATER SUPPLY EVALUATION TECHNICAL MEMORANDUM AND PHASE 1 IMPLEMENTATION STRATEGY RECOMMENDATION FOR THE WATER RECLAMATION FACILITY RECYCLED WATER PROGRAM
Recommendation: Staff recommends the Public Works Advisory Board:
 1. Receive and file the Revised Draft Basis of Design (BOD) Report for the Water Reclamation Facility (WRF) Indirect Potable Reuse (IPR) Program; and
 2. Receive and file the Draft Water Supply Evaluation Technical Memorandum; and
 3. Receive information and recommendations from City Staff and the Recycled Water Program Team for the Recycled Water Program implementation recommendations and associated consultant services support requirements; and
 4. Provide input to City Council on the IPR Program implementation recommendations.
- B-2 REVIEW OF LOS OSOS COMMUNITY SERVICES DISTRICT DRAFT INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION FOR PIPELINE AND INTERTIE PROJECT TO CONNECT TO STATE WATER
Recommendation: Staff recommends the Public Works Advisory Board:
 1. Review the Draft Initial Study (IS) and Mitigated Negative Declaration (MND) for the Los Osos Community Services District (LOCSD) Resiliency Intertie Project.
 2. Consider developing a response to recommend to the City Council to submit as a comment for the Draft IS and MND by the October 27, 2023, 30-day public comment deadline.
- C. FUTURE AGENDA ITEMS
Local Roadway Safety Plan
Beachcomber Sewer Main & Beach Tract Sewer Mains Replacement Update
- D. ADJOURNMENT
The next Regular Meeting will be held on **Wednesday, January 17, 2024, at 5:30 PM.**

THIS AGENDA IS SUBJECT TO AMENDMENT UP TO 72 HOURS PRIOR TO THE DATE AND TIME SET FOR THE MEETING. PLEASE REFER TO THE AGENDA POSTED AT THE PUBLIC WORKS DEPARTMENT, 955 SHASTA AVENUE, FOR ANY REVISIONS OR CALL THE DEPARTMENT AT 805-772-6263 FOR FURTHER INFORMATION.

MATERIALS RELATED TO AN ITEM ON THIS AGENDA SUBMITTED TO THE PUBLIC WORKS ADVISORY BOARD AFTER DISTRIBUTION OF THE AGENDA PACKET ARE AVAILABLE FOR PUBLIC INSPECTION UPON REQUEST BY CALLING THE DEPARTMENT AT 805-772-6263.

IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, IF YOU NEED SPECIAL ASSISTANCE TO PARTICIPATE IN A CITY MEETING, PLEASE CONTACT THE PUBLIC WORKS DEPARTMENT AT LEAST 24 HOURS PRIOR TO THE MEETING TO ENSURE REASONABLE ARRANGEMENTS CAN BE MADE TO PROVIDE ACCESSIBILITY TO THE MEETING.



AGENDA NO: A-1
MEETING DATE: October 18, 2023

Staff Report

TO: Public Works Advisory Board

DATE: October 11, 2023

FROM: Eric Riddiough, City Engineer

SUBJECT: Capital Projects Update

RECOMMENDATION

Information item, no action needed.

BACKGROUND/ DISCUSSION

Public Works staff have committed to providing routine updates on capital projects and their status to the PWAB. The capital projects listed are all projects that have been approved through the budget process in the current or prior fiscal years. Some projects may be from prior fiscal years as many projects are multi-year given the time for design, construction, and finalization. The project list does not include vehicle purchases or other capital projects not managed by Public Works.

The attached table details the current status of active capital projects as well as other unfunded projects that have been identified as priorities for the City to address.

CONCLUSION

Information item, no action needed.

Prepared By: <u>ER</u>	Dept Review: <u> </u>
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CITY OF MORRO BAY - PUBLIC WORKS DEPARTMENT
 CAPITAL PROJECTS STATUS UPDATE - OCTOBER 2023

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
FACILITIES							
915-9508	18/19 New in 23/24	Veteran's Hall Building Improvements	\$275,000	Trust, GF Public, Educational and Governmental Access funds (PEG)	Heavily used public facility for public meetings including City Council and several Advisory Boards This project is to modernize the Veteran's Hall Building to enable it to be used as a Council Chambers.	Sewer plumbing under building upgraded/replaced. Wall and ceiling repair complete. Electrical work was assessed and has more needs, roofing work completed, improvements ongoing as maintenance has opportunities	This project is to modernize the Veteran's Hall Building to enable it to be used as a Council Chambers. The work will include a new audio/visual architecture with new audio/visual devices; renovation of the Council Chambers, adjacent conference room, the audio visual control room; electrical upgrades, and ADA upgrades to the building and restroom facilities.
915-9942	20/21	Electric Vehicle Charging Stations - Embarcadero	\$58,000	APCD, Paking In Lieu, GF	Climate Action goal of city. With growing number of electric vehicle owners locally and tourists, more charging options throughout the city are needed.	City to proceed with first dual-port installation at restroom near Harbor Office. Contractor procured and awaiting materials for installation. Long lead times on materials. Design completed by vendor on first location. The second Embarcadero location has not been moved forward yet until first location is near completion.	Installation of charger for 1247 Embarcadero (Harbor Restroom). 1205 Embarcadero - Apply for service and electrical design w/ PG&E at second location later in 2023, construction to follow.
N/A	21/22	Electric Vehicle Charging Stations - Del Mar Park	\$15,000	CaleVIP	Climate Action goal of city. Project funds not received by the city and project performed through CaleVIP program	Plans submitted to City Building have been approved. PG&E and electrical design completed. Review of contracts for installation and maintenance in process with City Attorney.	Construction likely delayed until 2024 with lead time on materials and until contract issues resolved with vendor
915-8424	21/22	Coleman Park Restroom Renovation and Park Improvements	\$1,700,000	Parks Grants, PCP/Park In-Lieu; \$318k funding from grant received for restrooms to be carried over; RRT Prop 84 grant for \$600k - balance is unfunded; pursuing other grants including a Land Stewardship grant from PG&E and others	Restroom was demolished due to age and condition. A replacement for the restroom is needed as well as improvements to the park. PW has done preliminary public outreach for ideas of park amenities. More outreach to be coordinated with design. In addition, cultural amenities will be added in coordination with local tribes and groups	Restroom grant received, concept drawings have been discussed with public; other grant applications have been submitted Facilitation with tribes and groups paused but will continue once additional funding source identified	Apply for State Conservancy Grant for additional \$1-1.5 million RFP for preliminary design; pursue other funding sources; community outreach; environmental, and plans, specifications, and estimate (PS&E)

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
915-8240	22/23	Citywide Capital and Facilities Planning - Facilities Condition and Needs Assessment (FCNA)	\$200,000	GF	<p>The City has a need for developing data-driven and planning-based master plans for guiding Public Works and city management in the allocation of funds and resources for capital project planning. An assessment of all city facilities and infrastructure is needed which can be analyzed with the assistance of a consultant to multi-year capital plans, asset management strategies, and return on investment of capital.</p> <p>Assessment to also look at space needs of facilities with larger amounts of employees that have expansion needs as # of city staff changes over time.</p>	<p>RFP submitted. Proposals scored and interviews with consultants performed.</p> <p>City currently in negotiations with preferred consultant before entering into contract.</p>	<p>Negotiations ongoing with consultant to fit into budget available. Contract to award later in 2023 in Nov/Dec</p> <p>Begin assessment late 2023 with completion by mid 2024</p>
New	23/24	Storm and Flooding Damages - Facilities and Equipment	\$800,000	GF/Sewer/Water	This is a placeholder for facilities capital projects and equipment purchases related to the infrastructure impacts due to the 2023 winter storms. Staff will update the project scope and costs as they are further defined.	Some equipment purchases have been made with claims sent to insurance and filed with FEMA	TBD
New	23/24	Trash and Recycling Can Replacements	\$60,000	Measure Q&E	The current trash and recycling containers along the Embarcadero and Downtown areas are beyond their useful life, starting to degrade where doors are rusting and not functioning properly, and the current configuration allows for birds to pull trash out of containers, scattering material on the ground, leading to an unsightly appearance and potential for pollution in the bay that could impact fish and wildlife.	<p>Recently approved with FY 23/24 budget</p> <p>No action to date</p>	TBD
HARBOR							
923-8175	15/16	Beach Street Slips (North & South)	\$662,000	Harbor/CWBAF/JCF LC	25+ year old boat slips in need of replacement.	<p>Preliminary design was completed</p> <p>Design in process</p> <p>Electrical consultant in discussion with PG&E re: power needs and upgrades to</p>	Develop plans and specs and estimate, pursue additional funding for construction

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
923-8351	14/15	North T-Pier Renovations	\$5,000,000	Harbor	Deteriorating sections of pier; utilities and features of pier have exceeded useful life and are in need of replacement	Structural Analyses performed 5 years ago approx - \$55k \$1.5 million in funding through Congressional grant funding obtained. Balance of funding being pursued by Congress and other grant sources to fully fund. Consultant procured to examine scope of work whether to proceed with \$1.5 million scope or phase for future projects and receipt of additional funding.	Receive findings from scope of work evaluation Develop RFP for consultant services for PS&E, find additional funding, Over 60% underfunded. Execute Agreement with HUD with approved scope of work and cost breakdown with Council Approval
923-9921	17/18	Tidelands Boat Launching Facility and Float Replacement	\$1,510,000	Harbor	Launch ramp severely deteriorated - conceptual design and estimate needed to be able to pursue funding sources; \$200k approved in FY 22/23 budget	30% design was completed before submitting for DBW for grant. 60% and 90% designs to follow.	Comments received back from DBW. Consultant implementing changes to design as requested. Wait for grant process to play out. Find additional funding opportunities.
915-8240	22/23	Harbor Capital Needs Assessment	\$200,000	Harbor	The City has a need for developing data-driven and planning-based master plans for guiding Public Works, Harbor, and city management in the allocation of funds and resources for capital project planning. An assessment of all harbor facilities and infrastructure is needed which can be analyzed with the assistance of a consultant to multi-year capital plans, asset management strategies, and return on investment of capital.	Consultant working on scope of work for RFP. Phasing is under consideration since funding is limited to address all assessment needs. Proposed Phase 1 focus - Revetments and seawalls Proposed Phase 2 focus - Docks / Slips / Other	Finish and circulate RFP for consultant services to develop plan
New	23/24	Storm Recovery - Dock Repairs	\$200,000	Harbor	These funds will be used repair docks in the Harbor due to deferred maintenance and are beginning to structurally fail. The recent storms in January and March of 2023 have accelerated structural failure.	Phase 1 contract prep in progress.	Complete Phase 1, assess and move forward with Phase 2.
PARKS							
915-8456	22/23	Lila Kaiser Parking Lot Rehabilitation and ADA Upgrades	\$200,000	GF	The project is to repair, rehabilitate, and restripe the asphalt parking lot at Lila Kaiser Park. In addition, there is need to upgrade ADA accessible parking to the lot.	Design 90%. Construction cost estimate exceeded original budget funding by \$80k. \$120,000 in original budget. Balance of funding in the FY 23/24 request	Finalize and advertise for bid later in 2023
915-8028	18/19	City Park (and other parks) Play Equipment	\$250,000	GF / ARPA	Recreational priority for city Funding must be procured by 2025 for ARPA guidelines	Has not been procured. Project has been deferred for several years. Maintenance to procure landscape architect consultant for preparation of scope and drawings.	Prioritize Sites where greatest need exists through the assessment process; identify process for procurement - RFP, design/build, etc.

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
POLICE DEPARTMENT							
915-8207	22/23	Repave Police Annex Parking Lot	\$80,000	GF	The project is to repair, rehabilitate, and restripe the asphalt parking lot and add pavement to back evidence storage area. Project also covers stormwater handling into existing vegetated areas.	Design 100% and waiting for completion of Lila Keiser project for bidding	Finalize and advertise for bid later in 2023
SEWER							
922-8312	13/14	WRF Project	\$160,000,000	Sewer/Water Fund	Order by RWQCB - Deadline in 2023 Deadline met	Plant in operation since November 2022 Punch lists for both WRC and Conveyance still in process	Contract closeout FBV and Anvil. Recycled water in process
922-9928	21/22	Wastewater Collections System Improvements – Main Street and Atascadero Road	\$8,000,000	Sewer Fund	Identified in OneWater Plan as priority project Near capacity with risk of surcharge during peak flow periods	In design, 50-60% complete Design to reconvene with completion of WRF. Assessing location of main at SR-41/Main for future Roundabout Project	Finish design and bid out in 2024/25
922-9929	21/22	Wastewater Collections System Improvements - Beachcomber Main Replacement	\$2,000,000	Sewer Fund	Identified in OneWater Plan as priority project. Main line is aged and needs replacement. Address inflow and infiltration issues during heavy rain events. Replaces 2600 lf main line on Beachcomber. \$1.2 million in FY 22/23 budget and extra \$150,000 requested for FY 23/24 for main line replacement construction	Beachcomber main line design is near complete / some revisions in progress from constructability review Discussion about backyard mains to be facilitated at future PWAB meeting	Advertise for bid Beachcomber Main replacement in 2023/early 2024 Finish Backyard Main Lines design (next phase) to tie into new main line Present to PWAB at future meeting
922-9929	21/22	Wastewater Collections System Improvements - Backyard Sewer Main Improvements	\$3,200,000	Sewer Fund	Identified in OneWater Plan as priority project Main line is aged and needs replacement Address inflow and infiltration issues during heavy rain events	Backyard mains 60% designed - pipe bursting is leading, cost effective alternative for replacement, but relocation of mains into streets could be solution as well.	Design and Cost analysis, Pro/Cons of pipe bursting versus main relocation to streets Present to PWAB at future meeting
922-8227	22/23	Lift Station No. 1 Force Main Replacement	\$400,000	Sewer Fund	The force main was found to have a leak on April 11, 2022 and was removed from service with a bypass temporarily for assessment and repair. The repairs to the line were made, but the City would like to accelerate the design and construction of the line's replacement.	Design is 100% complete. Encroachment permit received from Caltrans.	Bid out for construction late 2023 / early 2024
New	23/24	Utility Hole (Manhole) Rehabilitation Project	\$250,000	Sewer Fund	The city's sewer utility holes are used for facilitating sewer inspection and maintenance, sewer lines joining or changing direction of sewers. This project covers repair, structural restoration and rehabilitation of existing manholes as required to eliminate leakage into the structures and provide protection against corrosion.	Recently approved in 23/24 budget	Procure consultant perform design (PS&E) Advertise for construction late in 2023

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
New	23/24	Outfall Inspection, Condition Assessment and Cleaning	\$600,000	Sewer Fund	The City's ocean outfall is used to dispose of treated wastewater effluent from the City's Water Resources Center (WRC) and their Brackish Water Reverse Osmosis (BWRO) treatment facility. The list below is the anticipated scope for this project. Note the City reserves the right to remove, edit, or add to this list as needed to meet the project needs. Exterior debris removal along pipeline and diffuser Interior cleaning of Outfall Pipeline Pipeline Condition Assessment and internal inspection Diffuser Condition Assessment and internal inspection Air-Relief Structure Assessment	Recently approved in 23/24 budget	Develop RFP for consultant services to perform design/scope of work
922-8312	22/23	Wastewater Treatment Plant Decommissioning	\$9,185,000	Sewer Fund	The Coastal Development Permit for the Water Reclamation Facility (WRF) Program requires removal and restoration (decommissioning) of the existing Wastewater Treatment Plant site to a safe and level configuration that roughly matches the surrounding areas. Funding for planning and project initiation is crucial to be in compliance with WRF permits.	Planning and review with CCSD ongoing \$135k budgeted in both FY 22/23 and FY 23/24 for planning / engineering	Start planning process in 2023/24 Discussions with CCSD for cost share and planning
STREETS / TRANSPORTATION							
915-9614	21/22	Annual Pavement Management Program (Arterial Digout Project) FY 21/22	\$1,415,000	GF/SB1/Measure Q&E	Pavement Condition of City-wide street network continues to decline and is at 60. Arterial Digout Project prioritized to rehabilitate some arterial and collector streets that had localized failures so that with surface seal life can be prolonged.	85% completed in Feb 2023. South Bay work delayed until August due to storms and construction company scheduling	Construction to be completed end of August
	22/23	Annual Pavement Management Program (Surface Seal Project) FY 22/23	\$1,400,000	Bike Path Fund/SB1/Measure Q&E/LTF	Pavement Condition of City-wide street network continues to decline and is at 60. After digout project, these roads and others in city to be surface sealed (chip seal or slurry seal) based upon condition and functional classification. Road list and design to be assembled for Summer construction	In design - prepare proposed road list for PWAB	FY 22/23 Project to focus on surface seals of streets in good condition to slow down declining PCI Design and bid doc prep to start in coming weeks. Final street list to be reviewed by PWAB. Construction will likely be postponed until Spring of 24
	23/24	Annual Pavement Management Program (TBD) FY 23/24	\$2,100,000	SB1/Measure Q&E	After surface seal project complete, or concurrent with surface seal project, this year's funding will focus on rehabilitation (mill and fill, overlay, recon) of full street sections that are in poor condition.	Street list development in progress for presentation to PWAB SB-1 Resolution to send to CTC and approved	Start design in early 2024 for construction in summer/fall 2024

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
New	FY 23/24	Storm and Flooding Damages - Pavement and Pavement Repairs	\$400,000	GF	The pavement life has deteriorated dramatically as a result of the storms. If not funded, further degradation will occur resulting in potential damages to vehicles and safety concerns. This project is to address the priority areas, but actual needs are several millions of dollars.	Recently approved with FY 23/24 budget Some funding used for Preston Lane and South Bay Blvd. projects. City will claim these areas as part of FEMA and FHWA reimbursement processes for potential reimbursement	Identify other priority areas for funding use related to storm damage repairs
915-8229	16/17	SR1/SR41/Main St Intersection Improvements	\$12,000,000	GF/CMAQ/DIF/CT SHOPP/SLOCOG/Measure Q&E \$1.2m City Q&E (committed) \$1m DIF (committed) \$5.9m SLOCOG/STIP (committed) \$2.5m SLOCOG/CMAQ (potential) \$3.0m Caltrans SHOPP (potential) \$8.1m (committed) \$5.5m (potential)	* Level of Service for intersection is an "F" (failed) with congestion during peak hours, projected to be worse with future development over time *safety improvements for pedestrians, bicycles, and motor vehicles * Priority Regional project for SLOCOG * Supported by Caltrans	Project Approval and Environmental Document (PA&ED) phase ongoing Extended Phase 1 Findings from Tribal / Caltrans completed and Environmental Document in progress. Continued meetings with consultant and Caltrans project team. Traffic studies and Traffic Operations Analysis updated for traffic counts. Community Engagement and public meetings conducted; Council direction given in June 2023 to pursue preferred Roundabout alternative for design	Start CEQA / NEPA, Project Approval Document for Caltrans; complete PA&ED by late 2023 / early 2024 Start design (PS&E) concurrent with cultural environmental process for target construction in 2025. Identify funding sources for shortfall of funding through grants, Caltrans SHOPP, CMAQ, etc. Amend contract with GHD to finish PA&ED phase of project
915-8500	22/23	ADA Accessibility Upgrades at Quintana and Main Streets Intersection	\$670,000	CDBG / Measure Q&E / SLOCOG Comm Betterment Grant	The nexus of the project was from requests from citizens that have disabilities for safety features at the City's sole traffic signal. The City has received partial funds for completing the project. If those funds are not used in a timely manner, the funds may be rescinded. This project contributes to the City's goals of improving infrastructure and promoting safe, active transportation for vulnerable populations.	Approved in 22/23 budget - \$180k, which includes Measure Q and E and CDBG funding. SLOCOG recently selected this project to receive a grant in the amount of \$490k which was awarded in August of 2022	Develop RFP for obtaining consultant services PS&E for this project
915-8055	22/23	Citywide Speed Survey	\$40,000	Measure Q&E	The City's current speed survey will be out of date by May 2023. Speed surveys are used to set speed limits for sections of city-controlled roadways. Speed limits provide notice to drivers of the maximum speed limit on a roadway and are an enforcement tool to assist police in addressing violators.	Completed study and ordinance update of speeds.	Finalize signage placement plans and striping additions details with consultant. Once plans complete, get quotes for installation. Notify public of changed speed
915-8045	22/23	Local Roadway Safety Plan (LRSP)	\$85,000	Caltrans Grant / GF	Having an LRSP will give the City the ability to apply for competitive Highway Safety Improvement Program (HSIP) grants in future funding cycles. \$40k received in grant with \$45k of local match	First community workshop held in September. Next workshop scheduled for 11/9/23	Last community meeting at PWAB special meeting on 12/6 Draft of plan to follow

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
New	23/24	LRSP Implementation and Safety Improvements	\$197,000	Measure Q&E / DIF's	Having an LRSP will give the City the ability to apply for competitive Highway Safety Improvement Program (HSIP) grants in future funding cycles. Funds for implementation can be used for priority projects and as leverage funding for grants such as HSIP and SS4A. These larger safety improvement projects usually require local fund matches to be competitive. Project is \$200,000 / year after initial year.	LRSP in process to identify needs and priority project ideas	Finalization and adoption of LRSP Identify priority projects and implement or pursue additional funding
New	23/24	Active Transportation / Active Corridor Studies	\$230,000	Bike Path Fund/Measure Q&E	The City of Morro Bay adopted the 2011 Morro Bay Bicycle & Pedestrian Master Plan in February of 2012. With the influx of new federal, state, and regional grant programs, is apparent that an update to the City's 2011 plan is necessary in order to be competitive and successful in applying for these grants. The Active Transportation Plan (ATP) would be an opportunity to do exhaustive community outreach and stakeholder engagement in order to identify the most pressing active transportation priorities in order to pursue grant opportunities.	Recently approved with FY 23/24 budget	RFP for ATP process and document prep Pursue planning grants such as Sustainable Communities to leverage City \$ as local match
New	23/24	Sidewalk Improvements and Street Tree Replacements Project	\$150,000	Measure Q&E	Current damage to city infrastructure caused by street trees is an unfunded liability to the city from a maintenance and safety perspective. The City continues to retain its character as a tree-friendly city with shade and canopy in its downtown area. Gradual tree replacement with more appropriate trees to protect city walkable surfaces is the desired outcome; not the elimination of street trees.	Recently approved with FY 23/24 budget	Identify priority areas for work and present to PWAB. Develop new City Street tree well and sidewalk standard details and update City Street Tree list
STORMWATER							
915-9949	21/22	Emergency Storm Drain Repair Juniper/Elena	\$500,000.00	GF	Stormdrain has failed and needs repair to minimize future damage. Sewer line also compromised and in need of replacement. (Target completion by May 2023)	Completed	Completed
915-9950	22/23	Emergency Storm Drain Repair - Sequoia Court	\$500,000.00	GF	The failed storm drain line is currently stabilized, but with regular rains, it may damage an area with steep slopes and potentially the roadway. Sinkholes have started to appear on the property at 681 Sequoia Court resulting from January and March storms. If repair is not done, heavy rains may cause damage to Sequoia Ct. and surrounding properties.	Assessment of line completed in June. Confirmed poor condition and need for replacement. Procured design contract in July. Design in progress for replacement of approx 300 lf of failed line	Finalize PS&E, obtain right of entry permission, and advertise for bid.

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
New	23/24	Annual Storm Drain Replacement and Major Maintenance Project	\$200,000.00	GF	The recent heavy storms and floods of 2023 in Morro Bay have been detrimental to residents' and city-owned infrastructure with damages estimated in the tens of millions of dollars. With the possibility of increased frequency of intense storm events, stormwater management is of great concern to the City and its residents. Several existing storm drain lines have shown evidence of failure or are near failure, and heavy rains will continue to cause damage to public and private property and present safety hazards if not addressed with replacement projects. Plan is \$1.2 million over 3 years	Recently approved with FY 23/24 budget	Prioritize Sites where greatest need exists; identify process for procurement - RFP, design/build, etc.
New	23/24	Waterways and Storm Systems Management Plan	\$250,000.00	GF	This request would be to develop a Waterways and Storm System Management Plan to assess the hydrology of the City's tributary areas and stormwater conduits, an approach and plan to address flooding, erosion, water quality, and ecological issues in the Morro Bay and Chorro Valley Watersheds that can be implemented with approval from various regulatory agencies. The plan may address potential stream maintenance and management, flood control alternatives, stream bank stabilization, debris and silt management, habitat conservation and restoration, and other topics to be determined	Recently approved with FY 23/24 budget Recently met with ACOE to discuss additional funding and strategy. Future meetings to discuss strategy going forward.	RFP for consultant services Request permits from ACOE and CDFW for maintenance of creek channels
TRANSIT							
920-9947	20/21	City Park Transit Hub Improvements	\$480,000	Rural Transit/SB1 State of Good Repair/LTF	Need for more user friendly, ADA accessible transit hub with modern shelters	Completed	Completed
New	23/24	Transit Comprehensive Operational Analysis	\$60,000	Transit Grants	Travel patterns for residents and visitors using the City's local public transit systems began to change prior to the COVID pandemic and were exacerbated during the pandemic have resulted in impacts to ridership that the City wants to evaluate and identify recommendations for short-, medium-, and long-term opportunities to redefine or modify existing transit services to create services that serve diverse demands.	Recently approved with FY 23/24 budget	RFP for consultant services
WATER							
921-9932	19/20	Nutmeg Tank and related Pressure Zone Improvements	\$18,000,000	Water Fund	Identified in OneWater Plan as priority project for maximum daily demand water supply Minimum recommended volume for meeting fire flow demand is 1 MG for Nutmeg. With consolidation of Nutmeg and Elena zones, design increased to 1.3 MG.	30% design complete, assessing design for next steps for complete design; Cultural and environmental work complete for MND. MND to be circulated in Fall of 2023	Complete admin review of MND before circulating for public comment in fall. If 30% design is approved in concept, procure full PS&E design services, planning,

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
921-9944	20/21	Water Tank Rehabilitation	\$3,300,000	Water Fund	Identified in OneWater Plan for water resiliency; rehabilitation due to deferred maintenance. \$600K added in FY 22/23 budget for full replacement of Blanca 3 and 4 tanks	Construction in progress; Kings #2 recoating complete; Blanca 1 and 2 recoating complete; Blanca 3 and 4 rehabilitation in progress.	Construction completion delayed to end of 2023; maintenance contract part of bid for 10-year plan; Kings #1 recoating to be started in Oct soon after Blanca 3 and 4 completed.
921-9927	20/21	Reskin Reverse Osmosis Treatment Building	\$200,000	Water Fund	Building age and deterioration	Bids too high, when bid out first; additional funds to be requested in future budgets	Prepare scope, RFP and procure consultant for PS&E
921-9945 New	20/21 23/24	Brackish Water Reverse Osmosis Building Improvements	\$480,000	Water Fund	The RO facility is necessary for removing Nitrates from the Morro Valley groundwater wells. \$80k in new funding from FY 22/23 budget to fund assessment of needs for facility. Other upgrades needed such as tank relocation, back up power, rehabilitation of controls, etc. will be pursued in future budget years.	Recently increase in funding approved in 23/24 budget	Develop RFP for consultant services to perform design
New	22/23	Morro Basin Wellfield Rehabilitation	\$3,485,000	Water Fund	These upgrades will provide the City with a resilient water supply that it can rely upon during periods of extended drought or State Water Project shutdowns. Existing wells are 30-40 years old and need rehabilitation	Approved in 22/23 and 23/24 budget Recycled water program work in progress	Develop RFP for consultant services to perform design
New	22/23	OneWater Plan Update	\$250,000	Sewer/Water Fund	The original OneWater Plan, a masterplan of the City's water and sewer utilities' and stormwater capital improvements to address system deficiencies and future needs, was finalized in 2018. The target frequency of updates of the plan is 5 years. With changing costs/hyper inflation, needs, and updates in the system, this update is essential to keep that plan accurate and useful.	Approved in 22/23 and 23/24 budget Work has not been initiated	Develop RFP for consultant services to update plan

48 Active Projects

\$241,237,000

Total \$ of Projects

Total \$ of Projects -
WRF
\$81,237,000

Other Unfunded Projects

SD-06A	Pipeline West of Main/Hwy 1	\$ 1,350,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-06B	Pipeline West of Main/Hwy 1	\$ 2,500,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-04	Pipeline at Morro Bay/Quintana	\$ 50,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-07A	Pipeline - Main Street SD-07A	\$ 115,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-05	Pipeline at Beach Morro/Embar	\$ 476,500	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-07B	Pipeline - Main Street SD-07B	\$ 110,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-07C	Pipeline - Main Street SD-07C	\$ 18,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-11	Pipeline - Laurel Street SD-11	\$ 25,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
SD-12		Pipeline - Avalon Street SD-12	\$ 95,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-16		Pipeline - Elena Street SD-16	\$ 330,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-02A		Pipeline - Marina Street SD-02A	\$ 16,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-02B		Pipeline - Marina Street SD-02B	\$ 30,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-03		Pipeline - Harbor Street SD-03	\$ 65,000	GF	Drainage - OneWater	Deferred - Not funded	Find Funding
SD-01A		Storm Drain System Install – SD-01A (Kern Street - Pecho to Anchor)					
SD-01B		Storm Drain System Install – SD-01B P (Anchor Street - Kern to Main)					
		Streets Deferred Maintenance	\$ 21,000,000	GF	Keep PCI from continual decline	Deferred - Not funded	Find Funding
		Surf Street Pedestrian Accessible					
		Access - Bluff top to Front Street	\$1.2m	GF		Deferred - Not funded	Find Funding
		Monte Young Restroom ADA Renovation	\$150k	GF		Deferred - Not funded	Find Funding
		North T-Pier Restroom ADA Renovation		GF/Harbor		Deferred - Not funded	Find Funding
		Cloisters Park Play Equipment	\$ 150,000	GF, Cloisters LLMA Recreational priority for city			Find Funding
		Utility Undergrounding (Citywide)	Unknown	\$2 million PG&E		Only enough for 1-2 blocks	Find Funding
		Morro Creek Restoration	Unknown	FEMA Grant		CCC CDP Issues	CCC Advocacy or Redesign
		New Civic Center					Find Funding
		Improvements Beach/Main					Find Funding
		Improvements Beach/Embarcadero					Find Funding
		Vehicluar Bridge Morro Creek					Find Funding
		ADA Transition Plan Update and Sidewalk Improvements					Find Funding
		Annual Striping Program					Find Funding
		Street Sign Replacement Program - Retro Reflectivity					Find Funding
		Compliance					Find Funding
		Seawall and Revetments					Find Funding
		Rehab					Find Funding
		Teen Center Rehabilitation					Find Funding
		Rock Restroom Expansion					Find Funding

Project Number	FY Initiated	Project	Estimated Total Cost	Funding Source	Justification and/or Deadlines	Current Status	Next Steps
		Cloisters Drainage Basins and Channels					Find Funding
		Electric Vehicles Charging Infrastructure Plan					Find Funding
		Stormdrain Condition Analysis and Relining Project					Find Funding
		Del Mar Basketball Courts Relocation and Pickleball Court Expansion					Find Funding
		Bridge Preventive Maintenance Program (3 City bridges - Twin Bridges, Morro Creek, Beachcomber)					Find Funding
		Storm Drain System Install – SD-01A (Kern Street - Pecho to Anchor)					
		Storm Drain System Install – SD-01B P (Anchor Street - Kern to Main)					



AGENDA NO: A-2

MEETING DATE: October 18, 2023

Staff Report

TO: Public Works Advisory Board

DATE: October 12, 2023

FROM: Greg Kwolek, Public Works Director

SUBJECT: Approval of Excused Absence Request for Board Member Beale

RECOMMENDATION

Staff recommends the Public Works Advisory Board (PWAB) approve the request submitted by PWAB Member, Laurie Beale, to excuse her absence from the August 16, 2023, Regular Public Works Advisory Board meeting.

ALTERNATIVES

The Board may choose not to excuse Ms. Beale's absence from the August 16, 2023 meeting.

BACKGROUND/DISCUSSION

In April 2022, the Council adopted Resolution No. 39-22 amending the By-Laws for all standing advisory bodies to establish a policy regarding absences. That policy, which is included in the current Advisory Bodies Handbook and By-Laws, states:

"Because of quorum requirements, when an absence is anticipated, the individual advisory body member is responsible for notifying the Chair and the staff responsible a minimum of seven days in advance and the absence shall be counted in that member's attendance record. An advisory body member may include a written request that the absence be excused; said request must be submitted in advance and formally approved at a regular meeting of the advisory body. The unexcused absence from two consecutive regular meetings or twenty-five (25) percent of the regular meetings during any calendar year period shall constitute the resignation of such absent member. An advisory body member determined to have not met the attendance requirements herein may submit a written request to the City Council to have the previous absences excused."

Staff received a request from PWAB member, Laurie Beale, for Board consideration to excuse her absence from the August 16, 2023 regular meeting. Ms. Beale's attached email details her reason for the absence which staff accepts as reasonable and warrants Board consideration. Ms. Beale has no excused or unexcused absences in the 2023 calendar year period. Should the Board approve Ms. Beale's request, her term on the PWAB will continue through January 31, 2025.

CONCLUSION

Staff recommends the Board approve Ms. Beale's request for an excused absence from the August 16, 2023 Regular Public Works Advisory Board meeting.

ATTACHMENTS

1. Request for Excused Absence submitted by Ms. Beale
2. Link to [Advisory Bodies Handbook and By-Laws](#)

Prepared By: JB

Dept Review: GK

Public Works Advisory Board Agenda Packet Page 13 of 73

Janeen Burlingame

From: Laurie Beale
Sent: Friday, October 6, 2023 12:14 PM
To: Janeen Burlingame
Subject: Re: PWAB August Meeting Absence

Thank you Janeen! I did intend to request, or I tried but I didn't do it correctly, so yes I would appreciate your assistance with that!

Get [Outlook for iOS](#)

From: Janeen Burlingame <jburlingame@morrobayca.gov>
Sent: Friday, October 6, 2023 10:31:27 AM
To: Laurie Beale <lbeale@morrobayca.gov>
Subject: PWAB August Meeting Absence

Hi Laurie,

Hope you are having a good week and are doing well. At the June PWAB meeting, you had announced you would be on vacation and not able to attend the August meeting. I wanted to reach out and see if you would like to request an excused absence for the August meeting. Per the Advisory Body Handbook and Bylaws, if a Board member has a certain number of unexcused absences from regular meetings (2 consecutive or 25% of the regular meetings in a calendar year) it constitutes a resignation of that member, but Board members can request the absence be excused and the Board approves that request at one of its meetings. The Board has considered and approved absences for other members for various meetings earlier this year, so your request would follow the same process. If you do wish to request an excused absence, please let me know and I will add it to the October 18, 2023 meeting agenda and prepare the staff report for the agenda packet that will go out next week.

If you have any questions, let me know.
Thanks, and have a good weekend.
Janeen

Janeen Burlingame
Management Analyst

City of Morro Bay
Public Works Department
955 Shasta Avenue - Office
595 Harbor Street - Mailing
Morro Bay, CA 93442

jburlingame@morrobayca.gov

Tel: 805.772.6263



www.morrobayca.gov

Please note that effective January 3rd, the City counter hours are Mondays through Thursdays from 8am to 4pm.



AGENDA NO: A-3

MEETING DATE: October 18, 2023

Staff Report

TO: Public Works Advisory Board

DATE: October 12, 2023

FROM: Greg Kwolek, Public Works Director

SUBJECT: Approval of Excused Absence Request for Board Member Erwin

RECOMMENDATION

Staff recommends the Public Works Advisory Board (PWAB) approve the request submitted by PWAB Member, John Erwin, to excuse his absence from the October 18, 2023, Regular Public Works Advisory Board meeting.

ALTERNATIVES

The Board may choose not to excuse Mr. Erwin's absence from the October 18, 2023 meeting.

BACKGROUND/DISCUSSION

In April 2022, the Council adopted Resolution No. 39-22 amending the By-Laws for all standing advisory bodies to establish a policy regarding absences. That policy, which is included in the current Advisory Bodies Handbook and By-Laws, states:

"Because of quorum requirements, when an absence is anticipated, the individual advisory body member is responsible for notifying the Chair and the staff responsible a minimum of seven days in advance and the absence shall be counted in that member's attendance record. An advisory body member may include a written request that the absence be excused; said request must be submitted in advance and formally approved at a regular meeting of the advisory body. The unexcused absence from two consecutive regular meetings or twenty-five (25) percent of the regular meetings during any calendar year period shall constitute the resignation of such absent member. An advisory body member determined to have not met the attendance requirements herein may submit a written request to the City Council to have the previous absences excused."

Staff received a request from PWAB member, John Erwin, for Board consideration to excuse his absence from the October 18, 2023 regular meeting. Mr. Erwin's attached email warrants Board consideration. Mr. Erwin has no excused or unexcused absences in the 2023 calendar year period. Should the Board approve Mr. Erwin's request, his term on the PWAB will continue through January 31, 2025.

CONCLUSION

Staff recommends the Board approve Mr. Erwin's request for an excused absence from the October 18, 2023 Regular Public Works Advisory Board meeting.

ATTACHMENTS

1. Request for Excused Absence submitted by Mr. Erwin
2. Link to [Advisory Bodies Handbook and By-Laws](#)

Prepared By: JB

Dept Review: GK

Public Works Advisory Board Agenda Packet Page 15 of 73

Janeen Burlingame

From: John Erwin
Sent: Sunday, October 8, 2023 3:15 PM
To: Janeen Burlingame; Dana Swanson
Subject: Re: I'll be absent for the 11/18/2023 PWAB

I meant to write I will not be able to attend 10/18 PWAB.

Sent from my iPad

On Oct 6, 2023, at 9:20 AM, John Erwin <jerwin@morrobayca.gov> wrote:

Janeen, I will be missing the 11/18/2023 PWAB meeting and I am requesting an excused absence.

John Erwin [REDACTED]



AGENDA NO: B-1

MEETING DATE: October 18, 2023

Staff Report

TO: Public Works Advisory Board

DATE: October 13, 2023

FROM: Gregory Kwolek, Public Works Director
Damaris Hanson, Utilities Division Manager
Dan Heimel, Confluence Engineering Solutions

SUBJECT: Presentation of the Basis of Design Report, Water Supply Evaluation Technical Memorandum, and Phase 1 Implementation Strategy Recommendation for the WRF Recycled Water Program

RECOMMENDATION

Staff recommends the Public Works Advisory Board:

1. Receive and file the Revised Draft Basis of Design (BOD) Report for the Water Reclamation Facility (WRF) Indirect Potable Reuse (IPR) Program; and
2. Receive and file the Draft Water Supply Evaluation Technical Memorandum; and
3. Receive information and recommendations from City Staff and the Recycled Water Program Team for the Recycled Water Program implementation recommendations and associated consultant services support requirements; and
4. Provide input to City Council on the IPR Program implementation recommendations.

FISCAL IMPACT

Funding for the BOD Report and implementation of the Recycled Water Program is included in the approved budget for the WRF Program. Additionally, the currently approved budget for the WRF Program includes \$3,417,175 for FY 23/24, a projection of \$3,202,175 for FY 24/25 for a total budget of \$9,424,174 for the remaining components of the Recycled Water Program (i.e., injection wells and additional recycled water pipelines). Costs associated with the Advanced Treatment Facility at the Water Resources Center (WRC) and the pipelines to deliver advanced purified recycled water to the Morro Basin injection wells are included in the WRC and Conveyance Facilities budget categories.

The level of implementation for the Recycled Water Program will determine if the current budget is sufficient to cover the program costs. The ~\$9.4M Recycled Water Program Budget was developed in 2020 and the City and other municipal agencies have seen significant construction cost escalation and inflation in recent years, that may impact the total cost of the Recycled Water Program. Additionally, through the course of design and construction of the WRC and the Conveyance Project components of the WRF Program, the City has identified certain biological and archeological resource constraints that could lead to increased costs for the Recycled Water Program that were not originally considered in the development of the program budget. However, the City is currently working with the WRF Program Funding/Financing agencies to identify the level of implementation for the Recycled Water Program that is required to meet the requirements of the existing and future funding/finance agreements. With the potential for a reduced level of implementation for the Recycled Water program (i.e., fewer injection wells) the overall costs for the program can be limited.

Prepared By: GK, DH, DH Dept Review: GK

Public Works Advisory Board Agenda Packet Page 17 of 73

When evaluating the costs of the Recycled Water Program, it is important to take into consideration the overall WRF Program Costs and the financing agreements utilized to fund the program. By including recycled water as a component of the WRF Program, the City became eligible for Water Infrastructure Finance and Innovation Act (WIFIA) and Clean Water State Revolving Fund (CWSRF) low interest financing (~0.9%) for a significant portion and potentially the entirety of the WRF Program. To date the City, has received ~\$138M in low interest financing through these programs and is currently developing an agreement with the State Water Resource Control Board (SWRCB) for a \$21.2M CSWRF Loan Amendment, which would bring the total low-interest financing available for the program to \$159.7M. By financing the costs of the WRF Program through these low interest financing mechanisms versus traditional bond financing, which would have been the alternative and would have had an estimated interest rate of 4.7%, the City has been able to achieve a savings of approximately \$41.2M on the overall repayment costs for the WRF Program, even with the higher Program Cost for inclusion of recycled water, estimated at approximately \$40M of the \$159.7M total Program Cost. These cost savings calculations are shown in **Error! Reference source not found.** below.

Table 1. WRF Repayment Cost Savings Calculations

	Total Financed Amount	Interest Rate	Loan Duration	Total Cost of Loan	Total Interest Savings
WRF Program w/ Recycled Water	\$159,776,974	0.9%	30	\$182,375,880	\$41,259,243
WRF Program w/o Recycled Water	\$119,776,974	4.7%	30	\$223,635,123	

In addition, inclusion of recycled water in the WRF Program allowed the City to apply for and be awarded approximately \$15.5M in grant funds through the CWSRF, United State Bureau of Reclamation Title XVI and California Department of Water Resources (DWR) Integrated Regional Water Management (IRWM) Programs. Combining the loan repayment savings, grant funds and the value of the Recycled Water Program, which the City received at no additional cost, including recycled water as a component of the WRF Program provided the City with approximately ~\$96M of total savings/value compared to an alternative program that did not include recycled water, see Table 2 below.

Table 2. Total Recycled Water Program Cost Saving/Value

Interest Savings	Recycled Water Grants	Recycled Water Infrastructure Value	Total Value Received from Recycled Water
\$41,259,243	\$15,500,000	\$40,000,000	\$96,759,243

To meet the requirements of the City’s low-interest financing and grant funding sources for the WRF Program, the City must implement a recycled water program that includes the elements outlined in Table 3 below.

Table 3. WRF Program Funding/Finance Agreement Recycled Water Implementation Requirements

Funding/Financing Source	Recycled Water Implementation Requirement	Notes
WIFIA Loan	Multiple Injection Wells	
CWSRF Loan	412.5 AFY of recycled water use in near term (5 years)	825 AFY of recycled water use at build-out
USBR Title XVI Grant	TBD	Grant agreement still under development
DWR IRWM Grant	2 or more injection wells	Draft grant agreement under development

DISCUSSION

Background

The City’ current water supply portfolio consists of two primary: imported water from the State Water Project (SWP) and groundwater pumped from the Lower Morro Valley Groundwater Basin (Morro Basin). The City is in the process of implementing a Recycled Water Program that will include injection of advanced purified recycled water into the Morro Basin to enhance recharge, prevent seawater intrusion and improve groundwater quality. The recycled water will then be pumped from the City’s existing extraction wells after complying with Indirect Potable Reuse (IPR) Groundwater Replenishment Reuse Project (GRRP) requirements to improve the reliability and resiliency of the City’s water supply portfolio.

Implementation of the Recycled Water Program is necessary for the following reasons:

1. To address vulnerabilities in the City’s water supply portfolio and reduce reliance on imported water from the SWP
2. To comply with the implementation requirements of the funding/financing agreements for the WRF Program
3. Fulfill City Council direction to incorporate Recycled Water as part of the WRF Program

Revised Draft Basis of Design Report

The Basis of Design (BOD) Report outlines the full-scale implementation strategy for the City’s WRF IPR Program based on an extensive amount of reference document review, aquifer characterization, hydrogeologic field investigations, and groundwater modeling. The BOD Report includes recommendations for how the City can design and construct a network of injection wells to inject advanced purified recycled water from the newly constructed Water Resources Center into the Morro Basin and extract that water through existing production wells to provide a local, reliable, resilient water supply for the City. The number and locations of the injection wells presented in the BOD Report represents an IPR recycled water program capable of treating and injecting the maximum amount of water the City anticipates producing at full build-out under the City’s existing General/Local Coastal Plan, which is not anticipated to occur until 2040 or later. The BOD Report focuses on the full build-out potential of the IPR Program because the Permitting/Regulatory agencies that will be reviewing and approving the IPR Program have indicated that this is their preferred approach. It is more efficient for them and the applicant to permit the largest scale version of the program that an agency envisions, even if there isn’t sufficient wastewater currently available to support a program of that scale, and then implement the program in phases, than permitting a smaller version of the program and having to re-apply to expand the program in the future.

Included in the BOD Report are descriptions of the hydrogeologic setting and groundwater conditions in the Morro Basin, results of pump/injection testing, analysis of current and anticipated future water quality and findings from groundwater modeling scenarios developed to simulate injection and extraction of advanced purified water for the IPR Program.

The key findings from the BOD Report are outlined below:

- Utilizing eight (8) injection wells the IPR Program could be capable of injecting 887 Acre-feet per year (AFY) of advanced purified recycled water into the Morro Basin
- Injection of 887 AFY would provide the City with the ability to extract up to a total of 1,000 AFY of groundwater from the Morro Basin without inducing seawater intrusion or violating other constraints established for the modeling scenarios
- The injection wells are recommended to be located along the south side of Morro Creek and on Embarcadero Road north of Morro Creek
- The IPR Program would improve the reliability and resiliency of the City's water supply portfolio by providing a drought proof local water supply that it can rely upon during extended droughts and State Water Project shutdowns

The BOD Report is based on findings from numerous hydrogeologic studies completed by GSI Water Solutions, Inc. (GSI) and was peer reviewed by Cleath-Harris Geologists. A copy of GSI's Revised Draft of the BOD Report is included as an attachment to this staff report.

Water Supply Evaluation Technical Memorandum

To assist the City in evaluating how to integrate its new recycled water supply and changes in availability of SWP water into its water supply portfolio, Confluence Engineering Solutions, Inc. (ConfluenceES) developed a Water Supply Operations Model (Supply Model) that was utilized to evaluate water management strategies under current and potential future hydrologic and demand conditions. The findings from the water supply scenario analysis, which include evaluation of different options for how the City can utilize its new recycled water supply, are intended to help inform the City on potential strategies to leverage its current and/or future water supply portfolio to maximize the benefit of these critical resources for its residents.

The findings from the Water Supply Evaluation are that the City's current water supply portfolio is vulnerable to extended drought conditions (e.g., drought from 2020 to 2022). However, implementation of an initial phase of a Recycled Water Program, including Indirect Potable Reuse (IPR) and Non-Potable Reuse (NPR) recycled water use is anticipated to address this water supply deficiencies under current and potential future demands. By utilizing NPR recycled water for landscape irrigation purposes to reduce potable water demands and IPR recycled water injection and extraction during low SWP allocation years (e.g., less than 25%) to preserve its SWP and Stored SWP water supplies for potential extended drought years, it is predicted that the City can reliably meet its water supply needs under current and future build-out demand conditions. As the City's demands increase with future development and/or additional cost recovery strategies are identified it may be beneficial to increase the capacity of the IPR program to increase the volume of drought proof water available and/or provide additional cost recovery.

Additionally, review of the scenario results estimate that the recycled water scenarios will have higher water production costs due to the increased variable cost associated with recycled water production compared to the variable cost for SWP water. However, with potential cost recovery opportunities there is the potential that the City could have lower net variable costs through the potential sale of excess SWP supplies in these scenarios. Additionally, the increased variable costs associated with the production of recycled water are far outweighed by the costs savings the City received by incorporating recycled water as component of the WRF Program.

Additional detail regarding the Supply Model and the Water Supply Evaluation Scenario Analysis is provided in the Water Supply Evaluation Technical Memorandum, included as an attachment to this staff report.

Recycled Water Program Implementation Recommendations

As described above, the BOD Report outlines the full build-out potential for the City's IPR Program. However, the results of the Water Supply Evaluation Scenarios indicate that implementation of an initial phase of the Recycled Water Program (i.e. 3 IPR injection wells and NPR recycled water landscape irrigation) could be sufficient to meet the City's near-term water supply reliability needs. Based on these findings and with the intent to limit the Recycled Water Program costs while still meeting the recycled water implementation requirements of the City's WRF Funding/Financing agreements, City Staff and the IPR Program Team developed the following recommendations for the initial phase Recycled Water Program implementation.

- Drill two additional injection wells for a total of three injection wells (one injection well has already been drilled)
- Equip the three injection wells to allow for IPR recycled water injection, backflushing, and other IPR Program operations
- Construct/extend recycled water pipelines to deliver recycled water to the injection wells and for NPR recycled water landscape irrigation use at Lila Kaiser Park and Morro Bay High School to offset demand for potable water
 - Evaluate opportunities to utilize existing, abandoned pipelines (i.e. Seawater Desal Feedline) to limit program costs and reduce construction and environmental impacts
- Incorporate water system operational strategies (e.g. blending Morro Basin groundwater with SWP water to avoid the need to utilize the Brackish Water Reverse Osmosis (BWRO) treatment system) to reduce production costs for the City's water system.



Figure 1. Initial Phase Recycled Water Program Implementation Recommendations

Next Steps

To meet the funding/financing deadlines for the implementation of the initial phase and to plan for implementation of future phases of the Recycled Water Program, the City must complete numerous design, permitting, environmental review and funding/financing activities prior to initiative construction of the recycled water facilities. These activities outlined below and shown in Figure 2:

- Prepare an updated Recycled Water Management Plan (Coastal Development Permit - Special Condition 6 Report) that includes description of the initial and future phases of the Recycled Water Program and submit to Coastal Commission Staff for approval consideration.
- Complete biological and archeological surveys for the Recycled Water Program construction area and prepare required reports and/or consultations with the Resource Agencies (e.g., United States Fish and Wildlife, State Historical Preservation Society, etc.)
- Complete Preliminary Design for the full build-out Recycled Water Program, as outlined in the Basis of Design Report, to enable the City to obtain the necessary environmental and permitting approvals for implementation of the Recycled Water Program.
- Develop an implementation plan with criteria for when to implement future phases of the Recycled Water Program.
- Procure a hydrogeologic consultant to complete the design and a drilling contractor to construct the 2 additional injection wells.
- Procure an engineering consultant to complete preliminary and final design of the recycled water pipelines, injection well equipping and NPR recycled water connections.
- Prepare WRF CDP Special Condition 1, 2, & 13 Reports for the Recycled Water Facilities

construction and submit to Coastal Commission Staff for approval consideration.

- Prepare and submit the Title 22 Engineering Report for the Recycled Water Program to the Division of Drinking Water for approval consideration.
- Prepare and submit the Report of Waste Discharge (RWOD) application for the Groundwater Replenishment Reuse Project (GRRP) to the Regional Water Quality Control Board and obtain a Waste Discharge Requirements (WDR) permit for the Recycled Water Program.
- Procure a contractor to construct the recycled water pipelines, injection well equipping and NPR recycled water connections.

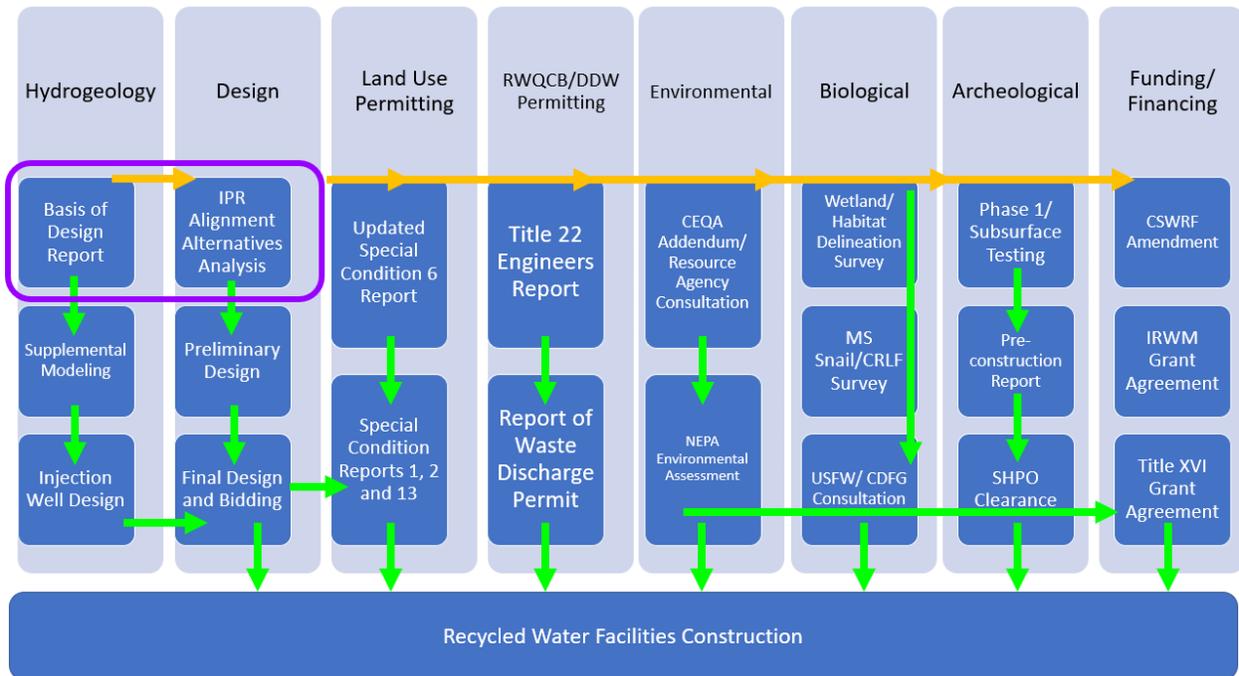


Figure 2. Recycled Water Program Implementation Requirements

To complete these initiatives, the City needs support from the Recycled Water Program Consultant Team. Included in Table 4 below is a description of each of the different program elements that are necessary to keep the program moving forward and the estimated budgets to cover the near-term anticipated level of effort.

Table 4. Recycled Water Implementation Support Requirements

Service Category	Description of Services	Budget Estimates	Notes
Biological Resource	Biological field surveys, resource delineation, and resource agency coordination/consultation	\$50k	
Archeological Resource	Archeological presence/absence testing and results documentation	\$200k	
Environmental Consulting	Environmental Review and preparation of EIR Addendum or Supplemental EIR for project elements outside current EIR Study Area	\$186k	Assumes Supplemental EIR, less expensive if EIR Addendum approach is utilized. Services to extend beyond FY 23/24.
Engineering Design	Preliminary, 30%, 60%, 90% and 100% Plans, Specs and Cost Estimates for recycled water pipelines, injection well equipping and NPR recycled water connections	~\$800k	City to procure Design Services through an RFP Process. Services to extend beyond FY 23/24.
Hydrogeologic Support	Injection Well siting support, supplemental injection testing, additional modeling scenarios, BOD report updates, and GRRP Permitting Support	\$230k	
Program Management	Recycled Water Facility Program Management	NA	Budget remaining to support near-term activities through end of FY 23/24
RWQCB/DDW Permitting	Title 22 Engineering Report, Report of Waste Discharge Permit Application	NA	Budget remaining to support completion of these activities
Funding/Financing Support	CWSRF, WIFIA Financing, Title XVI, IRWM Grant agreement and reimbursement support	NA	Budget remaining to support near-term activities through FY 23/24

Conclusion

Staff recommends the Public Works Advisory Board:

1. Receive and file the Revised Draft BOD Report for the WRF IPR Program; and
2. Receive and file the Draft Water Supply Evaluation Technical Memorandum; and
3. Receive information and recommendations from City Staff and the Recycled Water Program Team for the Recycled Water Program implementation recommendations and associated consultant services support requirements; and
4. Provide input to City Council on the IPR Program implementation recommendations.

ATTACHMENTS

1. [Public Draft Basis of Design \(BOD\) Report, GSI Water Solutions \(2023\)](#)
2. Water Supply Evaluation Technical Memorandum, Confluence Engineering Solutions (2023)

Draft Water Supply Evaluation Technical Memorandum



City of Morro Bay

October 12, 2023



CONFLUENCE
ENGINEERING SOLUTIONS

Table of Contents

Introduction	3
Background	4
Water Supply Model	10
Water Supply Scenarios	15
Conclusions and Recommendations	36
References	38

Introduction

The City of Morro Bay (City) currently possesses a water supply portfolio that consists of two primary sources of water for its water system customers. These sources include imported water from the State Water Project (SWP) and groundwater pumped from the Lower Morro Valley Groundwater Basin (Morro Basin). The City is in the process of implementing a Recycled Water Program that will include injection of advanced purified recycled water into the Morro Basin to enhance recharge, prevent seawater intrusion and improve groundwater quality. The advanced purified recycled water will then be pumped from the City's existing extraction wells after complying with Indirect Potable Reuse (IPR) Groundwater Replenishment Reuse Project (GRRP) requirements to improve the reliability and resiliency of its water supply portfolio.

Recent changes to the SWP water supply contracts (i.e. the Water Management Tools Amendment) that the San Luis Obispo County Flood Control and Water Conservation District (SLOCFCWCD) has with the California Department of Water Resources (DWR), and which the City is a subcontractor to for SWP water, provide new opportunities for how SLOCFCWCD and its subcontractors can manage their water supplies to provide additional water supply reliability, resiliency against infrastructure failures and cost recovery opportunities. Additionally, the SLOCFCWCD recently issued a letter (January 2023) to SWP subcontractors indicating that it was moving toward a "final call" for interest in purchasing additional "Drought Buffer" SWP water from its "Unsubscribed Allocation" before it evaluates other potential uses for that water. The associated potential loss of reliability that the SLOCFCWCD's "Unsubscribed Allocation" provides warrants an updated evaluation of the City's current and future water management strategies.

To assist the City in evaluating how to integrate its new recycled water supply and changes in availability of SWP water into its water supply portfolio, Confluence Engineering Solutions, Inc. (ConfluenceES) developed a Water Supply Operations Model (Supply Model) that was utilized to evaluate water management strategies under current and potential future hydrologic and demand conditions. The findings from the water supply scenario analysis, which include evaluation of different options for how the City can utilize its new recycled water supply are intended to help inform the City on potential strategies to leverage its current and/or future water supply portfolio to maximize the benefit of these critical resources for its residents.

Background

The City is located on the Central Coast of California in San Luis Obispo County. The City limits span approximately 5 square miles across a diverse coastal landscape and encompass the intersection of Highway 1 and Highway 41 (Figure 1). Incorporated in 1964, the City provides its roughly 11,000 residents with essential water, sewer, storm drainage and other essential services. Water services are available to all residential, commercial, and industrial customers, including fire protection services.

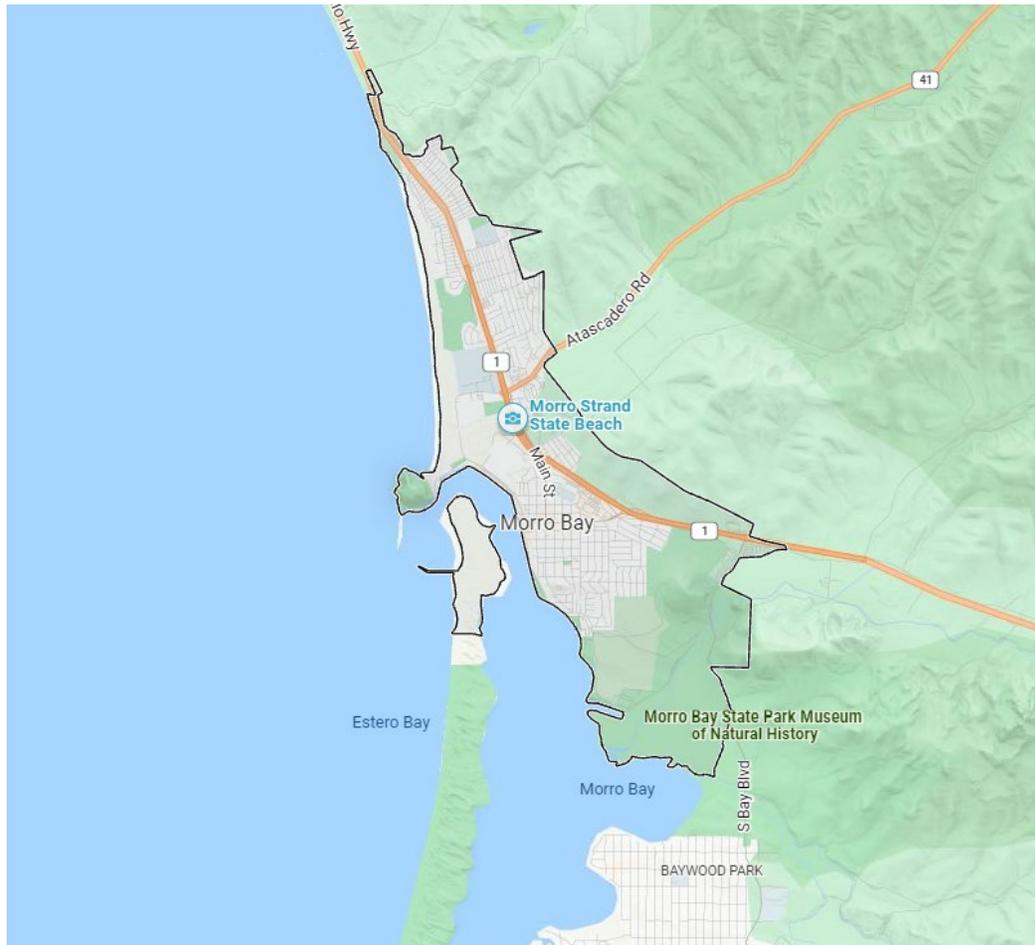


Figure 1: Morro Bay's City Limits [2]

Water Supply Portfolio

The City's current and future water supply portfolio will consist of two different water supplies: imported water from the SWP; and groundwater from the Morro Basin. The IPR Program will provide the City the ability to enhance recharge, prevent seawater intrusion, improve water quality, and increase extractions from the Morro Basin, but does not by itself provide a new separate drinking water supply source as the City will access its advanced purified recycled water through extraction from its Morro Basin production wells. However, having access to a recycled water source that can be utilized to offset use of potable water for landscape irrigation does provide the City with a new non-potable source of recycled water that can be utilized to reduce its potable water demand. Information on each of these water supplies is provided in the following sections.

State Water Project

In 1963, the SLOCFCWCD entered into a long-term water supply contract with the California Department of Water Resources for a Table A Allocation of 25,000 AFY of water from the SWP. In the 1990s, the City and 10 other water utilities (SWP subcontractors) entered contracts with the SLOCFCWCD to take delivery of up to a total of 4,830 AFY of treated SWP water, referred to as their Water Service Amount (WSA). The SLOCFCWCD then entered into agreements with DWR and the Central Coast Water Authority for the construction and operation of a water treatment plant, pumping plants, and pipelines to bring potable SWP water to their points of delivery in San Luis Obispo County. The SWP subcontractors additionally entered into agreements with the SLOCFCWCD for an additional 6,157 AFY of SWP Table A Allocation water, referred to as “Drought Buffer” to provide additional water supply reliability for years when SWP allocations are less than 100%. The remaining 14,463 AFY of SLOCFCWCD SWP Allocation is referred to as the SLOCFCWCD’s “Unsubscribed Allocation.”

The City’s SWP water is conveyed from the San Joaquin-Sacramento Delta via the California and Coastal Branch Aqueducts. The water is then pumped up to and treated at the Polonio Pass Water Treatment Plant, which is near the junction of Highways 41 and 46. From the water treatment plant, the water is then delivered via gravity to the City through the Coastal Branch and Chorro Valley Pipelines. The City’s maximum contractual instantaneous delivery capacity from its Chorro Valley Pipeline Turnout is 1.84 cubic feet per second or 109.41 Acre-Feet per month [3].

The City has a WSA of 1,313 AFY and a drought buffer of 2,290 AFY, as shown in Table 1 below. To calculate the amount of SWP water available to the City in a given year, its WSA and drought buffer are summed to get the total supply allocation. The total allocation is multiplied by DWR’s Annual Allocation (e.g. 5% for 2022) to determine a subcontractor’s allocation for that year. The City’s current drought buffer of 2,290 AFY provides the ability to receive its full WSA of 1,313 AFY in years when DWR’s Annual Allocation is 37% or greater. A subcontractor’s SWP deliveries within a given year cannot exceed its WSA, however, the City, through the SLOCFCWCD, has the ability to store a portion of its unused SWP water for use in future dry years (Stored SWP Water) in San Luis Reservoir.

Table 1: SLOFCWCD SWP Allocations

Subcontractor	Water Service Amount (AFY)	Drought Buffer (AFY)	Total Allocation
CSA 16 (Shandon)	100	-	100
CMC	400	400	800
County Ops Center	425	425	850
Cuesta College	200	200	400
City of Morro Bay	1,313	2,290	3,603
City of Pismo Beach	1,240	1,240	2,480
Oceano CSD	750	750	1,500
SMMWC	275	275	550
Avila Beach CSD	100	100	200
Avila Valley MWC	20	20	40
San Luis Coastal USD	7	7	14
SLOFCWCD "Unsubscribed Allocation"		14,463	14,463
Total			25,000

Stored SWP Water

As mentioned previously, the City can store a portion of its unused SWP water for use in future years in San Luis Reservoir, an off-stream storage reservoir in the SWP. The City has access to its stored water until there is a spill or the water in storage in San Luis Reservoir "interferes with the operations of the SWP or Central Valley Project." When a spill occurs in San Luis Reservoir, all water in storage is lost and the SLOFCWCD and City's storage accounts reset to zero.

Additionally, any SWP water in a given water year that the City cannot deliver or store in San Luis Reservoir is lost and no longer available for SLOFCWCD or City use. The equations for calculating how much SWP water the City can store in San Luis Reservoir are shown here:

Where:

W = Available SWP Water

T = Table A Water

B = Drought Buffer

A = Annual Allocation

$W = (T + B) \times A$

S = Amount Eligible for Storage

For deliveries from 0% to 50% the maximum storage allowed is 25% of the available water as shown in Equation 1.

Equation 1: $0 \leq A \leq 50\%$, $S \leq 25\% \times W$

For deliveries from 51% to 74% the maximum storage allowed is 25% plus 1% for every percentage point over 50% that is delivered as shown in Equation 2.

Equation 2: For $50\% < A < 75\%$, $S \leq [(A - 50\%) + 25\%] \times W$

For deliveries 75% and over the maximum storage allowed is 50% of the available water as shown in Equation 3.

Equation 3: For $A \geq 75\%$, $S = 50\% \times W$

Sample Calculations:

A = 20%
Maximum Storage, $S = 25\% \times W$ **Equation 1**
 $S = 25\% \times W$
 $S = 25\% \times [(T + B) \times A]$
 $S = 25\% \times [(1,313 + 2,290) \times 20\%]$
S = 180 AF

A = 65%
Maximum Storage, $S = [(A - 50\%) + 25\%] \times W$ **Equation 2**
 $S = [(A - 50\%) + 25\%] \times W$
 $S = [(A - 50\%) + 25\%] \times (T + B) \times A$
 $S = [(65\% - 50\%) + 25\%] \times [(1,313 + 2,290) \times 65\%]$
S = 937 AF

A = 85%
Maximum Storage, $S = 50\% \times W$ **Equation 3**
 $S = 50\% \times W$
 $S = 50\% [(T + B) \times A]$
 $S = 50\% [(1,313 + 2,290) \times 85\%]$
S = 1,531

SLOCFCWCD Unsubscribed Allocation

Currently, the City can access SLOCFCWCD “Unsubscribed Allocation” SWP water if there are times when it does not have sufficient SWP water to meet its customer demands or WSA capacity, whichever is lower. Historically this has provided a significant reliability buffer against extended drought conditions and multiple consecutive SWP low allocation years (e.g. 20% in 2020 and 5% in 2021 and 2022). However, as described previously this water may not always be available to the City or other subcontractors in the future.

Given the potential future unavailability of SLOCFCWCD “Unsubscribed Allocation” it would be beneficial for the City to evaluate how much water from other sources it may need as part of its future water supply strategy in order to make up for the loss of water supply reliability the SLOCFCWCD

“Unsubscribed Allocation” water has historically provided. Currently, the City can purchase additional drought buffer water from the SLOFCWCD, but that ability may not always be there in the future if the “Unsubscribed Allocation” is sold to other parties or put to other uses.

There are multiple considerations that come into play when evaluating purchasing additional drought buffer. Increasing its drought buffer would provide additional water during wet and dry periods to improve the reliability of the City’s water supply portfolio but could also increase the amount of City SWP water lost or that spills. Additionally with the Water Management Tools Amendment to the SWP Contracts there is significant increased flexibility for SWP contractors and subcontractors to transfer, exchange, and/or sell SWP water. These new management options could provide potential cost recovery opportunities through the transfer or sale of excess SWP water to neighboring, regional, or statewide agencies.

Morro Basin

The Morro Basin is located in the west-central area of San Luis Obispo County. It is bordered by impermeable rocks, except for the west side, where it borders the Pacific Ocean. It has a surface area of 1,200 acres [4]. The water source has had a history of water quality concerns, specifically high Total Dissolved Solids (TDS) associated with seawater intrusion and nitrate contamination [1].

The Morro Basin is currently a secondary source of water for the City. The City primarily uses SWP water, but uses Morro Basin groundwater when SWP water is not accessible due to maintenance. The City has two State Water Quality Control Board permits that allow the City to extract up to 581 AFY from the Morro Basin. While this is not sufficient water to meet the City’s total annual water demands (e.g. ~1,100 AFY), it does provide the City with a local water supply that it can utilize during SWP outages [1].

To access its Morro Basin water supply the City utilizes seven wells located near Lila Kaiser Park, Atascadero Road, and Highway 1 [5]. The City’s current active wells include HS-1, HS-2, MB-3, MB-4, MB-14, MB-15, and Flippos. On average approximately 100 AFY of Morro Basin water is currently utilized to provide water during planned and unplanned SWP shutdowns. However, due to nitrate concentrations in the Morro Basin exceeding the Maximum Contaminant Level, with concentrations ranging from 11 - 19 mg/L (NO₃-N), the Morro Basin groundwater is treated for nitrates at the City’s Brackish Water Reverse Osmosis Facility (BWRO). Approximately 25% of the groundwater extracted from the Morro Basin is rejected as concentrate during the BWRO reverse osmosis treatment process and discharged into the ocean [1].

IPR Recycled Water

Incorporated as part of the construction of the City’s new Water Resource Center (WRC) wastewater treatment facility is an advanced treatment system, which includes Reverse Osmosis (RO) and Ultraviolet/Advanced Oxidation (UV/AOP) treatment processes, that allow the City to produce advanced purified recycled water that can be injected into the Morro Basin and then extracted for use in the City’s drinking water system (IPR Recycled water). It is estimated that, at full build-out, the City’s IPR Program could have the capacity to treat and inject up to 887 AFY of advanced purified or IPR Recycled water into the Morro Basin to increase recharge, create a barrier against seawater intrusion, reduce nitrate contamination and allow the City to be able to extract up to 1,000 AFY of groundwater [6].

However, for the purposes of the Supply Model it was assumed that the City would implement an initial phase of the IPR program that would be designed to meet the City’s near-term water supply reliability

and resiliency needs and meet the recycled water implementation requirements of the City's low-interest and grant funding sources. For the purposes of the IPR Recycled water scenarios, it was assumed that the City would construct 3 injection wells capable of injecting ~400 AF of IPR Recycled water into the Morro Basin. During IPR operations, it is assumed that the City will blend groundwater extracted from the Morro Basin with incoming SWP water to reduce nitrate concentrations to levels below the Maximum Contaminant Level (MCL) and thus IPR recycled water is not required to be treated at the BWRO.

Non-Potable Reuse Recycled Water

Non-Potable Reuse (NPR) includes the use of recycled water for non-potable supply uses (e.g., landscape and/or agriculture irrigation, construction water, etc.). Producing recycled water for NPR does not require as extensive of a level of treatment as IPR Recycled water. The potential use of NPR Recycled water was included in the water supply evaluation scenarios to help the City understand what additional opportunities may be available to utilize its recycled water resources.

The primary uses for NPR Recycled water considered as part of the water supply evaluation scenarios were landscape irrigation at Lila Kaiser Park and Morro Bay High School. These locations were considered due to their proximity to the Morro Basin injection wells and the potential benefits to the City's potable water supply portfolio (i.e., ability to reduce potable water demand, ability to reduce Morro Basin groundwater pumping). For the scenarios that include NPR Recycled water, it was assumed that the City would provide ~60 AFY of IPR Recycled water for landscape irrigation at Lila Kaiser Park and Morro Bay High School. It was assumed that IPR Recycled water would be utilized for NPR Recycled water landscape irrigation purposes because of the challenges associated with delivering non-IPR Recycled water through the IPR pipeline and the limited opportunities to deliver recycled water of sufficient quality for NPR Recycled water use through the City's treated wastewater disposal pipeline. If opportunities are identified to deliver a lower quality water than IPR Recycled water for NPR Recycled water use, it could provide operational costs savings for the City.

A significant additional potential user of NPR Recycled water is the Morro Bay Golf Course, however, this was not initially considered in the water supply evaluation scenarios as the Morro Bay Golf Course currently obtains water from the Chorro Valley Groundwater Basin and the City does not have active water supply wells in that Basin. However, due to the potential significant demand for NPR Recycled water at the golf course, it is recommended that this be further evaluated as a potential cost recovery opportunity for the City.

Water Supply Model

To assist in evaluating the different options and strategies for managing its future water supply portfolio, City Staff worked with ConfluenceES to develop the Supply Model. The Supply Model is utilized to evaluate the City's current and future water supply portfolios under potential future hydrologic and demand conditions. The Supply Model operates on an annual time-step and illustrates how the City can utilize SWP water, stored SWP water, Morro Basin groundwater, IPR Recycled water, and NPR Recycled water over varying drought cycles to meet its customers' water demands. The Supply Model also calculates the volume of water lost to spills at San Luis Reservoir and the potential value of the lost water to assist the City in developing cost recovery strategies.

Hydrology

The Supply Model evaluates the anticipated performance of the City's current and potential alternate water supply portfolio over a future 25-Year Planning Period. The 25-Year Planning Period assumes a re-occurrence of the hydrologic conditions that occurred from 1999 to 2023 with anticipated impacts associated with Climate Change. By focusing on this timeframe, the Supply Model can more accurately predict spill events associated with the current SWP water supply infrastructure and evaluate how the City's water supply portfolio would fair under the historic droughts and low SWP allocations that occurred from 2012 – 2016 and 2020 – 2022, which correlate to Years 14 – 18 and 22 – 24 in the model.

The SWP Allocations within the 25-Year Planning Period were primarily based on two different hydrologic datasets. The Annual Allocation assumptions for 1998 – 2015 used in the Supply Model were obtained from the 2021 DWR Delivery Capability Report assuming Climate Change Hydrology from the Global Circulation Models and 55 cm of sea level rise. Annual Allocations from 2016 - 2023 were based on actual Annual Allocations for those years. The average SWP annual allocations in the hydrology dataset was 46% with allocations ranging from 5% - 100%. For reference, the average Annual Allocation 2021 DWR Delivery Capability Report Climate Change scenario from 1922 to 2015 is 46%.

Spill Assumptions

SWP Spill assumptions were made based off outputs from the analysis included in the Coastal Branch Water Management Strategies Report (1999 – 2019) and historical spill status data from recent years (2020 – 2023) for San Luis Reservoir [7]. In the Supply Model, during years where San Luis Reservoir is anticipated to spill the City stored water in the reservoir is reset to zero.

Demand Assumptions

Historic City water demands from 2008 to 2022 are shown in Figure 2 and were based on water production records for those years. Estimates for future water demands were obtained from the City's 2020 Urban Water Management Plan and were based off population projections from the City's General Plan and Local Coastal Program Land Use Plan (2021 Plan Morro Bay) [8,9]. Estimates of future water demand were developed by applying historical per capita water demands for the City to future population projections and were developed in five year increments from 2020 – 2045. An interpolation was performed develop demand estimates for the intermediate years and the projected City water demands for 2020 – 2050 are shown in Figure 3.

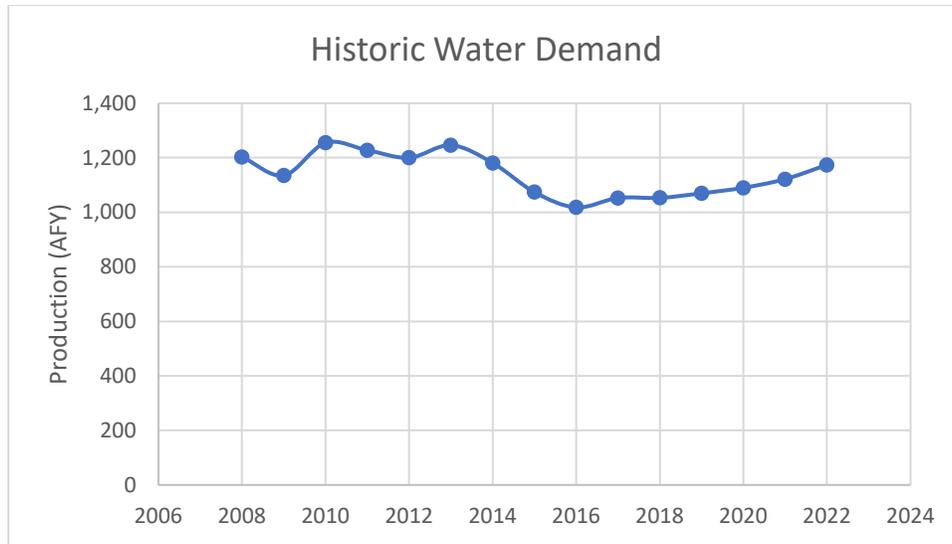


Figure 2: Historic City Water Demands

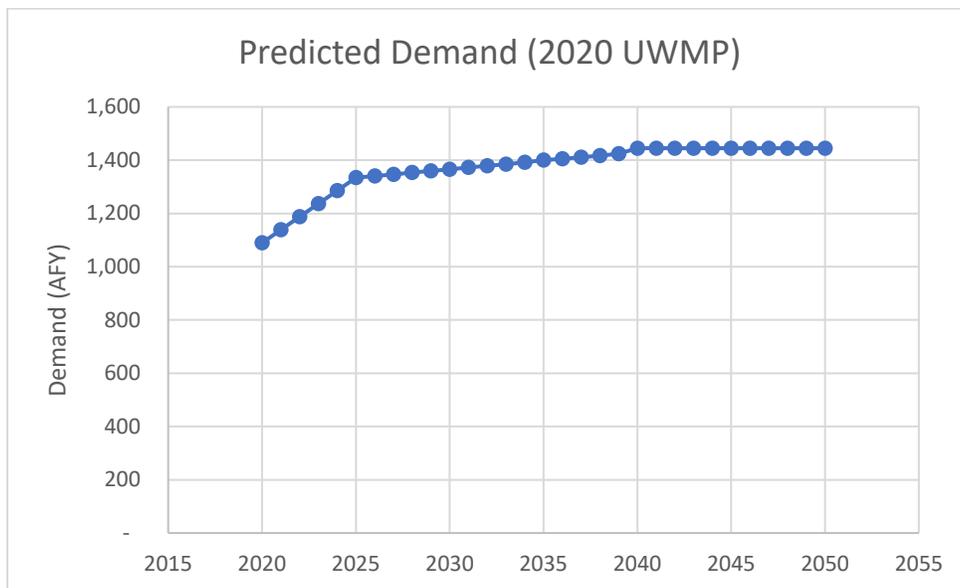


Figure 3: Future City Water Demand Projections for 2020 - 2050

Water Supply Usage Prioritization

The Supply Model incorporates water supply prioritization procedures to determine which sources of water to utilize and in what order to meet City water demands for each modeled year. The Supply Model utilizes available supply from the City’s portfolio in the following priority:

1. Morro Basin Groundwater – The Supply Model initially assumes that 100 AF of Morro Basin groundwater is used every year to provide water during SWP maintenance shutdowns. It additionally assumes that water will be treated through the BWRO facility because there is no SWP water available to blend down nitrate concentrations during SWP shutdowns.

2. NPR Recycled Water – Then for scenarios that include NPR recycled water, the Supply Model assumes that 60 AF of potable demand is offset through the use of NPR recycled water.
3. IPR Recycled Water – Then the Supply Model evaluates the SWP Allocation for the model year and if below the designated threshold assumes that the City will initiate operations of the IPR system and prioritize the production and use of IPR recycled water. The Supply Model assumes that the IPR recycled water does not need to be treated through the BWRO facility because it can be blended with SWP water to reduce nitrate concentrations below the Maximum Contaminant Level.
4. SWP Water - Then the Supply Model evaluates the amount of available SWP water based on that year’s SWP Annual Allocation and utilizes it to meet remaining demand, if available. If any unused SWP water is available, the Supply Model then evaluates to see if that water can be put into storage or is lost as undeliverable water.
5. Stored SWP water – Then if there is remaining demand, the Supply Model evaluates the amount of Stored SWP water available and utilizes it to meet remaining demand, if available. Any remaining Stored SWP water is retained for use in the subsequent years, unless the year is designated as a Spill Year, in which case the Stored SWP water is spilled.
6. Morro Basin Groundwater – Then if there is remaining demand, the Supply Model evaluates the amount of remaining Morro Basin groundwater the City can pump under its Water Rights Permit and utilizes it to meet remaining demand, if available.

Unused Morro Basin groundwater, IPR recycled water, and NPR recycled water supplies are not assumed to roll-over year over year and are limited within a given year based on the availability assumptions included in each scenario.

Water Cost/Value Assumptions

Included in the Supply Model are assumptions for the estimated cost of the City’s different water supplies and estimated value of that water during different hydrologic periods. Table 2 shows the fixed and variable costs for each water supply. The fixed costs are costs that the City must pay on an annual basis for each AF of allocation it has for its SWP Supplies and these costs do not significantly vary year to year. Variable costs are the costs the City must pay to take delivery or produce an AF of that water and these cost vary year to year depending on how much water from each source is utilized. See Appendix 1 for additional information on how the fixed and variable costs were derived.

Table 2. Fixed and Variable Water Cost Assumptions¹

Water Type	Fixed Costs (\$/AF)	Variable Costs (\$/AF)
SWP Water Service Amount (WSA)	\$1,100	\$300
SWP Drought Buffer	\$205	\$300
Morro Basin Groundwater	N/A	\$708
IPR Recycled Water	N/A	\$574
NPR Recycled Water	N/A	\$539

¹ The fixed and variable cost estimates included in the Supply Model were not adjusted for inflation as they are intended to be utilized for comparison purposes only.

No fixed cost was assumed for the recycled water treatment and distribution infrastructure because including recycled water as a component of the WRF Program allowed the City to be eligible for low-interest financing for the entire program. This equates to a total interest savings of ~\$40M based on the calculations outlined in Table 3 below. Additionally, by including recycled water as a component of the WRF Program the City was eligible for and awarded ~\$15.5M in grant funding and was able to construct the recycled water infrastructure (~\$40M value) at no additional cost to the City.

Table 3. WRF Recycled Water Interest Savings Calculations

WRF Program Alternatives	Total Financed Amount	Interest Rate	Total Cost of Loan	Total Interest Savings
WRF with Recycled Water	\$159,776,974	0.9%	\$182,375,880	~\$41,000,000
WRF without Recycled Water	\$119,776,974	4.7%	\$223,635,123	

To meet the requirements of the City’s low-interest financing and grant funding sources, the City must implement a recycled water program that includes the elements outlined in Table 4 below.

Table 4. WRF Financing and Funding Requirements

Funding/Financing Source	Recycled Water Implementation Requirement	Notes
Water Infrastructure Finance and Innovation Act (WIFIA) Loan	Multiple Injection Wells	
Clean Water State Revolving Fund (CWSRF) Loan	412.5 AFY of recycled water use in near term (5 years)	825 AFY of recycled water use at build-out
USBR Title XVI Grant	TBD	Grant agreement still under development
DWR IRWM Grant	2 or more injection wells	Draft grant agreement under development

Table 5 shows the estimated value for an AF of SWP water based on estimates of the value of water during different water year types from the Central Coast Water Management Strategies Report [7]. The estimated value of water varies significantly depending on the hydrologic conditions and the timing for when that water might be sold impacts the amount of revenue or cost recovery the City could potentially receive through selling excess water during periods of surplus.

Table 5. Estimated Water Value by Year Type

Year Type	Estimated Value (\$/AF)
Wet year	\$200
Normal Year	\$500 ²
Below Normal Year	\$1,000
Dry Year	\$1,500
Critical Year	\$2,000

²For the cost recovery calculations, \$500 per AF was selected as a starting point for evaluating the potential value of surplus SWP. The actual value of the water would likely depend on hydrologic conditions and the demand for water at the time of the sale.

Water Supply Scenarios

The Supply Model was utilized to evaluate five water supply and demand scenarios to assist the City in understanding how its new recycled water resources and reduced access to SLOFCWCD “Unsubscribed Allocation” could impact its future water supply availability. The scenarios included in this Technical Memorandum are not intended to be comprehensive of all the options the City has for utilizing its new recycled water resource but were developed as a starting point to assist the City in better understanding the reliability of its current and future water supply portfolio and in developing water supply management strategies to adapt changing water supply conditions. The scenarios in this Technical Memorandum, include Current Demand without Recycled Water, Current Demand with Limited IPR Recycled Water, Current Demand with Limited IPR/NPR Recycled Water, Current Demand with Continuous IPR/NPR Recycled Water, Mid-Buildout Demand with Limited Recycled Water, and Buildout Demand with Limited Recycled Water.

Current Demand without Recycled Water Scenario

This scenario simulates how the City’s current water supply portfolio is anticipated to perform over the next 25 years with current demand assumptions and a repeat of the last 25 years of hydrologic conditions with anticipated climate change impacts. The City’s current water supply portfolio and respective supply amounts for this scenario are shown in Table 6 below. A graphical representation of the scenario can be seen in Figure 4, and it illustrates whether or not it is anticipated that the City’s current water supply portfolio, which includes SWP water, SWP stored water, and Morro Basin groundwater, is able to meet current water demands under varying hydrologic conditions.

Table 6: Current Demand without Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)	Water Demand	Demand (AFY)
SWP WSA	1,313	Current	1,200
SWP Drought Buffer	2,290		
Morro Basin Groundwater	581		
IPR Recycled Water	0		

Water Supply Reliability Results

For the Current Demand without Recycled Water Scenario, the Supply Model (Figure 4) anticipates a deficit occurring in year 24 if historic hydrology is repeated. The deficit occurs in the third year of a historic drought, like the one experienced from 2020 to 2022 where the SWP had a 20% Annual Allocation followed by two consecutive 5% allocations. In this scenario, consistent with what occurred during this drought, the City did not have sufficient SWP water to meet demands during the third year of the drought. In 2022, the City, along with many other SWP subcontractors, had to rely upon SLOFCWCD “Unsubscribed Allocation” SWP and Stored SWP water to provide water to its customers. Given that SLOFCWCD “Unsubscribed Allocation” SWP water may not be available for SWP subcontractor use in the future, it is prudent that the City improve the reliability of its water supply portfolio to be able to better provide water during extended drought conditions.

Supply Portfolio Costs

Estimates of the fixed and variable costs for the City to operate with its current water supply portfolio were developed utilizing the unit costs described in the Water Cost/Value Assumptions section of the TM. The estimates of fixed costs for the Current Demand without Recycled Water scenario over the 25-year model period are shown in Table 7 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 8. It should be noted that due to the deficit in water supply availability, the variable costs in this scenario are artificially lower than other scenarios that do not include a deficit.

Table 7: Fixed Cost calculations for the Current Demand without Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 8: Variable Cost Calculations for the Current Demand without Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	22,697	\$300	\$6,809,052
Stored SWP Water Utilized	3,935	\$300	\$1,180,556
Morro Basin Groundwater	2,836	\$780	\$2,210,714
Total	29,468		\$10,200,321

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to spills at San Luis Reservoir over the 25-year modeled period. In the future, if excess SWP water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City's water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 9.

Table 9: Cost Recovery Calculations for the Current Demand without Recycled Water Scenario

Total Variable Cost (\$)	\$10,200,321
Total SWP Lost/Spilled (AF)	16,571
Estimated Value of SWP Water (\$/AF)	\$500
Total Potential Value of SWP Lost/Spilled (\$)	\$8,285,380
Potential Net Variable Costs (\$)	\$1,914,941

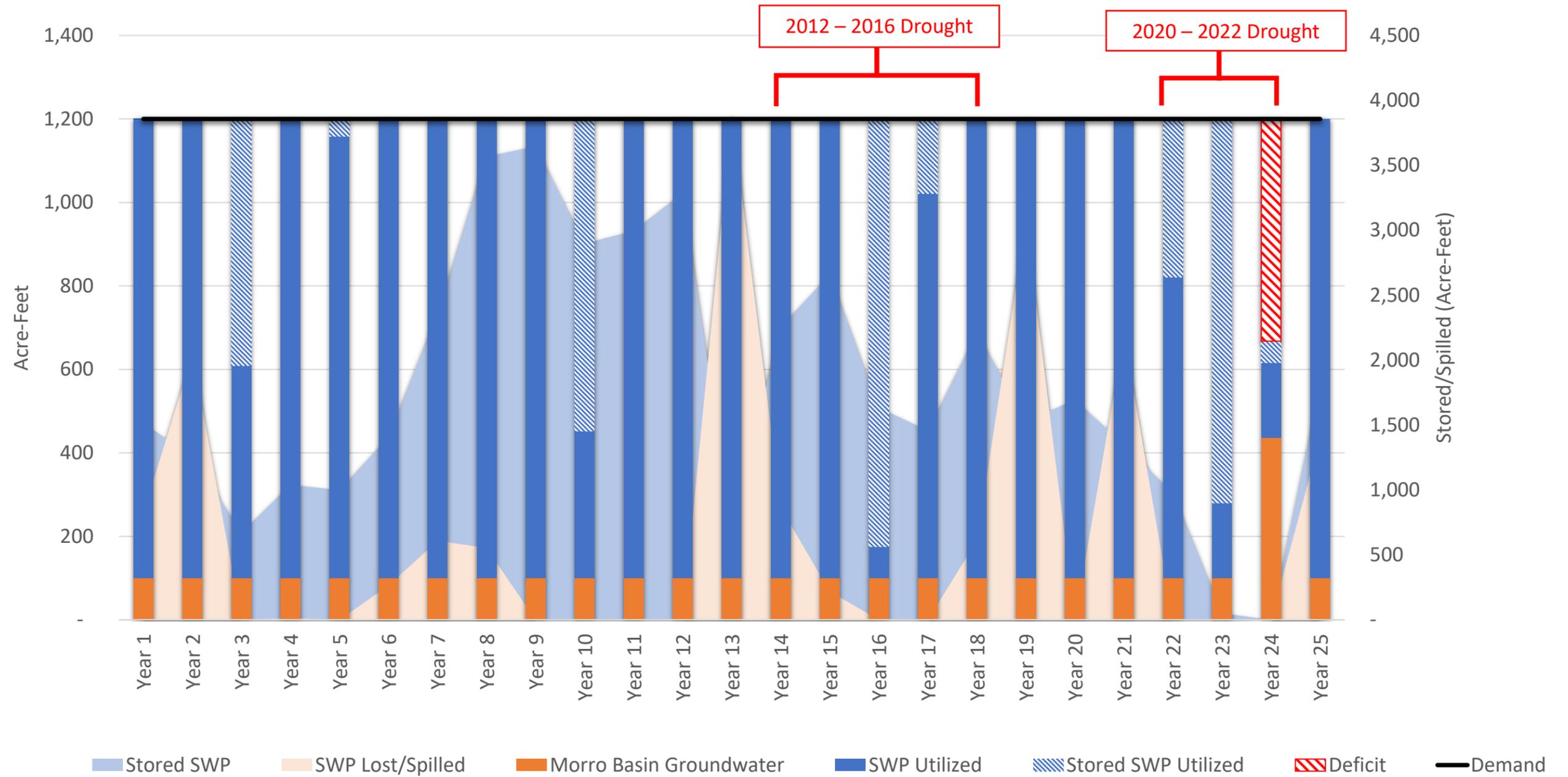


Figure 4: Current Demand without Recycled Water Scenario

Current Demand with Limited IPR Recycled Water Scenario

This scenario simulates how the City’s water supply portfolio, with implementation of an initial phase of the City’s IPR Program, is anticipated to perform over the next 25 years. The City’s water supply portfolio and respective supply amounts for this scenario are included in Table 10 and a graphical representation of this scenario is shown in Figure 5 below.

In this scenario, it is assumed the City initiates operation of its IPR Recycled Water Program during years when the SWP Annual Allocations are less than 25%. By utilizing its IPR Recycled Water at the beginning of a potential multi-year drought, the City is able to avoid a water supply deficit by preserving its SWP water for potential future dry years and associated low SWP Annual Allocations. This scenario is referred to as “limited” because IPR recycled water is only utilized during drought or low SWP Allocation years. For this scenario it is assumed that the City would construct sufficient injection well capacity to inject approximately 392 AFY of IPR recycled water into the Morro Basin and that water would be extracted for use in the City’s drinking water system.

Table 10: Current Demand with Limited IPR Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)
SWP WSA	1,313
SWP Drought Buffer	2,290
Morro Basin Groundwater	581
IPR	392
IPR Initiation Threshold	25%

Water Demand	Demand (AFY)
Current	1,200

Water Supply Reliability Results

For the Current Demand with Limited IPR Recycled Water Scenario, the Supply Model anticipates that the City will have sufficient water supplies available to meet demands in all modeled years. This is achieved by utilizing its IPR Recycled Water supply during years where SWP allocations are less than 25% to preserve its SWP and Stored SWP water for potential future extended drought years.

Supply Portfolio Costs

The estimates of fixed costs for the Current Water Supply Scenario with Limited IPR Recycled Water over the 25-year model period are shown in Table 11 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 12.

Table 11: Fixed Cost Calculations for the Current Demand with Limited IPR Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 12: Variable Cost Calculations for the Current Demand with Limited IPR Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	22,684	\$300	\$6,805,276
Stored SWP Water Utilized	2,464	\$300	\$739,147
Morro Basin Groundwater	2,500	\$780	\$1,948,967
IPR Recycled Water	2,352	\$574	\$1,350,005
Total	30,000		\$10,843,395

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to spills at San Luis Reservoir over the 25-year modeled period. In the future, if excess SWP water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City’s water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 13.

Table 13: Cost Recovery Calculations for the Current Demand with Limited IPR Recycled Water Scenario

Total Variable Cost (\$)	\$10,843,394
Total SWP Lost/Spilled (AF)	\$18,055
Estimated Cost of SWP Water (\$/AF)	\$500
Total Potential Value of Lost/Spilled (\$/AF)	\$9,027,355
Potential Net Variable Costs (\$)	\$1,816,040

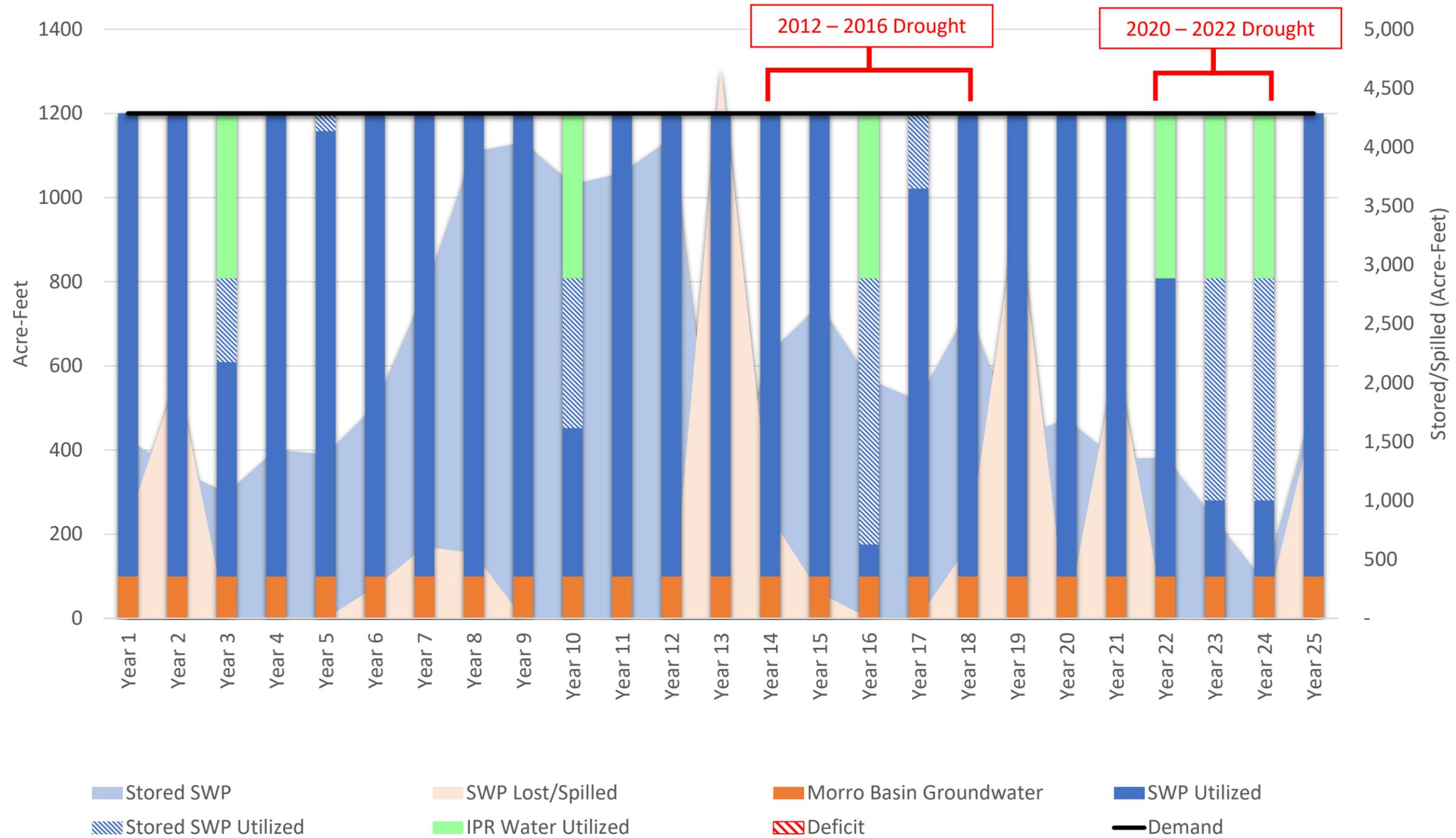


Figure 5: Current Demand with Limited IPR Recycled Water Scenario

Current Demand with Limited IPR/NPR Recycled Water Scenario

This scenario simulates how the City’s current water supply portfolio, with implementation of an initial phase of the City’s IPR and NPR Program, is anticipated to perform over the next 25 years. This scenario includes the same assumptions as the Current Demand with Limited IPR Recycled Water Scenario and additionally includes the use of 60 AFY NPR Recycled water every year to reduce demand for potable water. This scenario is referred to as “limited” because IPR recycled water is only utilized during drought or low SWP Allocation years. The City’s water supply portfolio and respective supply amounts for this scenario are included in Table 14 and a graphical representation of this scenario is shown in Figure 6 below.

Table 14: Current Demand with Limited IPR/NPR Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)
SWP WSA	1,313
SWP Drought Buffer	2,290
Morro Basin Groundwater	581
IPR Recycled Water	392
NPR Recycled Water	60
IPR Initiation Threshold	25%

Water Demand	Demand (AFY)
Current	1,200

Water Supply Reliability Results

For the Current Demand with Limited IPR/NPR Recycled Water Scenario, the Supply Model anticipates that the City will have sufficient water supplies available to meet demands in all modeled years. This is achieved by utilizing NPR recycled water to reduce total potable water demands and IPR Recycled water during years where SWP allocations are less than 25% to preserve its SWP and stored SWP supplies for potential future extended drought years.

Supply Portfolio Costs

The estimates of fixed costs for the Current Water Supply Scenario with Limited IPR/NPR Recycled Water over the 25-year model period are shown in Table 15 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 16.

Table 15: Fixed Cost Calculations for the Current Demand with Limited IPR/NPR Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 16: Variable Cost Calculations for the Current Demand with Limited IPR/NPR Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	21,586	\$300	\$6,475,888
Stored SWP Water Utilized	2,062	\$300	\$618,535
Morro Basin Groundwater	2,500	\$780	\$1,948,967
IPR Recycled Water	2,352	\$574	\$1,350,005
NPR Recycled Water	1,500	\$539	\$808,500
Total	30,000		\$11,201,895

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to SWP spills at San Luis Reservoir over the 25-year modeled period. In the future, if excess SWP water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City’s water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 17.

For the cost recovery analysis, it was assumed that the NPR recycled water could be sold at a cost equivalent to the cost to produce and deliver the water. Therefore, an additional cost recovery opportunity was added to the Potential Net Variable Cost calculation. Other potential uses for NPR recycled water (e.g. Morro Bay Golf Course, agriculture uses, other City Park facilities, etc.) could further reduce potable water demands and provide additional cost recovery opportunities.

Table 17: Cost Recovery Calculations for the Current Demand with Limited IPR/NPR Recycled Water Scenario

Total Variable Cost (\$)	\$11,201,894
Total SWP Water Lost/Spilled (AF)	20,340
Estimated Cost of SWP Water (\$/AF)	\$500
Total Potential Value of SWP Water Lost/Spilled (\$/AF)	\$10,169,899
Total NPR Recycled Water Produced (AF)	1,500
Potential Value of NPR Recycled Water (\$)	\$808,500
Potential Net Variable Costs (\$)	\$223,496

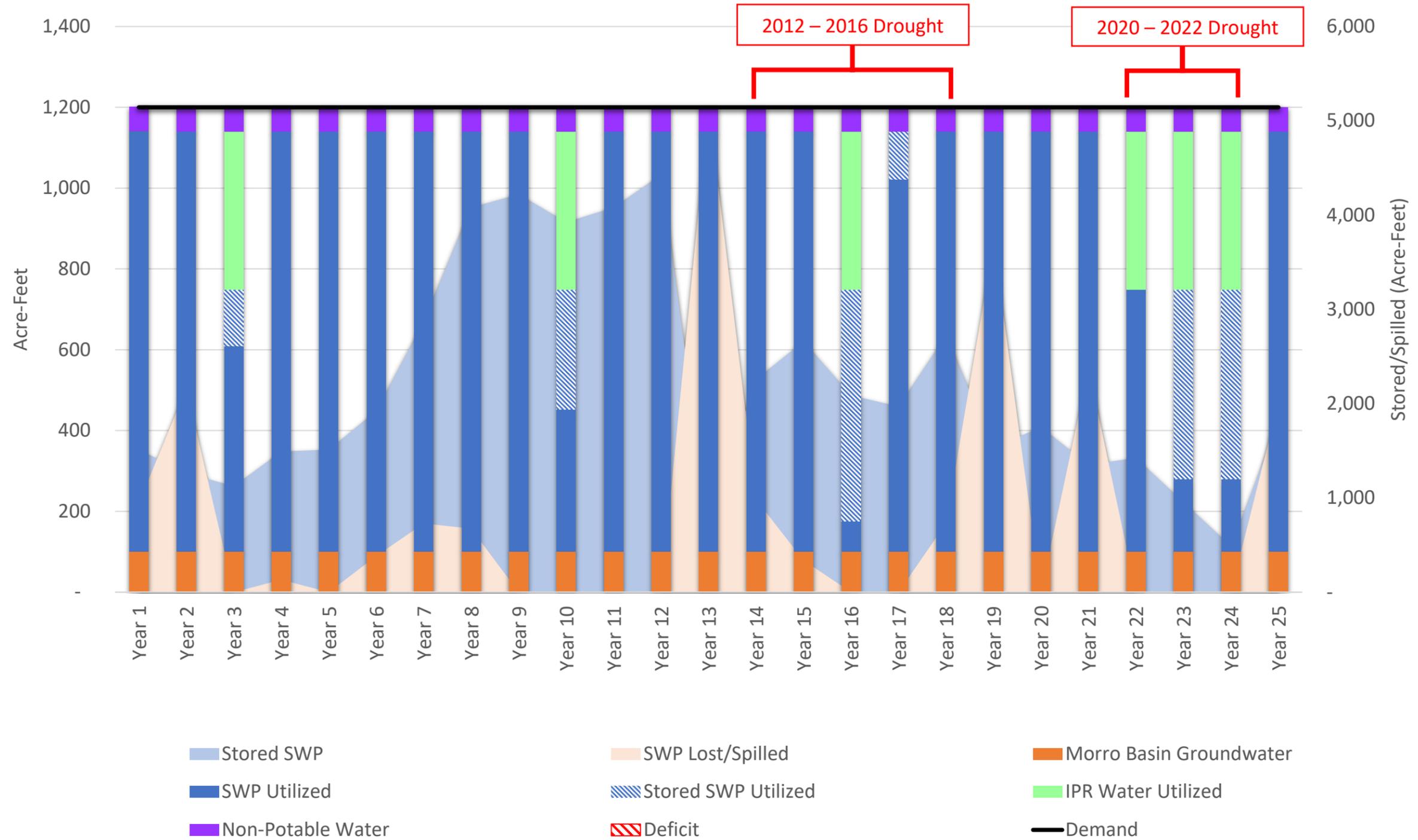


Figure 6: Current Demand with Limited IPR/NPR Recycled Water Scenario

Current Demand with Continuous IPR/NPR Recycled Water Scenario

This scenario simulates how the City’s current water supply portfolio, with implementation of an initial phase of the City’s IPR and NPR Program, is anticipated to perform over the next 25 years with continuous operation of the IPR Program. This scenario assumes the IPR initiation threshold is at 100% instead of 25% and the IPR system is used every year. Additionally, this scenario includes the use of 60 AFY NPR recycled water every year to reduce demand for potable water. This scenario is referred to as “continuous” because IPR recycled water is utilized for groundwater recharge every year instead of only during drought or low SWP Allocation years. The City’s current water supply portfolio and respective supply amounts for this scenario are shown in Table 18 below. A graphical representation of this scenario is shown in Figure 7 below.

Table 18: Current Demand with Continuous IPR/NPR Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)
SWP WSA	1,313
SWP Drought Buffer	2,290
Morro Basin Groundwater	581
IPR Recycled Water	392
NPR Recycled Water	60
IPR Initiation Threshold	100%

Water Demand	Demand (AFY)
Current	1,200

Water Supply Reliability Results

For the Current Demand with Continuous IPR/NPR Recycled Water Scenario, the Supply Model anticipates that the City will have sufficient water supplies available to meet demands in all modeled years. This is achieved by utilizing NPR Recycled water to reduce total potable water demands and IPR Recycled water every year to preserve its SWP and stored SWP supplies for potential future extended drought years.

Supply Portfolio Costs

The estimates of fixed costs for the Current Demand with Continuous IPR/NPR Recycled Water Scenario over the 25-year model period are shown in Table 19 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 20.

Table 19: Fixed Cost Calculations for the Current Demand with Continuous IPR/NPR Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 20: Variable Cost Calculations for the Current Demand with Continuous IPR/NPR Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	14,257	\$300	\$4,227,104
Stored SWP Water Utilized	1,943	\$300	\$582,990
Morro Basin Groundwater	2,500	\$780	\$1,948,967
IPR Recycled Water	9,800	\$574	\$5,652,020
NPR Recycled Water	1,500	\$539	\$808,500
Total	30,000		\$13,242,581

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to SWP spills at San Luis Reservoir over the 25-year modeled period. In the future, if excess SWP water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City’s water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 21.

Table 21: Cost Recovery Calculations for the Current Demand with Continuous IPR/NPR Recycled Water Scenario

Total Variable Cost (\$)	\$13,242,581
Total SWP Water Lost/Spilled (AF)	34,247
Estimated Cost of SWP Water (\$/AF)	\$500
Total Potential Value of SWP Water Lost/Spilled (\$/AF)	\$17,123,550
Total NPR Recycled Water Produced (AF)	1,500
Potential Value of NPR Recycled Water (\$)	\$808,500
Potential Net Variable Costs (\$)	-\$4,689,469

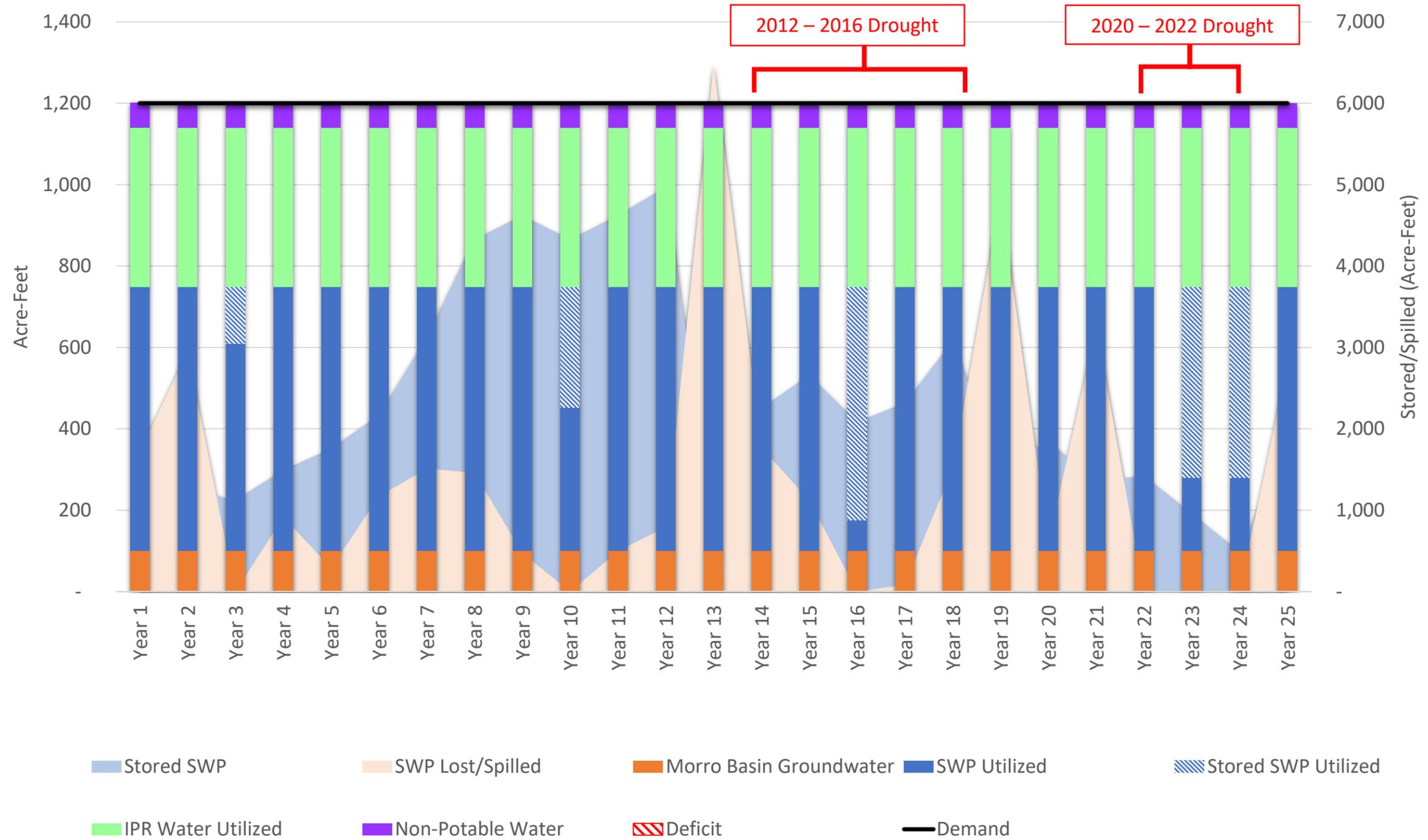


Figure 7: Current Demand with Continuous IPR/NPR Recycled Water

Mid-Buildout Demand with Limited Recycled Water Scenario

The Mid-Buildout Demand with Limited Recycled Water Scenario simulates how the City’s water supply portfolio, including IPR and NPR Recycled water, is anticipated to perform over the next 25 years under future demand conditions associated with Mid-Buildout of the City. This scenario is referred to as “limited” because IPR Recycled water is only utilized during drought or low SWP Allocation years. The City’s water supply portfolio and demand assumptions for this scenario are included in Table 22 and a graphical representation of the scenario is shown in Figure 8 below.

Table 22: Mid-Buildout Demand with Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)	Water Demand	Demand (AFY)
SWP WSA	1,313	Mid-Buildout	1,325
SWP Drought Buffer	2,290		
Morro Basin Groundwater	581		
IPR	392		
NPR	60		
IPR Initiation Threshold	25%		

Water Supply Reliability Results

For the Mid-Buildout Demand with Limited Recycled Water Scenario, the Supply Model anticipates that the City will have sufficient water supplies available to meet demands in all modeled years. This is achieved by utilizing NPR Recycled water to reduce total potable water demands and IPR Recycled water during years where SWP allocations are less than 25% to preserve its SWP and stored SWP supplies for potential future extended drought years.

Supply Portfolio Cost

The estimates of fixed costs for the Mid-Buildout Water Supply over the 25-year model period are shown in Table 23 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 24.

Table 23: Fixed Cost Calculations for the Mid-Buildout Demand with Limited Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 24: Variable Cost Calculations for Mid-Buildout Demand with Limited Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	23,802	\$300	\$7,140,552
Stored SWP Water Utilized	2,712	\$300	\$891,371
Morro Basin Groundwater Utilized	2,500	\$780	\$1,948,967
IPR Recycled Water	2,611	\$574	\$1,350,005
NPR Recycled Water	1,500	\$539	\$808,500
Total	31,625		\$12,139,395

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to spills at San Luis Reservoir over the 25-year period. In the future, if excess water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City’s water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 25.

Table 25: Cost Recovery Calculations for the Mid-Buildout Demand with Limited Recycled Water Scenario

Total Variable Cost (\$)	\$12,139,395
Total SWP Lost/Spilled (AF)	15,643
Estimated Cost of SWP Water (\$/AF)	\$500
Total Potential Value of Lost/Spilled (\$/AF)	\$7,821,639
Total NPR Recycled Water Produced (AF)	1,500
Estimated Cost of NPR Recycled Water (\$)	\$539
Total Potential Value of NPR Recycled Water (\$)	\$808,500
Potential Net Variable Costs (\$)	\$3,509,255

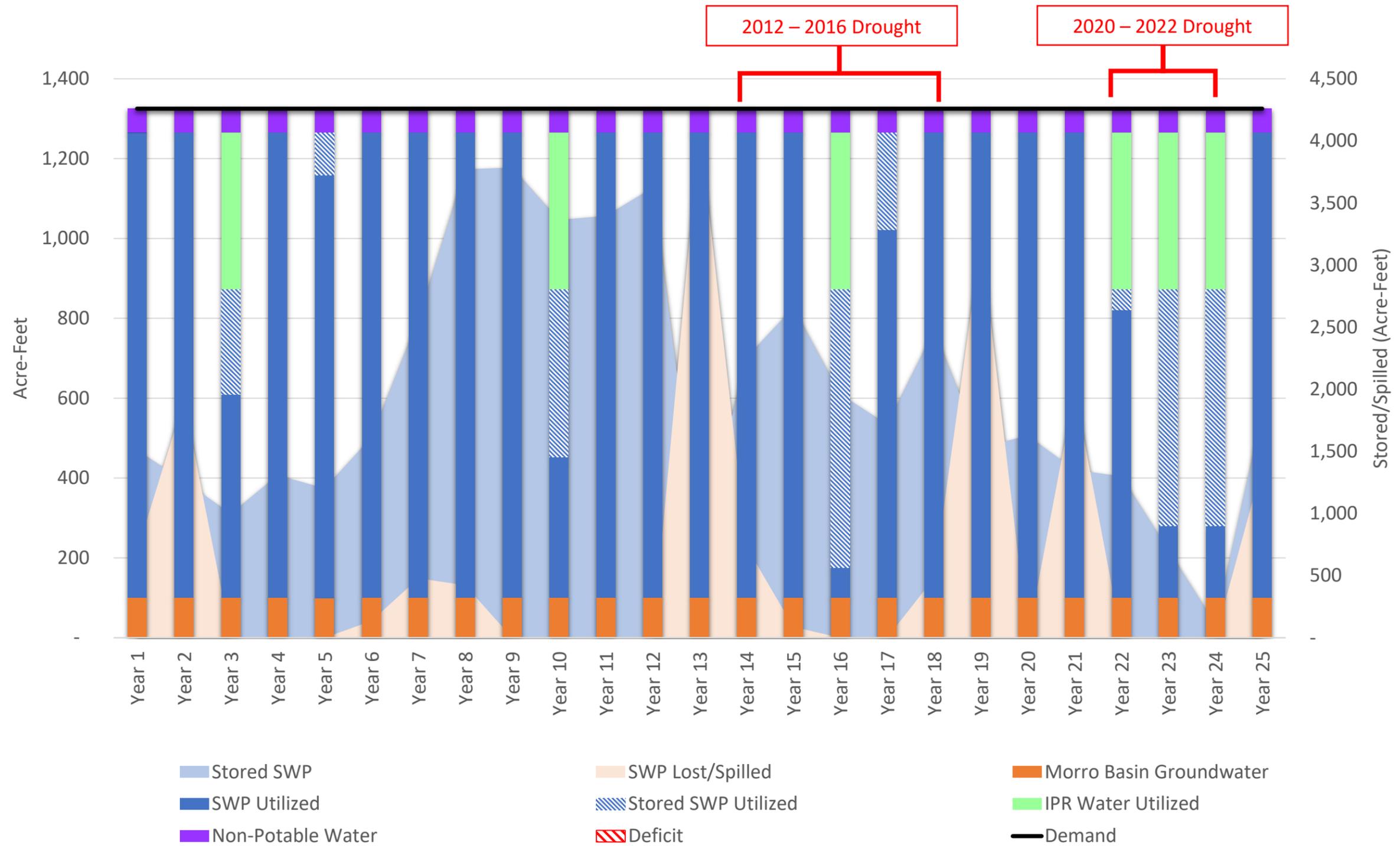


Figure 8: Mid-Buildout Demand with Limited Recycled Water Scenario

Buildout Demand with Limited Recycled Water Scenario

The Buildout Demand with Limited Recycled Water Scenario simulates how the City’s water supply portfolio, including IPR and NPR Recycled water, is anticipated to perform over the next 25 years under future demand conditions associated with full Buildout of the City. This scenario is referred to as “limited” because IPR Recycled water is only utilized during drought or low SWP Allocation years. The City’s water supply portfolio and demand assumptions for this scenario are included in Table 26 and a graphical representation of the scenario is shown in Figure 9 below.

Table 26: Buildout Demand with Limited Recycled Water Scenario Assumptions

Supply Source	Allocation/Supply Assumptions (AFY)	Water Demand	Demand (AFY)
SWP WSA	1,313	Buildout	1,445
SWP Drought Buffer	2,290		
Morro Basin Groundwater	581		
IPR Recycled Water	392		
NPR Recycled Water	60		
IPR Initiation Threshold	25%		

Water Supply Reliability Results

For the Buildout Demand with Limited Recycled Water Scenario, the Supply Model anticipates that the City will have sufficient water supplies available to meet demands in all modeled years. This is achieved by utilizing NPR Recycled water to reduce total potable water demands and IPR Recycled water during years where SWP allocations are less than 25% to preserve its SWP and stored SWP supplies for potential future extended drought years.

Supply Portfolio Cost

The estimates of fixed costs for the Buildout Demand with Limited Recycled Water Scenario over the 25-year model period are shown in Table 27 below and the variable cost, based on how much of each water supply is utilized in this scenario, are shown in Table 28.

Table 27: Fixed Cost Calculations for the Buildout Demand with Limited Recycled Water Scenario

	Allocation	Fixed Costs (\$/AF)	Annual Costs (\$/yr)	Model Time Frame (yr)	Total Cost (\$)
Water Service Amount	1,313	\$1,100	\$1,444,300	25	\$36,107,500
Drought Buffer	2,290	\$205	\$469,450	25	\$11,736,250
Total Fixed Costs					\$47,843,750

Table 28: Variable Cost Calculations for the Buildout Demand with Limited Recycled Water Scenario

	Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Cost (\$)
Annual Allocated SWP Water Utilized	25,623	\$300	\$7,686,921
Stored SWP Water Utilized	3,903	\$300	\$1,170,898
Morro Basin Groundwater Utilized	2,747	\$780	\$2,141,235
IPR Recycled Water	2,352	\$574	\$1,350,005
NPR Recycled Water	1,500	\$539	\$808,500
Total	34,625		\$13,157,859

Spilled/Lost Water Cost Recovery Opportunities

A cost recovery analysis was performed to estimate the potential value of the SWP water that is lost because it is not eligible for storage or due to spills at San Luis Reservoir over the 25-year period. In the future, if excess water can be sold or stored elsewhere, it can be utilized to offset operational costs for the City’s water system. Estimates of the total variable costs and potential cost recovery opportunities for this scenario over the 25-year time frame are shown in Table 29.

Table 29: Cost Recovery Calculations for the Buildout Demand with Limited Recycled Water Scenario

Total Variable Cost (\$)	\$13,157,859
Total SWP Lost/Spilled (AF)	11,579
Estimated Cost of SWP Water (\$/AF)	\$500
Total Potential Value of Lost/Spilled (\$/AF)	\$5,789,350
Total NPR Recycled Water Produced (AF)	1,500
Estimated Cost of NPR Recycled Water (\$/AF)	\$539
Total Potential Value of NPR Recycled Water (\$)	\$808,500
Potential Net Variable Costs (\$)	\$4,980,850

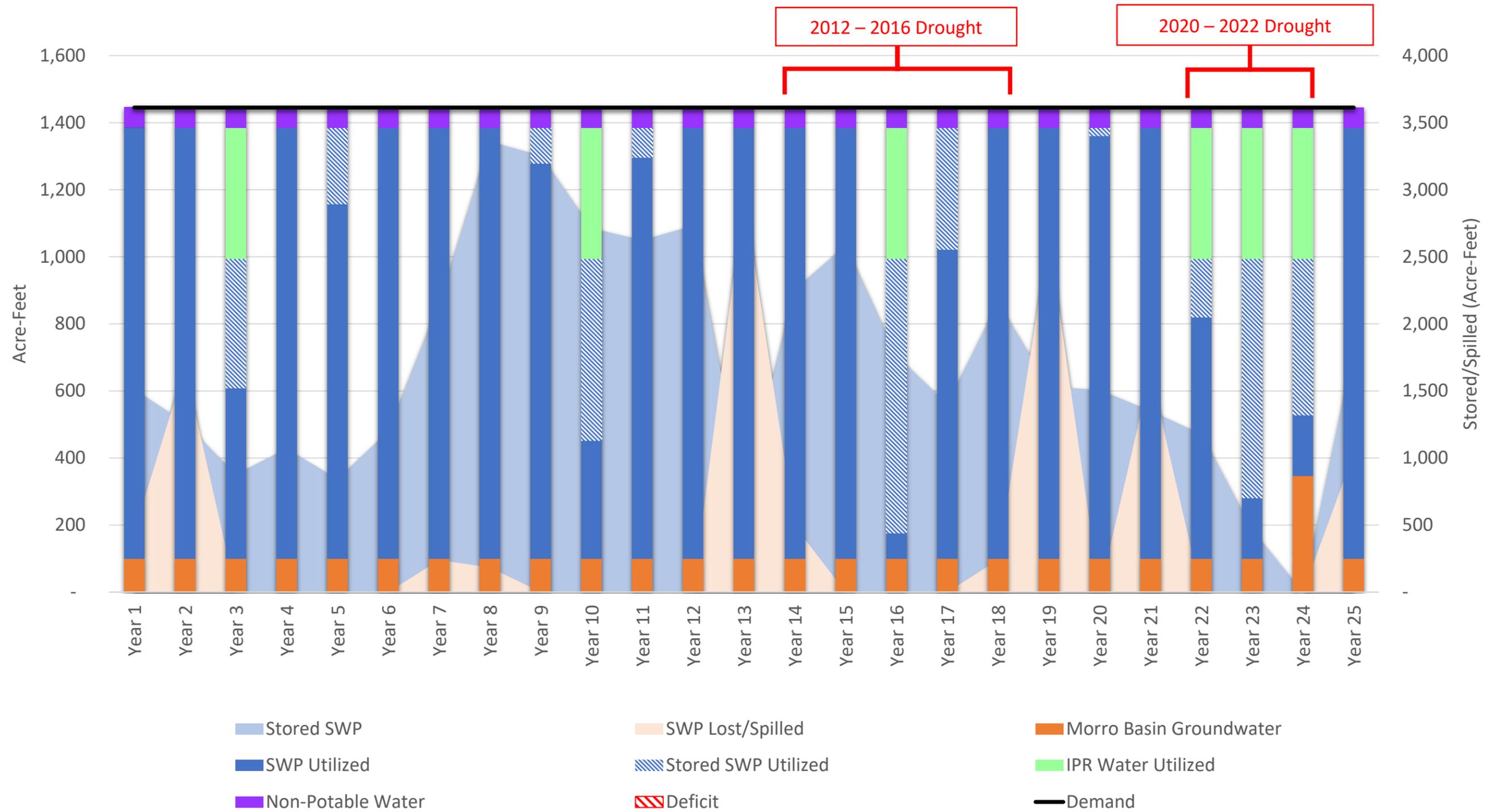


Figure 9: Buildout Demand with Limited Recycled Water Scenario

Results Comparison

Water Supply Reliability Comparison

Based on the results of the Scenario Analysis, it is anticipated that the City can reliably supply water over the 25-year period evaluated in the Supply Model under current and future demands through use of its new IPR and NPR Recycled water resources. Without the IPR and NPR Recycled water resources, the City's Water Supply portfolio is vulnerable to supply deficits during extended droughts under current demands and these conditions will be exacerbated with higher water demands associated with further build-out of the City.

Variable Cost and Cost Recovery Comparison

To assist in comparing the results of the different Current Demand Scenarios the following tables were developed:

Table 30 summarizes the variable costs; Table 31 summaries the potential cost recovery opportunities. The fixed costs for each of the scenarios were not included because they were assumed to be the same for each of the scenarios.

Based on review of the scenario results it's observed that the IPR Recycled water and IPR/NPR Recycled water scenarios have higher productions costs due to the increased variable cost associated with recycled water production compared to SWP water. It should be noted, however, that the cost estimate for the Current Demand without IPR Recycled Water Scenario is artificially lower than the other Recycled water scenarios because of the deficit in water supply availability that occurs in Year 24 of the Supply Model. To make up for this deficit without recycled water, the City would have to purchase water from an outside source during a period of high demand and scarcity or purchase additional drought buffer that would cost an additional ~\$10M in fixed costs over the 25-Year period evaluated in the Supply Model.

Review of the results of the potential cost recovery calculations indicate that the IPR Recycled water and IPR/NPR Recycled water scenarios could have the potential for a lower Net Variable cost due to the increased amount of unused SWP water, see Figure 10 below. In the Current Demand with Continuous IPR/NPR Recycled Water Scenario the cost recovery opportunities are significantly higher than the Limited IPR/NPR Recycled Water Scenarios and under the \$500/AF value assumption could provide the potential for a negative Net Variable cost. Therefore, if the City can find opportunities to sell its unused SWP Water, it could potentially reduce the overall operating costs for its water system, but this is dependent upon the value of the water that the City is able to obtain for its excess SWP supplies.

Table 30: Variable Costs Comparison for the Current Demand Scenarios

		Total Supply Utilized (AF)	Estimated Cost (\$/AF)	Total Costs (\$)
Current Demand w/o Recycled Water	Annual Allocated SWP Water Utilized	22,697	\$300	\$6,809,052
	Stored SWP Water Utilized	3,935	\$300	\$1,180,556
	Morro Basin Groundwater	2,836	\$780	\$2,210,714
	Total	29,468		\$10,200,321
Current Demand w/ Limited IPR Recycled Water	Annual Allocated SWP Water Utilized	22,684	\$300	\$6,805,276
	Stored SWP Water Utilized	2,464	\$300	\$739,147
	Morro Basin Groundwater	2,500	\$780	\$1,948,967
	IPR Recycled Water	2,352	\$574	\$1,350,005
Total	30,000		\$10,843,395	
Current Demand w/ Limited IPR/NPR Recycled Water	Annual Allocated SWP Water Utilized	21,586	\$300	\$6,475,888
	Stored SWP Water Utilized	2,062	\$300	\$618,535
	Morro Basin Groundwater	2,500	\$780	\$1,948,967
	IPR Recycled Water	2,352	\$574	\$1,350,005
	NPR Recycled Water	1,500	\$539	\$808,500
	Total	30,000		\$11,201,895
Current Demand w/ Continuous IPR/NPR Recycled Water	Annual Allocated SWP Water Utilized	14,257	\$300	\$4,227,104
	Stored SWP Water Utilized	1,943	\$300	\$582,990
	Morro Basin Groundwater	2,500	\$780	\$1,948,967
	IPR Recycled Water	9,800	\$574	\$5,625,020
	NPR Recycled Water	1,500	\$539	\$808,500
	Total	30,000		\$13,242,581

Table 31: Net Variable Costs Comparison for the Current Demand Scenarios

		Total Supply (AF)	Estimate Cost (\$/AF)	Total Cost (\$)
Current Demand w/o Recycled Water	Variable Costs	29,468	-	\$10,200,321
	Stored SWP Water Lost/Spilled	16,571	\$500	\$8,285,380
	Potential Net Variable Cost (\$)			\$1,914,941
Current Demand w/ Limited IPR Recycled Water	Variable Costs	30,000	-	\$10,843,395
	Stored SWP Water Lost/Spilled	18,055	\$500	\$9,027,355
	Potential Net Variable Cost (\$)			\$1,816,040
Current Demand w/ Limited IPR/NPR Recycled Water	Variable Costs	30,000	-	\$11,201,895
	Stored SWP Water Lost/Spilled	20,340	\$500	\$10,169,899
	NPR Recycled Water	1,500	\$539	\$808,500
	Potential Net Variable Cost (\$)			\$223,496
Current Demand w/ Continuous IPR/NPR Recycled Water	Variable Costs	30,000	-	\$13,242,581
	Stored SWP Water Lost/Spilled	33,463	\$500	\$17,123,550
	NPR Recycled Water	1,500	\$539	\$808,500
	Potential Net Variable Cost (\$)			-\$4,689,469

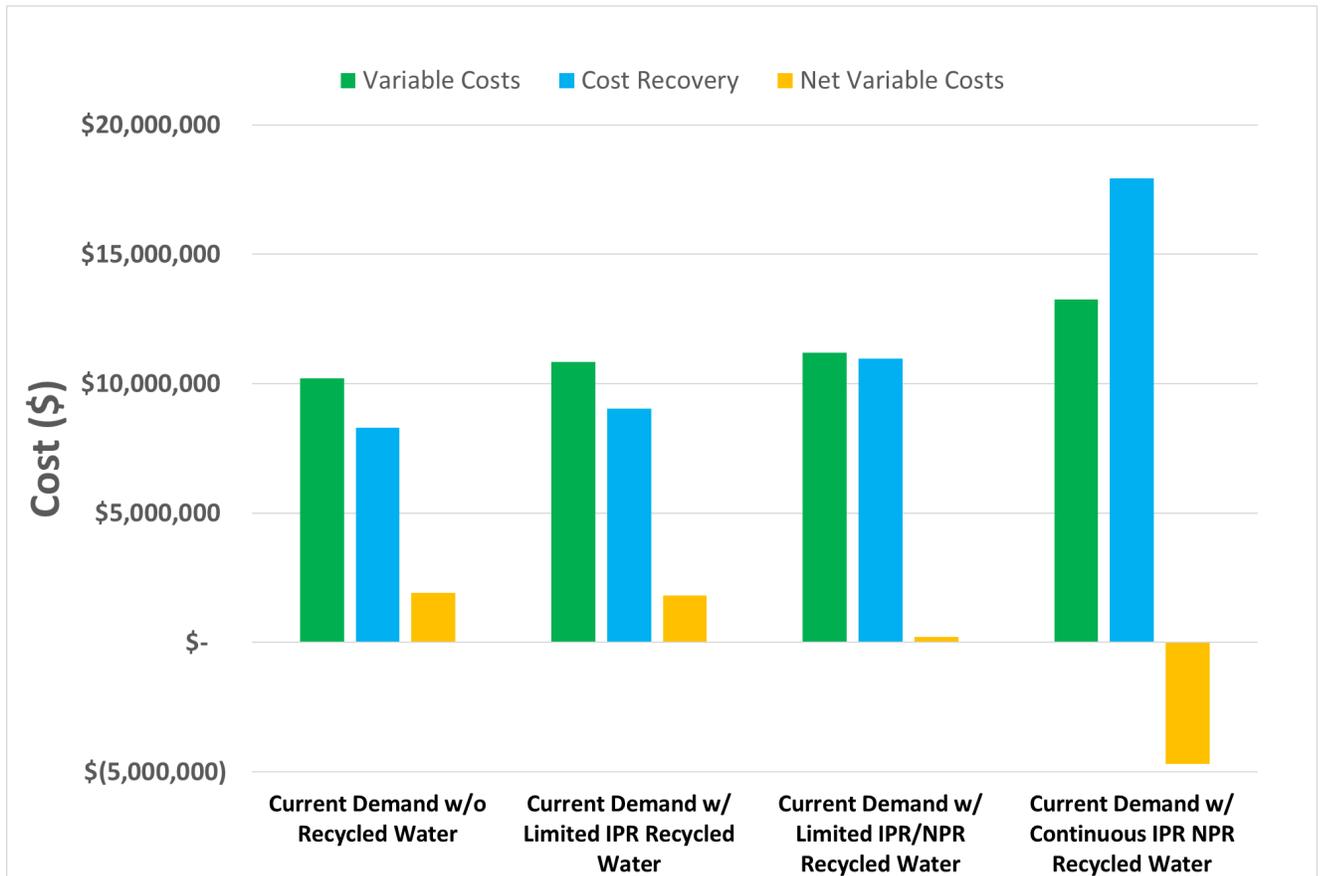


Figure 10: Cost Recovery Comparison Analysis

Conclusions and Recommendations

Based on the results of the Water Supply Evaluation, the following conclusions and recommendations were developed.

Conclusions

The City’s current water supply portfolio is vulnerable to extended drought conditions (e.g. drought from 2020 to 2022). Implementation of an initial phase of a Recycled Water Program, including IPR and NPR Recycled water use is anticipated to address this water supply deficiency under current and potential future demands. By utilizing NPR Recycled water to reduce potable water demands and IPR Recycled water during low SWP allocation years (i.e. less than 25%) to preserve its SWP and Stored SWP water supplies for potential extended drought years, it is predicted that the City can reliably meet its water supply needs under current and future buildout demand conditions. As the City’s demands increase with additional development it may be necessary to increase the capacity of the IPR program to increase the volume of drought proof water that the City has available during future extended drought conditions.

Recommendations

The following recommendations are provided to assist the City in developing and maintaining a reliable cost-effective future water supply portfolio for current and future drought conditions.

1. Implement an initial phase (Phase 1) of the Recycled Water Program capable of producing ~415 AFY of IPR and NPR Recycled water
2. Develop an implementation plan with criteria for when to implement future phases of the Recycled Water Program as City water demands increase or additional cost recovery opportunities are identified.
3. Investigate water storage and cost recovery opportunities (e.g. exchanges or sales agreements) for the City's excess SWP supplies that are undeliverable or lost to spills at San Luis Reservoir.

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Appendix 1: Variable and Fixed Costs Derivations

Variable Cost Derivations

The variable costs for the City’s different water supply sources are outlined in Table 1 and Table 2 below.

Table 1: SWP Variable Costs

Water Type	Variable Costs (\$/AF)
SWP Water Service Amount (WSA)	\$300
SWP Drought Buffer	\$300
Morro Basin Groundwater	\$708
IPR Recycled Water	\$574
NPR Recycled Water	\$539

Table 2: Recycled Water Variable Cost Components

	Cost (\$/AF)	Source
Groundwater Pumping Costs	\$35	OneWater Plan Appendix N [1]
BWRO O&M Costs	\$279	OneWater Plan pg. 7-14 [1]
BWRO Energy Costs	\$501	OneWater Plan pg. 7-15 [1]
Costs to Run IPR System	\$539	“30 Year Life Cycle Costs” WRF Improvements Cost Proposal [11]

The groundwater pumping cost estimates, BWRO O&M costs, and BWRO energy costs were based on values established in Morro Bay’s One Water Plan. The SWP WSA and Drought Buffer variable costs are based on input provided by SLOCFWCD Staff. The variable cost estimates do not include operating staff costs. The cost calculations for Morro Basin Groundwater costs, IPR Recycled water costs, and NPR Recycled water costs are shown below. Conveyance costs are not included in the IPR and NPR Recycled water costs because if not utilized for recycled water the wastewater would need to be conveyed to the City’s Outfall for disposal.

$$\begin{aligned}
 \text{Morro Basin Groundwater Costs} &= \text{BWRO O\&M Costs} + \text{BWRO Energy Costs} \\
 &= \$279/\text{AF} + \$501/\text{AF} \\
 &= \$780/\text{AF}
 \end{aligned}$$

$$\begin{aligned}
 \text{IPR Recycled Water Costs} &= \text{Groundwater Pumping Costs} + \text{Cost to Run IPR Treatment System} \\
 &= \$35/\text{AF} + \$539/\text{AF} \\
 &= \$574/\text{AF}
 \end{aligned}$$

$$\text{NPR Recycled Costs} = \text{Cost to Run IPR Treatment System}$$

The IPR Recycled water treatment costs, included in Table 4, were derived from the Reverse Osmosis (RO), Ultraviolet (UV) and Advanced Oxidation electrical and chemical costs from the Filanc/Black & Veatch “30 Year Life Cycle Costs” included in the Design-Build Proposal [11]. Costs to inject the IPR Recycled water into the basin are not included in the calculation because if not utilized for recycled water the wastewater would need to be conveyed to the City’s Outfall for disposal.

Table 4: IPR Treatment System Cost Calculations

	30 Year Costs	Cost Per Year	Cost Per AF
RO	\$4,519,775.00	\$150,659.17	\$259.31
UV	\$1,684,481.00	\$56,149.37	\$96.64
Chem pump, Antiscalant-Ro Feed	\$606,719	\$20,223.97	\$34.81
Chem pump, Hypo-RO Reject	\$100,948	\$3,364.93	\$5.79
Chem Pump, Hypo-RO Feed	\$676,588	\$22,552.93	\$38.82
Chem Pump, Hypo-UVAOP	\$349,371	\$11,645.70	\$20.04
Chem Pump, Hypo-Product Water	\$125,107	\$4,170.23	\$7.18
Chem Pump, Hydrox-RO CIP	\$64,301	\$2,143.37	\$3.69
Chem Pump, Hydrox-Product Water	\$138,674	\$4,622.47	\$7.96
Chem Pump, Citric Acid-RO CIP	\$96,266	\$3,208.87	\$5.52
Contactora, Calcite-Product Waste	\$1,029,788	\$34,326.27	\$59.08
Total	\$9,392,018.00	\$313,067.27	\$539

Fixed Cost Derivations

The fixed costs for the City’s different SWP water supply sources are outlined in Table 5 below.

Table 5: SWP Fixed Costs

Water Type	Fixed Costs (\$/AF)
SWP Water Service Amount (WSA)	\$1,100
SWP Drought Buffer	\$205

The Drought Buffer fixed cost can be found on the January 2023 “Notice to Subcontractors on the District’s Excess (Unsubscribed) Allocation (State Water Project)” from the SLOFCWCD [12]. The WSA fixed cost was derived from SWP cost estimate information included in the OneWater Plan [1].



AGENDA NO: B-2

MEETING DATE: October 18, 2023

Staff Report

TO: Public Works Advisory Board

DATE: October 13, 2023

FROM: Gregory Kwolek, Public Works Director

SUBJECT: Review of Los Osos Community Services District Draft Initial Study and Mitigated Negative Declaration for Pipeline and Intertie Project to Connect to State Water

RECOMMENDATION

Staff recommends the Public Works Advisory Board:

1. Review the Draft Initial Study (IS) and Mitigated Negative Declaration (MND) for the Los Osos Community Services District (LOCSD) Resiliency Intertie Project.
2. Consider developing a response to recommend to the City Council to submit as a comment for the Draft IS and MND by the October 27, 2023, 30-day public comment deadline.

BACKGROUND

LOCSD proposes to supplement its water supply portfolio by connecting its water system directly to state water with a pipeline and intertie project. The proposed pipeline alignment would run down South Bay Boulevard toward Morro Bay from Los Osos to Quintana, where it would then run East just beyond the City of Morro Bay's boundary. The alignment would then run north under Highway 1 and intertie with the Chorro Valley Pipeline outside of the City's boundary. As such, LOCSD aims to purchase state water directly from the San Luis Obispo County Water Conservation and Flood Control District (District), a move which would likely preclude an opportunity for the City of Morro Bay to sell water to the LOCSD.

DISCUSSION

The proposed project raises at least two concerns. The first is whether the Chorro Valley Pipeline has the capacity to supply the LOCSD with state water without impacting Morro Bay's ability to receive its full allocation of 1,313 acre feet per year. The second is what mechanisms the District is considering to ensure LOCSD would pay their fair share for the Chorro Valley Pipeline infrastructure, which was paid for by the City of Morro Bay.

LOCSD is currently in the environmental phase of its pipeline and intertie project, and its recently released Draft IS and MND document is available for review. The LOCSD is accepting questions and public comments on its IS and MND document until 5:00 p.m. on Friday, October 27, 2023 during this 30-day review period.

ATTACHMENTS

1. LOCSD Intertie MND Legal Notice
2. [LOCSD Draft IS and MND](#)
3. Email Correspondence with District April 12, 2023
4. Email Attachment from District August 1, 2023 re: Chorro Valley Pipeline Capacity

Prepared By: GK

Public Works Advisory Board Agenda Packet Page 66 of 73

**LOS OSOS COMMUNITY SERVICES DISTRICT
NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION**

Notice is hereby given that the Los Osos Community Services District will consider adoption of a Mitigated Negative Declaration in accordance with the California Environmental Quality Act for the project described below:

- Project Title:** Los Osos Community Services District Resiliency Intertie Project
- Applicant:** Los Osos Community Services District (LOCSD)
- Project Location:** The intertie would be constructed to the north of the southbound lane of Highway 1 and the proposed pipeline alignment would begin at this location, cross under Highway 1 and extend south toward Quintana Road, west along Quintana Road toward South Bay Boulevard, south along South Bay Boulevard, and would terminate at the LOCSD's basin at the intersection of Santa Ysabel Avenue and South Bay Boulevard; located in public right of way.
- Project Description:** LOCSD, the project applicant, proposes the construction and operation of an intertie to the Chorro Valley Pipeline to provide an alternative source of potable for the LOCSD. The project would involve the construction of an intertie to the Chorro Valley Pipeline and the installation of an approximately 2.5-mile pipeline. The proposed intertie would consist of a vault with piping, meter, valves, and may also consist of a booster pump station that would facilitate a controlled and metered flow of potable water to the LOCSD. It is anticipated that state water could provide up to 200 acre-feet per year (AFY) of water supply.

FINDING

The LOCSD has reviewed the above project in accordance with the California Environmental Quality Act and finds that an Environmental Impact Report need not be prepared because the proposed project will not have a significant effect on the environment, and that a Mitigated Negative Declaration may be approved for this project.

The 30-day public review period for the proposed Mitigated Negative Declaration will commence on September 27, 2023 and will end on October 27, 2023. The Initial Study, which provides the basis for this determination, is available at the LOCSD Office, 2122 9th Street STE 110, Los Osos, California.

The public is invited to provide written comment on the Mitigated Negative Declaration. The appropriateness of the Mitigated Negative Declaration will be reconsidered in light of the comments received.

Questions or comments about the proposed project and the Mitigated Negative Declaration may be directed to Brandi Cummings, contract planner, at (805) 786-2550 or via email to brandi.cummings@swca.com. Comments on the proposed project and Mitigated Negative Declaration may also be mailed to the LOCSD Office, 2122 9th Street STE 110, Los Osos, California 93402 provided that any comments are received no later than 5:00 pm on October 27, 2023.



Brandi Cummings, SWCA Environmental Consultants

Please publish once on: 09/27/2023

Janeen Burlingame

From: Kate Ballantyne <kballantyne@co.slo.ca.us>
Sent: Tuesday, August 1, 2023 9:43 AM
To: Greg Kwolek
Subject: RE: [EXT]Los Osos CSD as a Prospective State Water Subcontractor
Attachments: _Chorro-V-Pipe-Capacity-Design_MW-Memo-970930 (002).pdf

CAUTION: This is an external email. Please take care when clicking links or opening attachments.

Hi Greg-

I'm not sure you were able to open this ever, so here it is as an attachment.

Thanks,

Kate



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From: Greg Kwolek <gkwolek@morrobayca.gov>
Sent: Sunday, July 9, 2023 4:27 PM
To: Kate Ballantyne <kballantyne@co.slo.ca.us>
Cc: John Diodati <jdiodati@co.slo.ca.us>
Subject: Re: [EXT]Los Osos CSD as a Prospective State Water Subcontractor

Thanks Kate, I don't see to have access. Can you resend?

-Greg

On Jun 5, 2023, at 5:07 PM, Kate Ballantyne <kballantyne@co.slo.ca.us> wrote:

CAUTION: This is an external email. Please take care when clicking links or opening attachments.

Kate Ballantyne has shared a OneDrive for Business file with you. To view it, click the link below.

<image00001.png> [Chorro-V-Pipe-Capacity-Design MW-Memo-970930 \(002\).pdf](#)

Hi Greg-

Here's a memo from our files about the capacity in the Chorro Valley line, and details which entities paid for that capacity. If you have any questions after you review it, I'd be happy to discuss- just let me know.

Thanks,

Kate

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Z hevwh## #vz lwhu## #P ds##

From: Greg Kwolek <gkwolek@morrobayca.gov>
Sent: Wednesday, April 12, 2023 5:56 PM
To: Kate Ballantyne <kballantyne@co.slo.ca.us>; John Diodati <jdiodati@co.slo.ca.us>
Subject: [EXT]Los Osos CSD as a Prospective State Water Subcontractor

ATTENTION: This email originated from outside the County's network. Use caution when opening attachments or links.

Hello, I hope you are both doing well. I have a two questions about the prospect of Los Osos CSD becoming a state water subcontractor through the San Luis Obispo County Water Conseration and Flood Control District. Answers to these questions are of interest to the City of Morro Bay because presumably the state water brought to Los Osos CSD would come through the Chorro Valley Pipeline, which also supplies Morro Bay and which Morro Bay paid for.

1. Is there enough "room" in the Chorro Valley Pipeline to supply Morro Bay at full allocation and Los Osos CSD at an acceptable velocity? If so, what would be the maximum amount of water that could go through the pipe in a year? Also if so, please provide documentation that demonstrates this.
2. Morro Bay paid into the capital costs for the Chorro Valley Pipeline. How would the County contemplate Los Osos CSD's participation in the Chorro Valley Pipeline's infrastructure costs, which are already paid for?

Thank you,

Greg

Gregory Kwolek
Director of Public Works
City of Morro Bay
(805) 772-6564
gkwolek@morrobayca.gov

M E M O R A N D U M



MONTGOMERY WATSON

TO: <i>Paul Donnelly</i>	FROM: <i>Linda Tripp</i>
Co. Dept	
PHONE #	PHONE #
FAX #	FAX #

*FILE
CHORRO
PIPELINE*

To: Paul Hilliard/Rick Meeks **Date:** September 30, 1997
From: Linda Tripp *LT* **Reference:** 812.0120/3.1.2
Subject: Chorro Valley Pipeline-Capacity

This memorandum has been prepared in response to your questions yesterday regarding the capacity of the Chorro Valley Pipeline. Attached is a memorandum to Paul Donnelly dated February 13, 1995 that addressed the City of Morro Bay's questions regarding this issue.

As stated in this memorandum, the pipeline capacity is controlled by two factors, the flow velocity and the pipeline pressure. Although the pipeline can tolerate greater velocities, the pipeline, valves, and appurtenances were not designed to tolerate the higher pressures that are associated with the larger flows, and limit the capacity. The memorandum also recommends modifications to the design to increase the capacity, however, during the design, the City of Morro Bay elected to not make the modifications to the pipeline and appurtenance design.

The design capacity of the pipeline is summarized as follows

User	Base Entitlement	Flow (inc. 11% for outages, See *)
California Men's Colony	400 AF/yr	274 gpm
Cuesta College	200 AF/yr	138 gpm
SLO County Operations Center	425 AF/yr	292 gpm
City of Morro Bay	1313 AF/yr	903 gpm
City of Los Osos	600 AF/yr	413 gpm
Total Design Capacity (Ente No 3)	2938 AF/yr	2020 gpm
Design Capacity at CMC TO	1025 AF/yr	720 gpm
Design Capacity to Los Osos TO	1913 AF/yr	1316 gpm
Design Capacity to Morro Bay	1313 AF/yr	903 gpm

* The pipeline capacity was based on an annual flow, and assumed that the Polonio Pass WTP is shut down for 1 month a year based on CCWA Operations predictions.

If you have any questions, or need any additional information, please call me at (510)274-2353.

M E M O R A N D U M



MONTGOMERY WATSON

To: Paul Donnelly **Date:** February 13, 1995
From: Liuda Tripp **Reference:** 812.0120/3.1.2
Subject: Chorro Valley Pipeline Project
 Pipeline Capacity

This memorandum is a response to the request by the City of Morro Bay to estimate the maximum possible capacity of the Chorro Valley Pipeline. On January 18, 1995 at a meeting with the County, the City of Morro Bay, and Montgomery Watson, the City requested information on the additional capacity available, if any, in the Chorro Pipeline.

The Chorro pipeline is currently designed to provide the following base State Water Project (SWP) and Nacimiento entitlements to the users listed below:

User	Base Entitlement (AF/yr)	
California Men's Colony	400	(SWP)
Cuesta College	200	(SWP)
SLO County Opers. Ctr.	425	(SWP)
City of Morro Bay	1313	(SWP)
Los Osos	600	(Nacimiento)

The velocities and flow rates resulting from these base entitlements are shown in Attachment No. 1.

The pipeline's capacity is controlled by two factors: the flow velocity and the pipeline pressure. The maximum velocity in the pipeline is recommended to be a maximum of 10 ft/sec to maintain the integrity of the cement mortar lining and to reduce the potential for surge pressures in the pipeline. The maximum pressure is determined by the head available in the pipeline versus the pipeline and valve material selection and the cost of these facilities.

Velocity: With the current entitlements, the maximum velocity in the pipeline is 5.5 ft/sec. Limiting the velocity to 10 ft./sec., the pipeline capacity could be increased by 1700 AF/yr for a total flow rate of 7.09 cfs. The velocities and the flow rates with the 1700 AF/yr additional capacity are shown in Attachment No. 2.

Pressure: The current head available in the Chorro pipeline is 1444 feet. This head is set by the HGL of the DWR Coastal Branch Aqueduct at the Chorro turnout. The pipeline's head is reduced at a flow control/pressure reducing valve vault (PRV/H-CV vault) located upstream of the turnout for the California Men's Colony on Segment 1. To increase the capacity in the Chorro pipeline, the amount of head loss at the PCV/PRV vault would need to be reduced. With the amount of head available in the pipeline, the capacity could be increased by 1700 AF/yr (the additional capacity available with the velocity limitations), however, the pipeline, valves and

appurtenances would need to be designed for an HGL of 1370 feet. Portions of the pipeline would need to be designed to tolerate pressures as high as 570 psi. The pipeline, valves and appurtenances on Segment 1 downstream of the FCV/PRV vault which have already been purchased, but not installed, have been designed for an HGL of 700 feet.

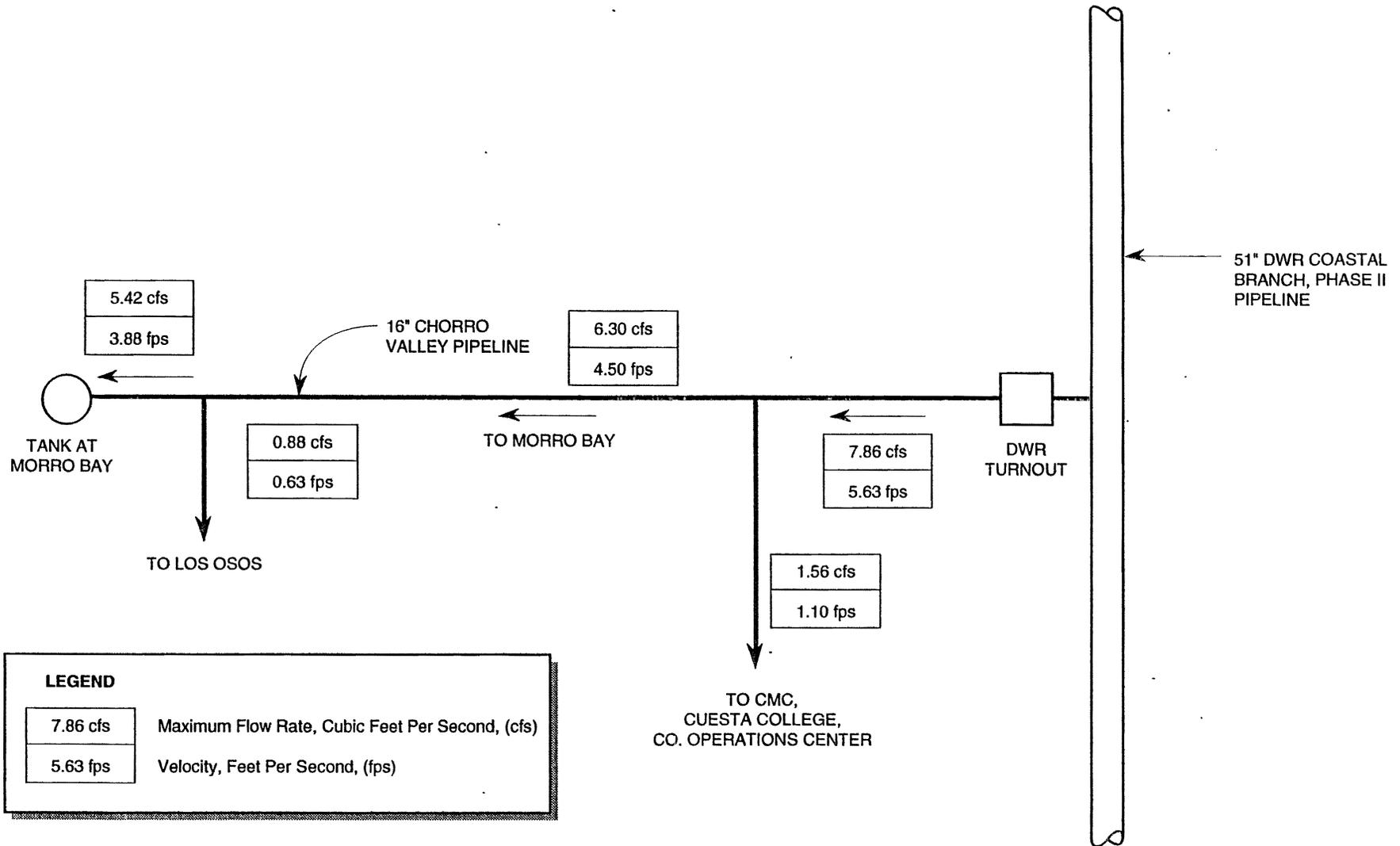
The pipeline, valve, and appurtenances of Segment 2 and Segment 1 downstream of the FCV/PRV have been designed for an HGL of 700 feet. The capacity in the pipeline is limited by the pressures that the pipeline materials, valves, and appurtenances in these reaches can tolerate. As a result, with the materials specified now, no additional capacity is available in the Chorro pipeline with the current design HGL of 700 feet.

Although designed for an HGL of 700 feet, the pipeline, valves and meters downstream of the FCV/PRV have the capacity to tolerate the pressures created with an HGL of 850 feet, however the air release and air vacuum valves can only tolerate the pressures created with the design HGL of 700 feet. Assuming the HGL could be increased to 850 feet, then the pipeline's capacity could be increased by 500 AF/yr. To achieve the additional capacity with an HGL of 850 feet, the air release and air vacuum valves for Segment 1 would need to be replaced with higher class valves, and the pipeline, valves, and appurtenances on Segment 2 would need to be redesigned for the higher HGL. The flow rates and velocities for this additional capacity are shown in Attachment No. 3.

If you have any questions regarding the additional capacity in the Chorro pipeline, please call me.

Attachments

cc: Lou Carella



**FLOW RATES AND VELOCITIES
STATE WATER PROJECT AND NACIMIENTO WATER**

