CITY OF MORRO BAY
PUBLIC WORKS ADVISORY BOARD
AGENDA

The City of Morro Bay is dedicated to the preservation and enhancement of the quality of life. The City shall be committed to this purpose and will provide a level of municipal service and safety consistent with and responsive to the needs of the public.

Thursday, February 20, 2014
Veteran's Memorial Building - 6:00 P.M.
209 Surf Street, Morro Bay, CA

Matt Makowetski, Chair

Ron Burkhart
Janith Goldman
Marlys McPherson
Deborah Owen
(Vacant)
Stephen Shively

ESTABLISH QUORUM AND CALL TO ORDER
MOMENT OF SILENCE/PLEDGE OF ALLEGIANCE
ANNOUNCEMENTS/PRESENTATIONS

PUBLIC COMMENT PERIOD
Members of the audience wishing to address the Board on City business matters other than scheduled items may do so at this time. To increase the effectiveness of the Public Comment Period, the following rules shall be followed:

- When recognized by the Chair, please come forward to the podium and state your name and address for the record. Board meetings are audio and video recorded and this information is voluntary and desired for the preparation of minutes.
- Comments are to be limited to three minutes.
- All remarks shall be addressed to the Board, as a whole, and not to any individual member thereof.
- The Board respectfully requests that you refrain from making slanderous, profane or personal remarks against any elected official, commission and/or staff.
- Please refrain from public displays or outbursts such as unsolicited applause, comments or cheering.
- Any disruptive activities that substantially interfere with the ability of the Board to carry out its meeting will not be permitted and offenders will be requested to leave the meeting.
- Your participation in Board meetings is welcome and your courtesy will be appreciated.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Services' Administrative Technician at (805) 772-6291. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

A. CONSENT CALENDAR

A-1 Approval of Minutes of December 19, 2013 Meeting
Recommendation: Approve minutes.

A-2 Director's Report/Information Items –Verbal Report

A-3 Morro Bay Citizens Bike Committee Memo dated February 7, 2014 –
Recommendation: Receive and file.

B. OLD BUSINESS - None

C. NEW BUSINESS

C-1 Stormwater Management Post Construction and Low Impact Development Requirements
Recommendation: Receive report and provide comments as necessary.

C-2 Water Status Report
Recommendation: Receive report.

C-3 Special Meeting for Water Equivalency Unit Offset Policy
Recommendation: Schedule Special Meeting to review policy.

D. FUTURE AGENDA ITEMS

E. ADJOURNMENT
Adjourn to the Public Works Advisory Board meeting at the Veteran's Memorial Building, 209 Surf Street, on **Thursday, May 15, 2014 at 6:00 p.m.**

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 Services Department, 955 Shasta Avenue, for any revisions or call the department at 772-6291 for further information.

Materials related to an item on this Agenda are available for public inspection during normal business hours in the Public Services Department, at Mill's/ASAP, 495 Morro Bay Boulevard, or the Morro Bay Library, 695 Harbor, Morro Bay, CA 93442, or online at www.morro-bay.ca.us/pwab . Materials related to an item on this Agenda submitted to the Board after publication of the Agenda packet are available for inspection at the Public Services Department during normal business hours or at the scheduled meeting.

AGENDA ITEM:	A-1
DATE:	February 20, 2014
ACTION:	

SYNOPSIS MINUTES – MORRO BAY PUBLIC WORKS ADVISORY BOARD
SPECIAL MEETING – DECEMBER 19, 2013
VETERAN'S HALL – 6:00 P.M.

Chairperson Makowetski called the meeting to order at 6:00 p.m.

PRESENT:	Matt Makowetski	Chairperson
	Janith Goldman	Board Member
	Marlys McPherson	Board Member
	Deborah Owen	Board Member
ABSENT:	Ron Burkhart	Vice-Chairperson
	Richard Rutherford	Board Member
	Stephen Shively	Board Member
STAFF:	Rob Livick	Public Services Director

ESTABLISH QUORUM AND CALL TO ORDER
MOMENT OF SILENCE/PLEDGE OF ALLEGIANCE
ANNOUNCEMENTS/PRESENTATIONS

PUBLIC COMMENT

Chairperson Makowetski opened Public Comment period, and seeing none, closed Public Comment period.

CONSENT CALENDAR

A-1 Approval of Minutes of November 4, 2013 Meeting
Recommendation: Approve minutes.

MOTION: Boardmember McPherson moved to approve the minutes.

The motion was seconded by Boardmember Owen and carried unanimously. (4-0).

A-2 Director's Report/Information Items – Verbal Report

Livick presented the staff report.

Chairperson Makowetski asked Livick if the state water shutdown was longer than usual this year. Livick stated this year's shutdown was one week longer than usual because additional maintenance needed to occur at Devil's Den.

Chairperson Makowetski asked Livick to discuss whether the water supply at San Luis Reservoir is dwindling. Livick stated the stored water for the contract agencies is not threatened, but the extra water for agricultural uses may be threatened. Livick stated municipal supplies are guaranteed.

Chairperson Makowetski confirmed with Livick the repair work on the main sewer line along the Embarcadero will affect the full length of the commercial zone, roughly from the Embarcadero Inn (on the south) to Lift Station 2 (on the north).

Boardmember McPherson asked Livick to discuss the severity of the groundwater intrusion at this point. Livick stated it is not causing a problem operationally. He explained there is groundwater coming into the City's pipes which is why, for example, the new WWTP will be designed to handle 1.5 million gallons of water per day.

Chairperson Makowetski asked if the City intends to stripe Hemlock Avenue where an overlay has been laid. Livick stated the City will stripe the street three weeks after the seal is laid so that the asphalt has time to cure. He stated the other street section to be striped is the first full block of San Jacinto.

OLD BUSINESS

None.

NEW BUSINESS

C-1 Review of Public Art Proposal – Painting of Traffic Signal Control Cabinets – Quintana and Main
Recommendation: Consider proposal, and recommend the City Council approve the concept to decorate the traffic Signal Control Cabinets.

Livick presented the staff report.

Chairperson Makowetski opened Public Comment period, and seeing none, closed Public Comment period.

MOTION: Boardmember McPherson moved to accept staff recommendation and move the item forward to City Council for approval.

The motion was seconded by Boardmember Owen and carried unanimously. (4-0).

C-2 Request for Stop Sign at the Intersection of Marina and Fresno and Review of the Public Process for Traffic Control Signs.
Recommendation: Receive Report, take public testimony, and forward any recommendations to the City Council.

Livick presented the staff report.

Boardmember McPherson noted Livick's traffic analysis took place about two years ago and asked Livick whether the traffic value has changed over the past couple of years. Livick stated there has not been a significant change that would affect the study and there has not been an increase in accidents.

Boardmember McPherson asked Livick to explain the criteria used to decide whether a stop sign is warranted. Livick stated the state of California has adopted the Manual of Uniform Traffic Control Devices to determine whether such signs are warranted. In an intersection like the one at Marina and Fresno, Livick

stated the California Vehicle Code does regulate how to drive through the intersection, but observations indicate not many people do in fact slow down to the recommended 15 mph.

Boardmember McPherson asked if there have been any recent accidents at this intersection in the past year. Livick stated there has been one accident there, but in order for the City to install a stop sign, there must be at least five accidents at that location.

Boardmember Owen expressed concern about the excessive height of vegetation at intersections in the City and would like to see the height limit for vegetation better enforced. She stated she would also like the City to create a stop sign procedure.

Boardmember Goldman expressed concern that visibility at this intersection is limited due to the height of the vegetation. She asked Livick about the effectiveness of installing "YIELD" signs. Livick stated these signs may be confusing to some drivers and suggested installing a "STOP" sign instead, if at all.

Boardmember Goldman asked how the City enforces the height of shrubbery at intersections. Livick stated there are regulations in place to monitor this but the City does not patrol the streets on a regular basis and thus relies on complaints in order to manage vegetation in the public right of way.

Chairperson Makowetski asked why this issue is being heard at PWAB rather than at City Council. Livick explained a City Council member requested it be heard at PWAB first in order to get direction on how to proceed.

Boardmember McPherson asked Livick how many stop signs are being contemplated at this intersection and where they are proposed to be located. Livick stated staff has not analysed this issue because he does not recommend stop signs be installed at this intersection. If staff did decide to install stop signs, it would be necessary to look at traffic patterns in the neighborhood.

Chairperson Makowetski opened Public Comment period.

Don Henderson, resident of Morro Bay, discussed the need for a stop sign or other type of signage at this intersection. He stated there have been several accidents at this intersection in recent years.

Chairperson Makowetski closed Public Comment period.

Boardmember Owen echoed Henderson's concerns. She asked Livick if he is aware of the details of the accident that occurred on June 28, 2013 at this intersection. Livick stated he does not know the details of the accident.

Boardmember McPherson stated the City does need a policy of some kind to address stop sign installations. She also expressed support for installing a stop sign at this intersection given the amount of public support for this issue.

Chairperson Makowetski asked Livick to explain why a yield sign should or should not be installed at this intersection. Livick stated some drivers are unsure about what they need to do at a yield sign, whereas a stop sign gives positive indication on what the driver needs to do. Stop signs are typically more effective.

Chairperson Makowetski asked Livick if the stop signs on Anchor Street went through the same process as the proposed stop sign at the intersection of Marina and Fresno. Livick stated he does not know how stop signs were installed in the City in the past. He did explain, however, at one point every new traffic control

device needed a resolution from City Council but that changed in 2008 when the City Council gave the City Traffic Engineer the authority to approve stop signs installation.

Boardmembers and Livick discussed the feasibility of establishing a subcommittee to address stop sign installations. Boardmembers decided they would like to examine potential stop sign policies at the next PWAB meeting.

MOTION: Boardmember McPherson moved to approve the installation of a stop sign at the intersection of Marina and Fresno.

The motion was seconded by Boardmember Goldman.

AMENDED MOTION: Boardmember McPherson moved to recommend a stop sign or signs, depending on the judgment of Public Works staff, be placed at the intersection of Marina and Fresno.

The motion was seconded by Boardmember Goldman and carried unanimously. (4-0).

SECOND MOTION: Boardmember McPherson moved to direct to staff to present examples of citizen stop sign policy petition processes for review and consideration and, ultimately, recommendation to City Council at the February 20, 2014 PWAB meeting.

The motion was seconded by Boardmember Owen.

FUTURE AGENDA ITEMS

- Stop Sign Policy, as discussed above
- Update on the Water Reclamation Facility Process
- Update on Street and Roads

ADJOURNMENT

The meeting adjourned at 7:03 pm to the next scheduled meeting to be held at the Veteran's Memorial Hall on Thursday, February 20, 2014, at 6:00 p.m.

Morro Bay
Citizens Bike Committee

Recreation and Parks Department
595 Harbor Street, Morro Bay CA 93442

Dedicated to the advocacy and creation of an efficient interconnected network of safe, scenic bikeways and community paths in the Morro Bay area.

February 7, 2014

To: Recreation and Parks Commission
Recreation and Parks Department
Public Works Advisory Board

Citizens Bike Committee met February 4, 2014.

Robert Davis and Barry Rands presented the new Morro Bay Bike Route Map. SLO Bike Club and Morro Bay Tourism Bureau each contributed $900 to develop and print the map. Ms Mary Hay did the graphics and Mr Tom Hay printed 2,500 copies. Mr Rands still has enough money in a City special account to print additional maps after the Morro Creek Bike Bridge and the Bike Park are constructed. Committee members suggested the following deployment locations – Visitor Center, hotels, bike shop, surrey rental shop, SLO Visitor Center, campgrounds, RV parks, Natural History Museum, kayak shops and the Police Department as well as public locations that Mr Rands has selected.

Mr Rands presented an updated plan for the Morro Bay-Cayucos Connector Gap Closure project at Atascadero Road near the high school. It provides two crosswalks with flashing lights and green-painted Class II bike lanes on both sides of the street. The plan calls for replacement of the unsafe fixed metal bollards that are currently located within the traveled way with cyclist-friendly plastic bollards.

Mr Rands reported that the Morro Creek Bridge/Harborwalk Extension project is moving forward with Council approval and the addition of lights. The project is fully funded and construction should start in late summer and be complete within two months.

Mr Davis passed around photos of extensive pavement cracking and buckling in the Class I pathway between the high school parking lot and Coral Street. PWAB is expected to address this and other unmet bike/ped needs later this month. Committee members noted that the section of Class I trail next to the PG&E driveway near Main Street floods during every rainstorm and accumulates debris that sits there afterward. Ms Burton suggested that we ask Mr Joe Woods to make cleanup of this section an automatic action after every rainstorm.

Mr Davis reported that Rincon Consultants has been working on the Chorro Valley feasibility study. The final plan document will be incorporated into SLOCOG's 2014 Regional Transportation Plan.

Mr Davis reported that an application for a coastal development permit for the Morro Bay-Cayucos Connector is being prepared for submittal to the County Planning Department and the California Coastal Commission. Preliminary engineering is funded as well as R/W negotiations with Chevron. Construction is not yet funded.

Mr Davis reported that two city bike tours are being planned for this year's Morro Bay 50th Birthday celebration. One will be in May, during Bike Month, and the other in October during Rideshare Month. One will tour City parks; the other will tour City historic sites. Mr Woods has been asked to assist with the parks tour. He has not yet responded.

Mr Davis reported that the group formed to nominate Morro Bay as a Bike Friendly Community to League of American Bicyclists is proceeding with the assistance of Dan Rivoire and City staff and Police. We are awaiting a list of questions from Mr Rivoire.

Ms Bonnie Johnson reported that she is working on Bike Park permits. PG&E has approved parking on their property for $500 per year. Design and construction are paid for. Ms Johnson continues to raise money for poly paving and fencing. She expects a groundbreaking ceremony in May.

Mr Davis reported that bike/pedestrian lanes have been installed on San Jacinto from Main Street to Greenwood and parking is prohibited.

Citizens Bike Committee presented a list of unmet bicycle and pedestrian needs to Council January 14th and the same list to SLOCOG January 23rd.

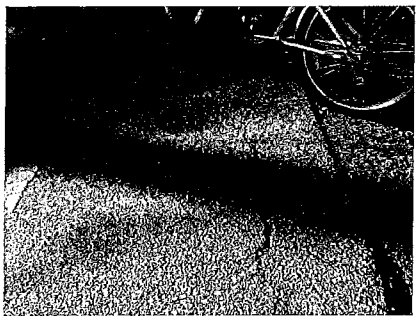
Committee has identified a shortage of bike parking in Morro Bay. Members discussed suitable areas to install bike corrals for bicycle parking off the sidewalks. The owner of Sunshine Health foods (Greg) is open to the idea of a corral demo in front of his store. Ms Beverly Ford is also looking for bike parking ideas at Grandma's Frozen Yogurt. Committee also suggested the Visitor Center parking lot on Morro Street as a potential location. Mr Rands also noted that restricted parking areas next to crosswalks could be converted to bike corrals without losing motor vehicle parking spaces.

Next meeting of the Committee will be May 6, 2014.

Respectfully submitted,

Robert F. Davis

Robert Fuller Davis
Chair



Morro Bay
Citizens Bike Committee

2961 Sandalwood Avenue
Morro Bay CA 93442
(805) 772-0874

Dedicated to the advocacy and creation of an efficient inter-connected network of safe, scenic bikeways and community paths in the Morro Bay area.

February 6, 2014

Mr Joe Woods
1001 Kennedy Way
Morro Bay CA 93442

Dear Mr Woods,

Members of the Morro Bay Citizens Bike Committee request that your department schedule automatic cleanup of the Class I multi-use trail from Main Street to Atascadero Road after every rainstorm. Every time it rains, this section of trail floods and debris accumulates and sits until it eventually gets cleaned up.

Is it possible that you could add this to your checklist of places to check after every rainstorm and clean it up if necessary?

Thank you.

Robert Fuller Davis
Committee Chair

AGENDA NO: C-1

MEETING DATE: February 20 , 2014

Staff Report

TO: **Public Works Advisory Board** **DATE: February 13, 2014**

FROM: **Barry Rands, PE – Associate Engineer**

SUBJECT: **Storm Water Management Guidance Manual for Low Impact Development & Post-Construction Requirements**

RECOMMENDATION

That the Public Works Advisory Board receive a presentation of the draft **Storm Water Management Guidance Manual for Low Impact Development & Post-Construction Requirements**, take public testimony and provide comments to staff.

FISCAL IMPACT

Other than additional staff responsibilities in monitoring and reporting compliance, there is no fiscal impact to the City.

SUMMARY

The Guidance Manual is intended to assist developers in understanding and complying with stormwater management requirements recently adopted by the Regional Water Quality Control Board.

BACKGROUND

In July of 2013 the Regional Water Quality Control Board adopted post-construction stormwater control requirements for certain types of new and redevelopment projects. The requirements go into effect March 6, 2014. The requirements can become technically complex for large projects. Therefore, City staff has drafted two Guidance Manuals to assist developers in understanding and complying with these new requirements. An abbreviated manual covers only what is required for the vast majority of projects typical to Morro Bay: construction or replacement of single-family residences. The complete Guidance Manual provides the remaining technical details required for more complex developments such as multi-family and commercial projects. The Guidance Manuals provide a supplement to the City Engineering Standards and replaces the July 2011 supplement that contained interim stormwater management regulations pending the adoption of these requirements.

DISCUSSION

Developers should already be familiar with stormwater control requirements intended to protect water quality during and after construction. The interim requirements that are currently in place are similar to these new requirements. The requirements apply to new or replaced impervious surfaces such as parking

Prepared By: BR Dept Review: RL

lots, sidewalks and roofs that generate stormwater runoff that damage downstream rivers, lakes and streams. These impervious surfaces also reduce the amount of rainwater that can soak into the ground and replenish our groundwater supplies. The new post-construction requirements are intended to reduce the long-term water quality impacts associated with development through site design and structural stormwater control measures.

The requirements affect any development or redevelopment that creates or replaces over 2,500 square feet of impervious surface. The requirements increase with increasing project size. The minimum requirements include various aspects of site planning to preserve pervious surfaces and reduce runoff, while larger projects will require progressively more comprehensive stormwater management measures including runoff filtration, retention, infiltration, and detention.

CONCLUSION

After hearing the presentation of the Guidance Manual and taking public testimony, the Board should make recommendations to staff.

ATTACHMENTS

DRAFT Storm Water Management Guidance Manual for Low Impact Development & Post-Construction Requirements (Main Manual)

DRAFT Storm Water Management Guidance Manual for Low Impact Development & Post-Construction Requirements (EZ Manual)

STORM WATER MANAGEMENT GUIDANCE MANUAL FOR LOW IMPACT DEVELOPMENT & POST-CONSTRUCTION REQUIREMENTS

MAIN MANUAL

March 6, 2014

DRAFT

City of Morro Bay, California

Contents

Introduction

Post-Construction Stormwater Management Performance Requirements

The primary objective of these Post-Construction Stormwater Management Performance Requirements is to minimize the downstream impact of increased stormwater runoff that often occurs as the result of development or redevelopment projects. The Post-Construction Requirements emphasize protecting and, where degraded, restoring key watershed processes to create and sustain healthy watersheds. Maintenance and restoration of watershed processes is necessary to protect water quality and beneficial uses.

The intention of this Guidance Manual is to provide developers a tool to both determine the specific requirements for a given project and to plan and design the project so that those requirements are met as efficiently as possible.

Definitions Related to Post-Construction Requirements

Bioretention – A Stormwater Control Measure designed to retain stormwater runoff using vegetated depressions and soils engineered to collect, store, treat, and infiltrate runoff. Bioretention designs do not include underdrains.

Biotreatment or Biofiltration Treatment –A Stormwater Control Measure designed to detain stormwater runoff, filter stormwater through soil media and plant roots, and release the treated stormwater runoff to the storm drain system. Biotreatment systems include an underdrain.

Discretionary Approval – A project approval which requires the exercise of judgment or deliberation when the MS4 decides to approve or disapprove a particular activity, as distinguished from situations where the MS4 merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

Dispersion – The practice of routing stormwater runoff from impervious areas, such as rooftops, walkways, and patios, onto the surface of adjacent pervious areas. Stormwater runoff is dispersed via splash block, dispersion trench, or sheet flow and soaks into the ground as it moves slowly across the surface of the pervious area.

Drainage Management Area (DMAs) – Following the low impact development principle of managing stormwater through small-scale, decentralized measures, DMAs are designated individual drainage areas within a Regulated Project that typically follow grade breaks and roof ridge lines and account for each surface type (e.g., landscaping, pervious paving, or roofs). Stormwater Control Measures for runoff reduction and structural facilities are designed for each DMA.

Equivalent Impervious Surface Area – is equal to *Impervious Tributary Surface Area* (ft^2) + *Pervious Tributary Surface Area* (ft^2), where *Impervious Tributary Surface Area* is defined as the sum of all of the site's conventional impervious surfaces, and *Pervious Tributary Surface Area* is defined as the sum of all of the site's pervious surfaces, corrected by a factor equal to the surface's runoff coefficient.

Evapotranspiration (ET) – The loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues).

Flow-Through Water Quality Treatment Systems – Stormwater Control Measures that are designed to treat stormwater through filtration and/or settling. Flow-through systems do not provide significant retention or detention benefits for stormwater volume control.

Gross Impervious Area – Impervious surfaces that are created or replaced by the project. Manufactured permeable surfaces (pervious paving, gapped paving stones, etc.) may be considered as a pervious surface and are considered on a case by case basis. If sidewalks or new pavement in the City right of way is planned or required by code, these surfaces shall also be included in the total. Do not include the surface area of decks with gaps that allow runoff to drain to permeable surfaces below. Gross Impervious Area is used in the initial determination of performance requirements.

Groundwater Basins – Groundwater basin areas defined by the California Department of Water Resources (DWR) and used in the Central Coast Water Board Joint Effort for Hydromodification Control to identify groundwater receiving-water issues and areas where recharge is a key watershed process. DWR based identification of the groundwater basins on the presence and areal extent of unconsolidated alluvial soils identified on a 1:250,000 scale from geologic maps provided by the California Department of Conservation, Division of Mines and Geology. DWR then further evaluated identified groundwater basin areas through review of relevant geologic and hydrogeologic reports, well completion reports, court-determined adjudicated basin boundaries, and contact with local agencies to refine the basin boundaries.

Impervious Surface – A hard, non-vegetated surface area that prevents or significantly limits the entry of water into the soil mantle, as would occur under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether the thresholds for application of Performance Requirements are exceeded. However, for modeling purposes, open, uncovered facilities that retain/detain water (e.g., retention ponds, pools) shall be considered impervious surfaces. There are three methods of calculating impervious surface area, depending on the context of the calculation. For more details, see ***Net Impervious Area, Gross Impervious Area, and Equivalent Impervious Area*** definitions.

Land recycling – The reuse of abandoned, vacant, or underused properties for redevelopment or repurposing

Landscaped Areas – Areas of soil and vegetation not including any impervious surfaces of ancillary features such as impervious patios, BBQ areas, and pools.

Large River – A river draining 200 square miles or more.

Low Impact Development (LID) – A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Ministerial Approval – A project approval which involves little or no personal judgment by the MS4 as to the wisdom or manner of carrying out the project and only involves the use of fixed standards or objective measurements.

Native Vegetation – Vegetation comprised of plant species indigenous to the Central Coast Region and which reasonably could have been expected to naturally occur on the site.

Net Impervious Area – The sum of new and replaced post-project impervious areas, minus any reduction in total imperviousness from the pre-project to post-project condition: *Net Impervious Area =*

(New and Replaced Impervious Area) – (Reduced Impervious Area Credit), where *Reduced Impervious Area Credit* is the total pre-project to post-project reduction in impervious area, if any.

New Development – Land disturbing activities that include the construction or installation of buildings, roads, driveways and other impervious surfaces. Development projects with pre-existing impervious surfaces are not considered New Development.

Percentile Rainfall Event (e.g., 85th and 95th) – A percentile rainfall event represents a rainfall amount which a certain percent of all rainfall events for the period of record do not exceed. For example, the 95th percentile rainfall event is defined as the measured rainfall depth accumulated over a 24-hour period, for the period of record, which ranks as the 95th percentile rainfall depth based on the range of all daily event occurrences during this period.

Permeable or Pervious Surface – A surface that allows varying amounts of stormwater to infiltrate into the ground. Examples include pasture, native vegetation areas, landscape areas, and permeable pavements designed to infiltrate.

Pre-Project – Stormwater runoff conditions that exist onsite immediately before development activities occur. This definition is not intended to be interpreted as that period before any human-induced land activities occurred. This definition pertains to redevelopment as well as initial development.

Project Site – The area defined by the legal boundaries of a parcel or parcels of land within which the new development or redevelopment takes place and is subject to these Post-Construction Stormwater Management Requirements.

Rainwater Harvest – Capture and storage of rainwater or stormwater runoff for later use, such as irrigation (without runoff), domestic use (e.g. toilets), or storage for fire suppression.

Receiving Waters – Bodies of water, surface water systems or groundwater that receive surface water runoff through a point source, sheet flow or infiltration.

Redevelopment – On a site that has already been developed, construction or installation of a building or other structure subject to the Permittee's planning and building authority including: 1) the creation or addition of impervious surfaces; 2) the expansion of a building footprint or addition or replacement of a structure; or 3) structural development including construction, installation or expansion of a building or other structure. It does not include routine road maintenance, nor does it include emergency construction activities required to immediately protect public health and safety.

Replaced Impervious Surface – The removal of existing impervious surfaces down to bare soil or base course, and replacement with new impervious surface. Replacement of impervious surfaces that are part of routine road maintenance activities are not considered replaced impervious surfaces.

Self-Retaining Areas – (also called "zero discharge" areas), are designed to retain some amount of rainfall (by ponding and infiltration and/or evapotranspiration) without producing stormwater runoff. Self-Retaining Areas may include graded depressions with landscaping or pervious pavement.

Self-Treating Areas – are a portion of a Regulated Project in which infiltration, evapotranspiration and other natural processes remove pollutants from stormwater. The self-treating areas may include conserved natural open areas and areas of native landscaping. The self-treating area only treats the rain falling on itself and does not receive stormwater runoff from other areas.

Routine Road Maintenance – includes pothole and square cut patching; overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage; shoulder grading; reshaping/regrading drainage systems; crack sealing; resurfacing with in-kind material without expanding the road prism or altering the original line and grade and/or hydraulic capacity of the road.

Single-Family Residence – The building of one single new house or the addition and/or replacement of impervious surface associated with one single existing house, which is not part of a larger plan of development.

Stormwater Control Measures – Stormwater management measures integrated into project designs that emphasize protection of watershed processes through replication of pre-development runoff patterns (rate, volume, duration). Physical control measures include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water use. Design control measures include but are not limited to conserving and protecting the function of existing natural areas, maintaining or creating riparian buffers, using onsite natural drainage features, directing runoff from impervious surfaces toward pervious areas, and distributing physical control measures to maximize infiltration, filtration, storage, evaporation, and transpiration of stormwater before it becomes runoff.

Stormwater Control Plan – A plan, developed by the Regulated Project applicant, detailing how the project will achieve the applicable Post-Construction Stormwater Management Requirements (for both onsite and offsite systems).

Tributary Area – The entire project area except for undisturbed areas of planted areas with native vegetation that do not receive runoff from other areas and impervious surface areas that discharge to infiltration areas that will not produce runoff or create nuisance ponding. The Drainage Management Areas are smaller Tributary Areas that cumulatively make up the Tributary Area of the entire site.

Does My Project Need to Meet Post-Construction Performance Requirements?

Projects subject to these Post-Construction Performance Requirements include all New Development or Redevelopment projects that create and/or replace ≥2,500 square feet of impervious surface (collectively over the entire project site). In general, the larger the impervious surface created or replaced, the more rigorous the requirements become. However, the requirements are also dependent on project type and location. Consequently, these three elements (gross impervious area, project type, and project location) need to be determined and quantified as a first step in the process.

1. **Gross Impervious Area**: Gross Impervious Area is the total of newly created and replaced impervious surfaces. Existing impervious surfaces that are within the project site but are not being replaced do not count in this calculation. Impervious surfaces are any hard, non-vegetated surface areas that prevent or significantly limit the entry of water into the soil. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Manufactured permeable surfaces (pervious paving, gapped paving stones, etc.) may be considered as pervious surfaces and are considered on a case by case basis. If sidewalks or new pavement in the City right of way is planned or required by code, these surfaces shall also be included in the total. Surface areas of decks with gaps that allow runoff to drain to permeable surfaces below are not considered imperious areas. For redevelopment projects, both new and replaced impervious surfaces are included. If the Gross Impervious Area is less than 2,500 square feet, the project is exempt from requirements.
2. **Type of Project:** A list of types of projects that are exempt for all stormwater requirements is detailed below, also see Appendix A. If not exempt:
    a. Is the project a new development or redevelopment project? Projects are classified as redevelopment if the project replaces or adds to existing impervious surfaces. Projects located on land with no existing impervious surfaces are considered new development.
    b. Does the project involve the construction or reconstruction of one or more detached single family residences (SFR)?
3. **Location**: The City is divided into several Watershed Management Zones. The map in Appendix B shows the boundaries of these zones. A Google Earth overlay is available on the City website for more precise project location.

The Performance Requirement Determination Form in Appendix C is provided to document the results of the above assessment. It shall be completed and filed with the Planning permit application. If the project is exempt, no further documentation is required. If not exempt, a calculation of the Net Impervious Area is required.

PROJECTS EXEMPT FROM STORMWATER REQUIREMENTS

Project that are exempt from the Post-Construction Performance are as follows (check any box on the list and no further action is required):

- ☐ Road and Parking Lot maintenance:
  - Road surface repair including slurry sealing, fog sealing, and pothole and square cut patching
  - Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
  - Shoulder grading
  - Cleaning, repairing, maintaining, reshaping, or re-grading drainage systems
  - Crack sealing
  - Resurfacing with in-kind material without expanding the road or parking lot
  - Practices to maintain original line and grade, hydraulic capacity, and overall footprint of the road or parking lot
  - Repair or reconstruction of the road because of slope failures, natural disasters, acts of God or other man-made disaster
- ☐ Sidewalk and bicycle path or lane projects, where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas
- ☐ Trails and pathways, where no other impervious surfaces are replaced or created, and built to direct stormwater runoff to adjacent vegetated areas
- ☐ Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics
- ☐ Curb and gutter improvement or replacement projects that are not part of any additional creation or replacement of impervious surface area (e.g., sidewalks, roadway)
- ☐ Second-story additions that do not increase the building footprint
- ☐ Raised (not built directly on the ground) decks, stairs, or walkways designed with spaces to allow for water drainage
- ☐ Photovoltaic systems installed on/over existing roof or other impervious surfaces, and panels located over pervious surfaces with well-maintained grass or vegetated groundcover, or panel arrays with a buffer strip at the most down gradient row of panels
- ☐ Temporary structures (in place for less than six months)
- ☐ Electrical and utility vaults, sewer and water lift stations, backflows and other utility devices
- ☐ Above-ground fuel storage tanks and fuel farms with spill containment system

Net Impervious Area Calculation

Net Impervious Area is the Gross Impervious Area minus any reduction in total imperviousness from the pre-project to post-project condition: Net Impervious Area = (Gross Impervious Area) - (Reduced Impervious Area Credit), where Reduced Impervious Area Credit is the total pre-project to post-project reduction in impervious area, if any. The result of this calculation is used to determine if a project is subject to PR.2 or in the case of an SFR project, subject to PR.3 requirements.

Examples of Calculating **Net Impervious Area**

Example 1:

The project is a property that is an existing commercial shopping center with 100,000 sf of impervious surface, including buildings, parking lot, etc. The new project will redevelop the site and have a total impervious area of 85,000 sf.
The **Reduced Imperious Area Credit** is 100,000 – 85,000 = 15,000 sf.
The **Net Impervious Area** is 85,000 – 15, 000 = 70,000 sf.
The **Net Impervious Area** is 70,000 sf which is greater than 5,000 sf .
The project is subject to PR.2.
Design the Water Quality Treatment measures to treat the water runoff from the 85,000 sf of impervious area.

Example 2:

The project is an existing commercial shopping center with 100,000 sf of impervious surface. The new project will redevelop the entire site leaving a gross impervious area of 52,000 sf. (they've added a lot of landscaping and used green roofs to reduce the impervious area by 48,000 sf).
The **Reduced Imperious Area Credit** is 100,000 – 52,000 = 48,000 sf.
The **Net Impervious Area** is 52,000 – 48,000 = 4,000 sf.
The **Net Impervious Area** is 4,000 sf which is less than 5,000 sf.
The project is **NOT** subject to PR.2 (though it may be subject to other PRs).

Once the Net Impervious Area Calculation is determined, use the following flow charts to determine the Post-Construction Performance Requirements for the project. Complete the Performance Requirement Determination Form (Appendix C) once the Flow Charts have been used to determine Performance Requirements.

Flow Charts

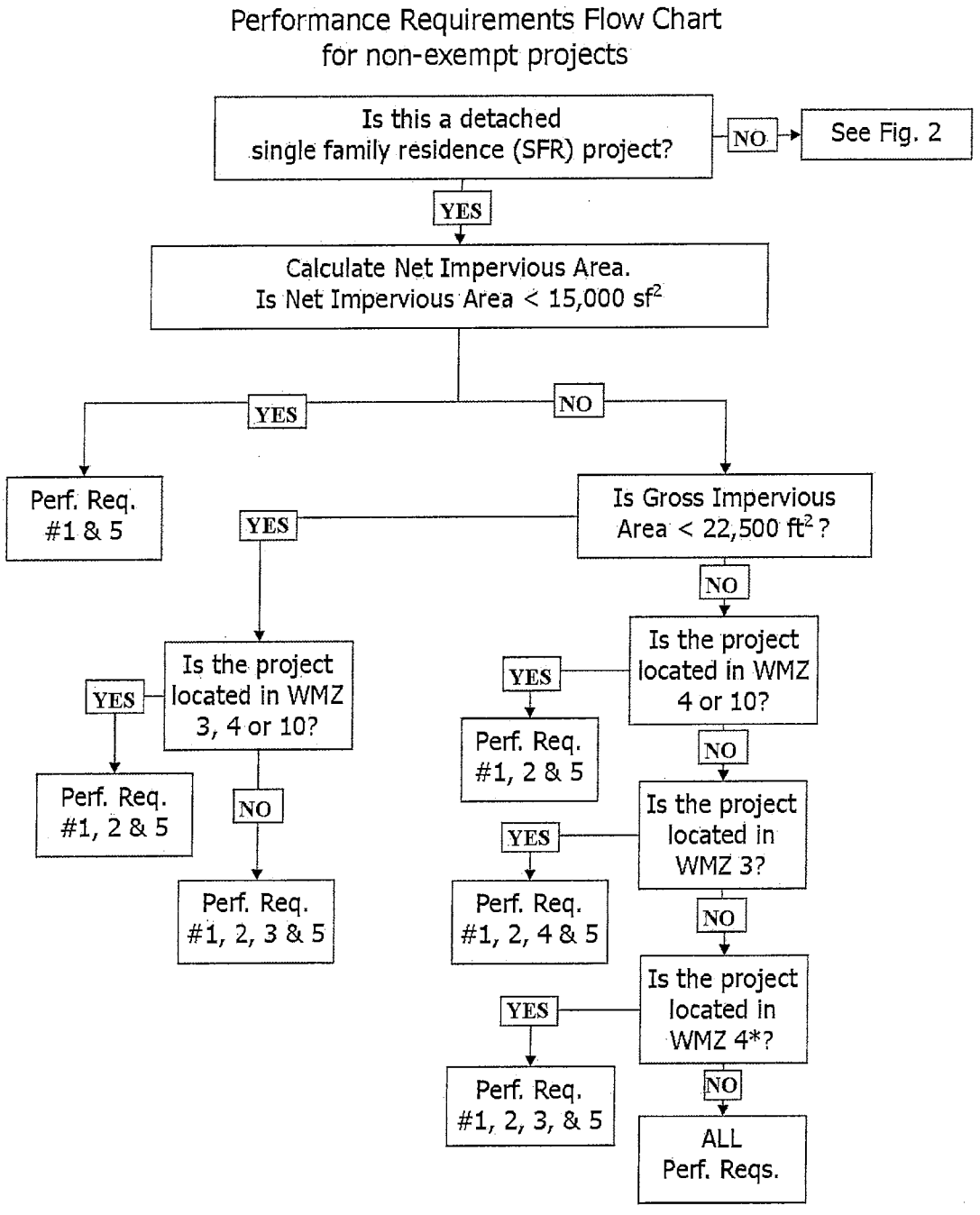


Figure 1

Performance Requirements Flow Chart
for non-exempt projects
(other than SFR projects)

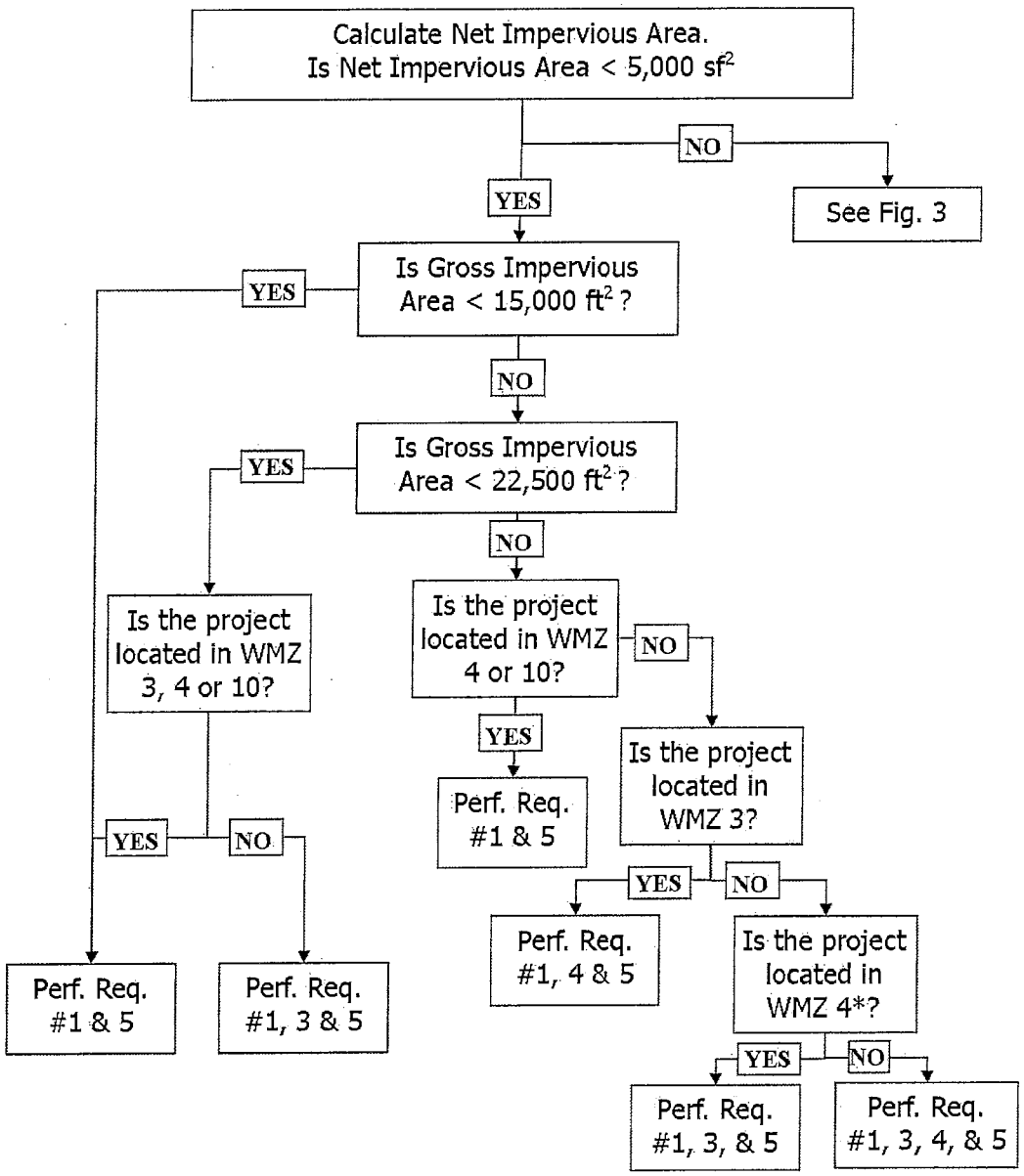


Figure 2

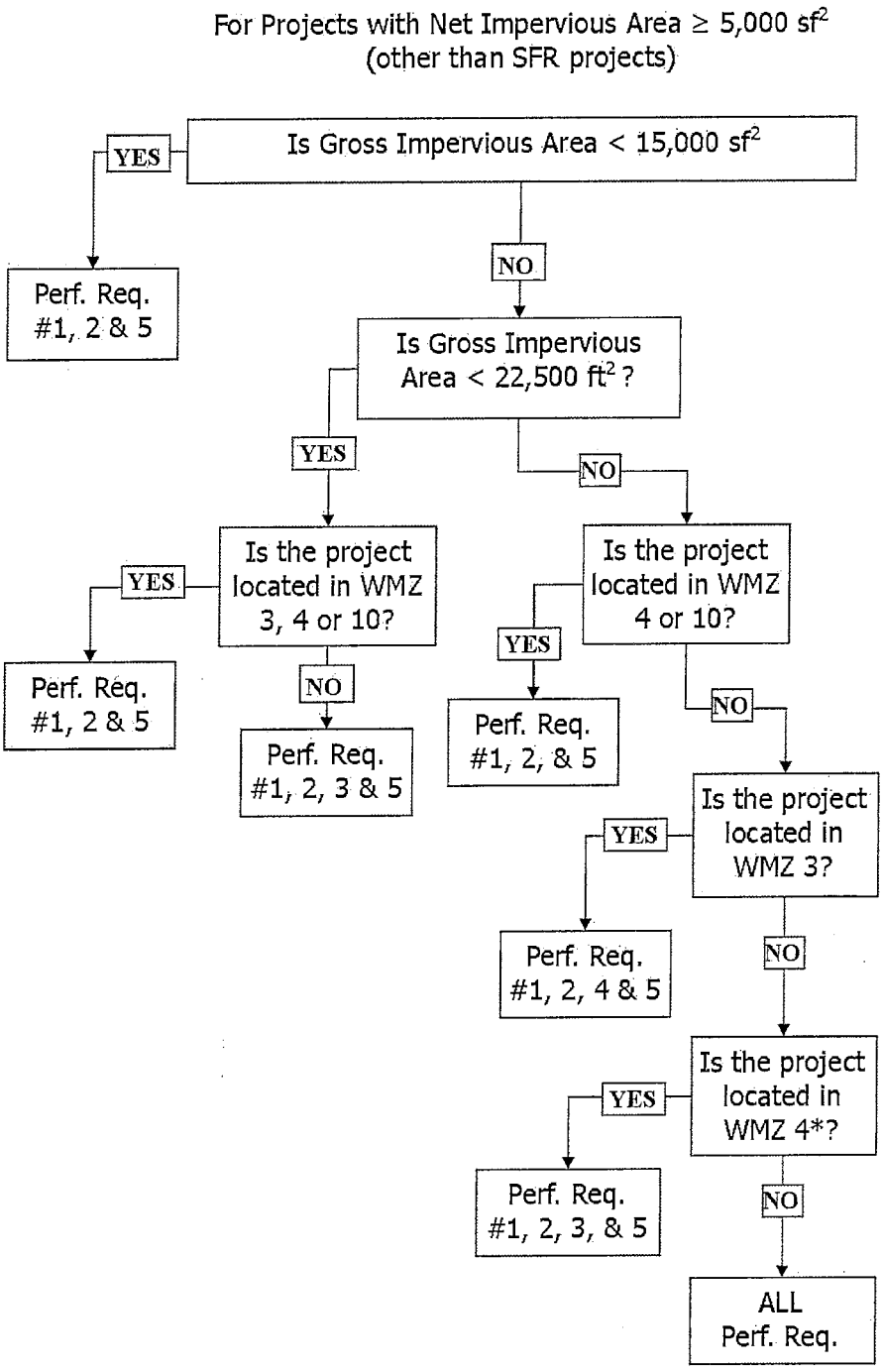

For Projects with Net Impervious Area ≥ 5,000 sf²
(other than SFR projects)
Is Gross Impervious Area < 15,000 sf²
YES
Perf. Req. #1, 2 & 5
NO
Is Gross Impervious Area < 22,500 ft² ?
YES
NO
Is the project located in WMZ 3, 4 or 10?
YES
Perf. Req. #1, 2 & 5
NO
Perf. Req. #1, 2, 3 & 5
Is the project located in WMZ 4 or 10?
YES
Perf. Req. #1, 2, & 5
NO
Is the project located in WMZ 3?
YES
Perf. Req. #1, 2, 4 & 5
NO
Is the project located in WMZ 4*?
YES
Perf. Req. #1, 2, 3, & 5
NO
ALL Perf. Req.

Figure 3

Section 1

Performance Requirement No. 1

Site Design and Runoff Reduction

Projects subject to Performance Requirement No. 1 (PR.1) are:

Projects that create and/or replace ≥ 2,500 square feet of impervious surface (collectively over the entire project site), including detached single-family homes.

The Project Engineer shall submit a stamped and signed copy of the Performance Requirement No.1 Certification, as included on the following page; certifying Low Impact Development design strategies are included in the project design. Each strategy that has been incorporated into the design should be initialed by the project engineer, or marked NA if not applicable.

PERFORMANCE REQUIREMENT NO. 1 CERTIFICATION		
	LOW IMPACT DEVELOPMENT (LID) DESIGN STRATEGY	INCORPORATED
1.	Limit disturbance of creeks and natural drainage features.	
2.	Minimize compaction of highly permeable soils.	
3.	Limit clearing and grading of native vegetation at the site to the minimum area needed to build the project, allow access, and provide fire protection.	
4.	Minimize impervious surfaces by concentrating improvements on the least sensitive areas of the site, while leaving the remaining land in a natural undisturbed state.	
5.	Minimize stormwater runoff by implementing one or more of the following design measures:	
	a) Direct roof runoff into cisterns or rain barrels for reuse.	
	b) Direct roof runoff onto vegetated areas safely away from building foundations and footings.	
	c) Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas safely away from building foundations and footings.	
	d) Direct runoff from driveways and/or uncovered parking lots onto vegetated areas safely away from building foundations and footings.	
	e) Construct bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios with permeable surfaces.	

I, _____, acting as the Project Engineer for _____ project, located at _____, hereby state that the Site Design and Runoff Reductions design strategies initialed above have been incorporated into the design of the project.

_____ _____

Signature Date

Section 2

Performance Requirement No. 2

Water Quality Treatment

Projects subject to Performance Requirement No. 2 (PR.2) are:

Projects with ≥ 5,000 square feet of Net Impervious Area, except detached single-family homes.

Detached single-family homes ≥ 15,000 square feet of Net Impervious Area.

Projects subject to PR.2 are also subject to PR.1. Applicant is required to submit PERFORMANCE REQUIREMENT NO.1 CERTIFICATION.

PR.2 requires the applicant to provide Water Quality Treatment design measures to reduce pollutant loads and concentrations using physical, biological, and chemical removal.

The Project Engineer shall identify which of the on-site water quality treatment measures on the following page is included in the design. The on-site water quality treatment measures are listed in order of preference. The plans shall clearly identify the type, location, and size of all on-site water quality treatment measures. Initial each on-site water quality treatment measure and note the page of the plans that shows the location and size, that has been incorporated into the design or mark NA if not applicable. Submit a stamped and signed copy of the PR.2 Certification.

PERFORMANCE REQUIREMENT NO. 2 CERTIFICATION		
	ON-SITE WATER QUALITY TREATMENT MEASURES	INCORPORATED
1.	Low Impact Development (LID) Treatment Systems designed to retain stormwater runoff generated by the 85th percentile 24-hour storm (see Appendix I). Stormwater Control Measures Implemented (check all that apply, design documentation is required): ☐ Harvesting and Use, ☐ Infiltration, ☐ Evapotranspiration	
2.	Biofiltration Treatment Systems – with the following design parameters: (1) Maximum surface loading rate appropriate to prevent erosion, scour and channeling within the biofiltration treatment system itself and equal to 5 inches per hour, based on the flow of runoff produced from a rain event equal to or at least 0.2 inches per hour intensity	
	(2) Follow Central Coast LIDI Bioretention Design Guidance for other parameters. If site conditions warrant, an underdrain with discharge to a storm drainage facility is allowed.	
3.	Non-Retention Based Treatment Systems – designed to meet at least one of the following hydraulic sizing criteria:	
	(a) Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to the volume of runoff generated by the 85th percentile 24-hour storm event (see Appendix I)	
	(b) Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat the flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.	
4.	Stormwater Control Plan is required – see Appendix K	

I, _____, acting as the Project Engineer for _____ project, located at _____, hereby state that the On-Site Water Quality Treatment Measures initialed above have been incorporated into the design of the project.

_____ _____

Signature Date

Section 3

Performance Requirement No. 3

Runoff Retention

Projects subject to Performance Requirement No. 3 (PR.3) are:

Single Family Residential Projects that create and/or replace ≥15,000 square feet of Net Impervious Area and other projects which create and/or replace ≥15,000 square feet of Gross Impervious Area in Watershed Management Zones (WMZ) 1, 2, 4*, 5, 6, 8 and 9.

PR. 3 requires the applicant to manage Runoff Retention from the site.

Adjustment to PR.3 Requirements for Redevelopment Projects – Where the Project includes replaced impervious surface, the following adjustment applies. This adjustment is accounted for in the Tributary Area calculation in Appendix E:

i) The total amount of replaced impervious surface shall be multiplied by 0.5 when calculating the volume of runoff subject to PR.3 requirements.

The Project Engineer shall certify that the Runoff Retention requirements were included in the design either onsite or through an Alternative Compliance agreement.

Compliance with PR.3:

- Identify WMZ and treatment requirements
- LID Site Assessment Check List
- LID Site Design Measures Certification
- A Stormwater Control Plan is required (see Appendix K) and shall include discrete Drainage Management Areas (DMAs), structural Storm Water Control Measures (SCM), hydraulic sizing calculations, and off-site mitigation.

Design Rainfall Events & Treatment Requirement for WMZs

WMZ	Treatment Options & Design Rainfall	Check Applicable WMZs
WMZ 1	Via Infiltration, prevent offsite discharge from events up to the 95th percentile 24-hour rainfall event as determined from local rainfall data.	
WMZ 2	Via storage, rainwater harvesting, infiltration, and/or evapotranspiration, prevent offsite discharge from events up to the 95th percentile 24-hour rainfall event as determined from local rainfall data.	
WMZ 3, 4 & 10	Not Applicable	
WM 4 *	Via Infiltration, prevent offsite discharge from events up to the 95th percentile 24-hour rainfall event as determined from local rainfall data.	
WMZ 9	Via storage, rainwater harvesting, infiltration, and/or evapotranspiration, prevent offsite discharge from events up to the 85th percentile 24-hour rainfall event as determined from local rainfall data.	
* Applicable only to those areas that overlay designated Groundwater Basins		

LID Site Assessment Checklist

	Included
1. Site topography	
2. Hydrologic features including contiguous natural areas, wetlands, watercourses, seeps, or springs	
3. Depth to seasonal high groundwater	
4. Locations of groundwater wells used for drinking water	
5. Depth to an impervious layer such as bedrock	
6. Presence of unique geology (e.g., karst)	
7. Geotechnical hazards	
8. Documented soil and/or groundwater contamination	
9. Soil types and hydrologic soil groups	
10. Vegetative cover/trees	
11. Run-on characteristics (source and estimated runoff from offsite which discharges to the project area)	
12. Existing drainage infrastructure for the site and nearby areas including the location of municipal storm drains	
13. Structures including retaining walls	
14. Utilities	
15. Easements	
16. Covenants	
17. Zoning/Land Use	
18. Setbacks	
19. Open space requirements	
20. Other pertinent overlay(s)	

LID Site Design Measures

The Project Engineer shall certify the Project design optimizes the use of the following design measures. Initial each runoff retention measure that has been incorporated and optimized into the design or mark NA if not applicable

PERFORMANCE REQUIREMENT NO. 3 CERTIFICATION OF LID SITE DESIGN MEASURES		
	DESIGN MEASURE	INCORPORATED/OPTIMIZED
1.	Defining the development envelope, identifying the protected areas, and identifying areas that are most suitable for development and areas to be left undisturbed	
2.	Identifying conserved natural areas, including existing trees, other vegetation, and soils (shown on the plans)	
3.	Limit the overall impervious footprint of the project	
4.	Design of streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided that public safety or mobility uses are not compromised	
5.	Set back development from creeks, wetlands, and riparian habitats	
6.	Design conforms the site layout along natural landforms	
7.	Design avoids excessive grading and disturbance of vegetation and soils	

I, _____, acting as the Project Engineer for _____ project, located at _____, hereby state that LID Site Design Measures initialed above have been incorporated into the design of the project.

_____ _____

Signature Date

Drainage Management Areas (DMAs)

The site shall be designed to provide for decentralized storm water management with discrete DMAs.

(1) Provide a map of the entire project site showing the discrete DMAs and detailing the drainage for the rainfall event specified.

(2) Drainage from each DMA shall be accounted for using the following measures:

(a) Undisturbed or areas planted with native vegetation that do not receive runoff from other areas are self-treating and no additional stormwater management is required.

(b) Runoff from impervious surfaces, generated by the rainfall events identified for PR.3, may be directed to undisturbed or natural landscaped areas. Where the design demonstrates that this runoff will be infiltrated and will not produce runoff to the storm drain system, or a surface receiving waterbody, or create nuisance ponding, then no additional stormwater management is required for these impervious surfaces.

(c) Runoff that cannot be captured by the above methods must be managed by a structural stormwater control measure as described below.

Structural Stormwater Control Measures (SCM)

SCMs shall optimize retention and result in optimal protection and restoration of watershed processes. SCMs are typically small-scale, decentralized facilities designed to infiltrate, evapotranspirate, filter, or capture and use stormwater. SCMs shall be sized and designed as described in Appendix E.

Off-Site Mitigation

Off-site mitigation of full Retention Volume is not required where technical infeasibility, as described in the Alternate Compliance section (Section 7), limits on-site compliance with the Runoff Retention Performance Requirement AND ten percent of a project's Equivalent Impervious Surface Area[1] has been dedicated to retention-based Stormwater Control Measures. (NOTE: PR.2, the Water Quality Treatment Performance Requirement is NOT subject to this adjustment. Mitigation to achieve full compliance with the Water Quality Treatment Performance Requirement is required on- or off-site.)

[1] Calculate Equivalent Impervious Surface Area using guidance in Appendix F

- Use the Appendix F instructions to calculate the ten percent adjustment for applying the Runoff Retention Performance Requirement.

- Use the Appendix G instructions to calculate the Off-Site retention requirements when a Project subject to the Runoff Retention Performance Requirement cannot allocate the full ten percent of the project site's Equivalent Impervious Surface Area to retention-based Stormwater Control Measures.

Section 4

Performance Requirement No. 4

Small Peak Flow Control

Projects subject to Performance Requirement No. 4 (PR.4) are:

- Projects that create and/or replace ≥22,500 square feet of gross impervious surface (collectively over the entire project site); and are in Watershed Management Zones 1, 2, 3, 6, or 9

PR. 4 requires the applicant to manage post-development peak flows discharged from the site.

The Project Engineer shall provide a Hydrology Report demonstrating that post-development storm water runoff peak flows discharged from the site do not exceed pre-project peak flows for the 2- through 10- year storm events. If detention storage is required, use the same design method described in the following Section 5.

Section 5

Performance Requirement No. 5

Large Peak Flow Control

All non-exempt new development or redevelopment projects that create or replace more than 2,500 square feet of impervious surfaces are subject to Performance Requirement 5. Exempt projects are those that are located in areas that have no potential for downstream flooding. For example, projects along the west side of the Embarcadero that drain directly to the bay are exempt from flood control requirements.

Goal:

For peak runoff flow control, post-development peak runoff flows shall be reduced to within 5% of the pre-development flows from the 10, 25, 50 and 100-year rainfall events. For the purposes of runoff flow control, the pre-development condition shall be natural soil and vegetation. As this performance requirement overlaps with PR4 at the 10-year storm event, the most conservative design of the two shall govern if the project is required to meet both requirements.

Methods:

- Detention basin design shall include development of a post-construction runoff hydrograph that is routed through the basin. If NRCS TR-20 is used, the following assumptions shall apply:
  - Storm Type: Type 1, 24-hr, San Luis Obispo D, or custom rainfall curve for Morro Bay[2]
  - Antecedent Moisture Condition: 2
  - Storm Duration: 24 hours
  - 24-hour rainfall depths: per NOAA Precipitation maps (http://hdsc.nws.noaa.gov/hdsc/pfds)
- Detention storage may be surface or subsurface. Parking areas may be used for detention as long as flood depth does not exceed six inches in the 100-year event.
- Multi-purpose basins may be designed to address both water quality and runoff control criteria, as long as all design goals are achieved.
- For other detention basin design standards, refer to the current version of the SLO County Public Improvement Standards.

[2] Some hydrologic modeling programs, such as HydroCAD v.10, have built in Storm Types for San Luis Obispo (taken from the SLO Creek WMP). Such programs also have the ability to create custom storm curves. The analysis may use the standard Type 1 or one of the storm types specific to the site.

Section 6

Performance Requirement No. 6

Special Circumstances

Performance Requirement No. 6 (PR.6) is Special Circumstances as defined by the Central Coast Regional Water Quality Control Board:

> Projects that are subject to Special Circumstances based on certain site and/or receiving water conditions may be exempt from Runoff Retention and/or Peak Management Performance Requirements where those Performance Requirements would be ineffective to maintain or restore beneficial uses of receiving waters.
>
> Special Circumstances are defined as projects that discharge stormwater to the following:
>
> - Highly Altered Channels
> - Intermediate Flow Control Facility
> - Historic Lake and Wetland
>
> Projects subject to Special Circumstances must still comply with the Water Quality Treatment Performance Requirements if so required.

Section 7

Alternative Compliance

Technical Infeasibility

When on-site compliance is demonstrated to be technically infeasible, Water Quality Treatment (PR.2), Runoff Retention (PR.3), and Peak Management Performance Requirements (PR.4 & 5) may be achieved through off-site SCMs or through use of the Ten Percent Adjustment to Retention Requirement (Appendix F).

An application for approval of Alternative Compliance based on technical infeasibility shall include a site-specific hydrologic analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect, demonstrating that compliance with the applicable numeric Post-Construction Stormwater Management Requirements is technically infeasible.

Technical Infeasibility may be caused by site conditions, including:

i) Depth to seasonal high groundwater limits infiltration and/or prevents construction of subgrade stormwater control measures[3]
ii) Depth to an impervious layer such as bedrock limits infiltration
iii) Sites where soil types significantly limit infiltration
iv) Sites where pollutant mobilization in the soil or groundwater is a documented concern
v) Space constraints (e.g., infill projects, some redevelopment projects, high density development)
vi) Geotechnical hazards
vii) Stormwater Control Measures located within 100 feet of a groundwater well used for drinking water
viii) Incompatibility with surrounding drainage system (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning treatment or flow control facility)

See Appendix H for methods of determining feasibility of infiltration measures.

---

[3] According to the CASQA Frequently Asked Questions about LID, "some MS4 permits and BMP guidance manuals require anywhere from 3-10 feet of separation from the groundwater level for infiltration practices. This distance depends on the soil type, pollutants of concern, and groundwater use. In some cases, however, where there may be groundwater or soil contamination, LID infiltrative practices may be restricted completely. (p. 7 in https://www.casqa.org/Portals/0/LID/CA_LID_FAQ_06-28-2011.pdf)

If the Technical Infeasibility analysis is approved, the use of the Ten Percent Adjustment to Retention Requirement method of compliance may be used (Appendix F). For off-site mitigation, a plan detailing the project(s) that will provide off-site mitigation shall be submitted. The proposed off-site projects may be existing facilities and/or prospective projects that are as effective in maintaining watershed processes as implementation of the applicable Post-Construction Stormwater Requirements on-site. The description shall include:

a) The location of the proposed off-site project(s), which must be within the same watershed as the Regulated Project. Alternative Compliance project sites located outside the watershed may be approved by the Central Coast Water Board Executive Officer.
b) A schedule for completion of offsite mitigation project(s), where the off-site mitigation project(s) has not been constructed.

Watershed or Regional Management Plan

The City of Morro Bay does not have an approved Watershed or Regional Management Plan.

Urban Sustainability Area

Projects located within an approved Urban Sustainability Area (USA) may apply for Alternative Compliance for numeric Runoff Retention and Peak Management Performance Requirements without demonstrating technical infeasibility; however the City of Morro Bay has not established an Urban Sustainability Area.

Application for approval of an Urban Sustainability Area may be made to the Central Coast Regional Water Quality Control Board. The Urban Sustainability Area may only encompass redevelopment in high density urban centers that are pedestrian-oriented and/or transit-oriented development projects intended to promote infill of existing urban areas. The USA proposal must include, at minimum:

i) A definition and delineation of the USA for high-density infill and redevelopment for which area-wide approval for Alternative Compliance is sought.
ii) Information and analysis that supports the intention to balance water quality protection with the needs for adequate housing, population growth, public transportation, land recycling, and urban revitalization.
iii) Demonstration that implementation of Alternative Compliance for Regulated Projects in the USA will meet or exceed the on-site requirements for Runoff Retention and Peak Management. The proposal must include quantitative analysis used to evaluate off-site compliance. Identification of specific off-site projects is not necessary for approval of the USA designation.

Projects in a USA may meet Water Quality Treatment Performance Requirements off-site only when:

i) It has been demonstrated that on-site water quality treatment is Technically Infeasible; AND
ii) The proposed off-site project(s) have been demonstrated to comply with the Water Quality Treatment Performance Requirements.

Off-Site Compliance Project(s) Requirements

Location of Alternative Compliance Project(s) – The location of the proposed off-site project(s) must be within the same watershed as the Project. Alternative Compliance project sites located outside the watershed may be approved by the Central Coast Water Board Executive Officer.

Timing and Funding Requirements for Alternative Compliance Projects – A schedule for the completion of off-site mitigation projects, including milestone dates to identify funding, design, and construction of the off-site projects shall be submitted with the application for Alternative Compliance.

a) Complete the project(s) as soon as practicable and no longer than four years from the date of the certificate of occupancy for the project for which off-site mitigation is required, unless a longer period is otherwise authorized by the Central Coast Water Board Executive Officer.
b) The timeline for completion of the off-site mitigation project may be extended, up to five years with prior Central Coast Water Board Executive Officer approval. Central Coast Water Board Executive Officer approval will be granted contingent upon a demonstration of good faith efforts to implement an Alternative Compliance project, such as having funds encumbered and applying for the appropriate regulatory permits.
c) Off-site mitigation projects on public property shall be fully funded by the applicants.
d) Off-site mitigation projects on private property shall include all documentation necessary to provide legal authority to use the property for the mitigation and shall include project bonding.

Section 8

Maintenance and Reporting

An Operation and Maintenance Plan (O&M) is required for all projects that utilize Structural Control Measures (SCMs) to satisfy Performance Requirements 2, 3, 4 and/or 5. A maintenance program is essential to ensure that the stormwater facilities continue to function as designed to maintain water quality and prevent possible flooding and property damage.

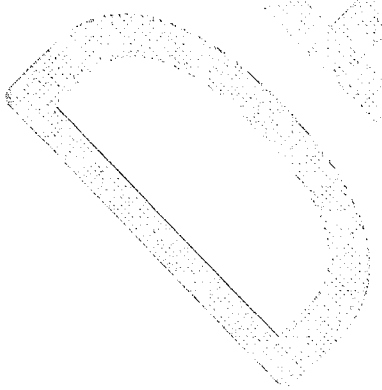
A proper maintenance plan must include:

- Site map of all SCMs requiring O&M practices to function as designed
- Procedures are provided for each structural control measure including, but not limited to, LID facilities, retention/detention basins, and proprietorship devices
- Short and long term maintenance requirements
- Estimated cost for maintenance

Appendix J has templates to aid in the development of the O&M Plan.

The SWCP and O&M plan shall be prepared under the direction of a professional civil engineer registered in the State of California. The plans shall be stamped, signed and include a certifying statement indicating that all stormwater BMPs have been designed to meet the City's stormwater quality requirements.

Applicants of regulated projects subject to Performance Requirements 2, 3, 4 or 5 are required to demonstrate compliance with these requirements on an annual basis.



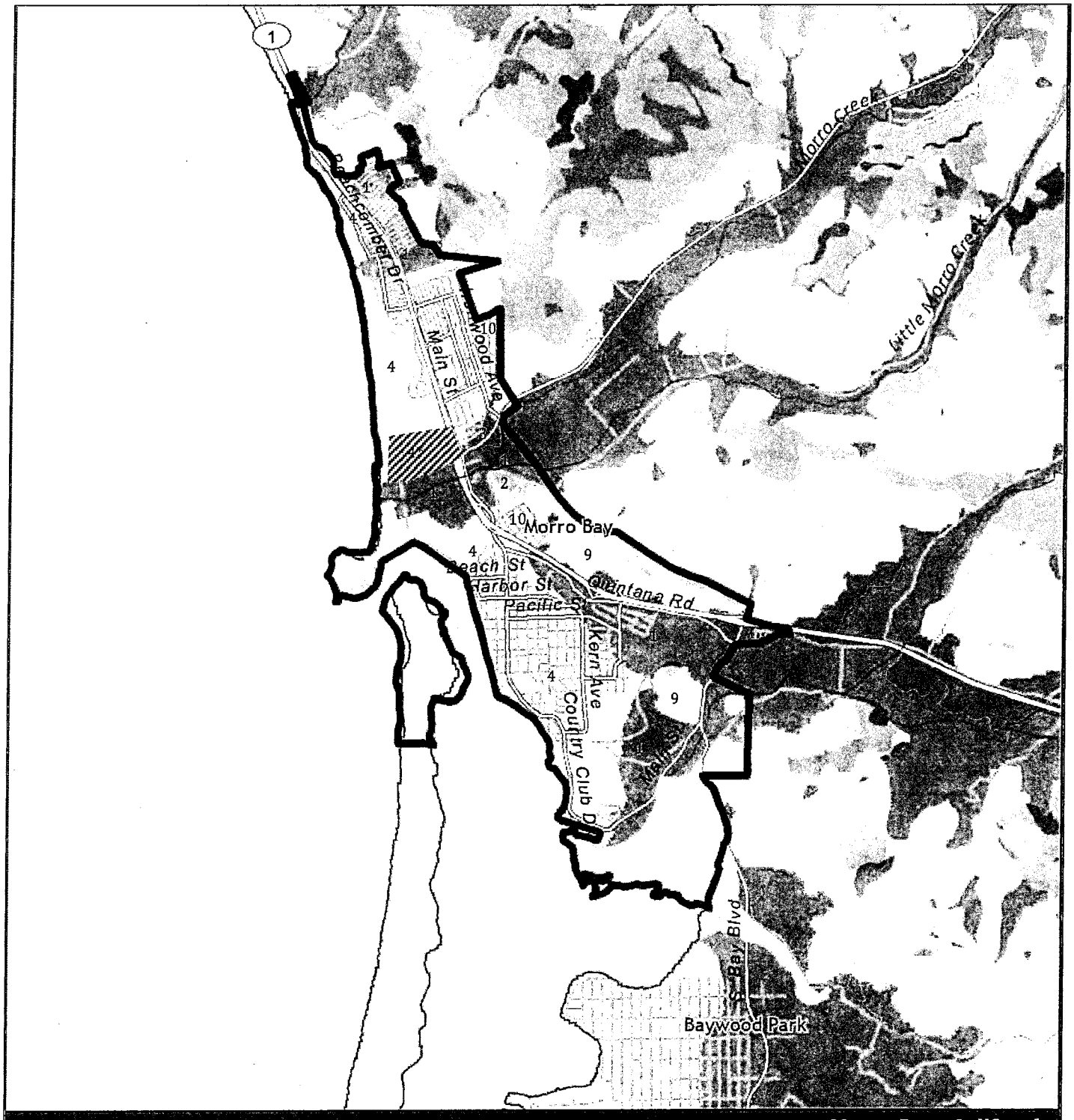
APPENDIX A

PROJECTS EXEMPT FROM STORMWATER REQUIREMENTS

Project that are exempt from the Post-Construction Performance are as follows (check any box on the list and no further action is required):

- ☐ Road and Parking Lot maintenance:
  - Road surface repair including slurry sealing, fog sealing, and pothole and square cut patching
  - Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
  - Shoulder grading
  - Cleaning, repairing, maintaining, reshaping, or re-grading drainage systems
  - Crack sealing
  - Resurfacing with in-kind material without expanding the road or parking lot
  - Practices to maintain original line and grade, hydraulic capacity, and overall footprint of the road or parking lot
  - Repair or reconstruction of the road because of slope failures, natural disasters, acts of God or other man-made disaster
- ☐ Sidewalk and bicycle path or lane projects, where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas
- ☐ Trails and pathways, where no other impervious surfaces are replaced or created, and built to direct stormwater runoff to adjacent vegetated areas
- ☐ Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics
- ☐ Curb and gutter improvement or replacement projects that are not part of any additional creation or replacement of impervious surface area (e.g., sidewalks, roadway)
- ☐ Second-story additions that do not increase the building footprint
- ☐ Raised (not built directly on the ground) decks, stairs, or walkways designed with spaces to allow for water drainage
- ☐ Photovoltaic systems installed on/over existing roof or other impervious surfaces, and panels located over pervious surfaces with well-maintained grass or vegetated groundcover, or panel arrays with a buffer strip at the most down gradient row of panels
- ☐ Temporary structures (in place for less than six months)
- ☐ Electrical and utility vaults, sewer and water lift stations, backflows and other utility devices
- ☐ Above-ground fuel storage tanks and fuel farms with spill containment system

APPENDIX B
WATERSHED MANAGEMENT ZONES



APPENDIX C

PERFORMANCE REQUIREMENT DETERMINATION FORM

The following form shall be completed for all development and redevelopment projects. Projects that are exempt from performance requirements are required to complete Section 1 & 2 only.

Section 1: General Information	
Project name	
Project Address	
Assessor's Parcel Number(s)	
Name of Applicant	
Applicant email address:	
Applicant phone:	
Project Type (e.g. single-family residential, commercial, etc.)	
Section 2: Area Information	
Total Project Area	
Total Existing impervious surface area	
Proposed Gross Impervious Area Calculation	
a. Rooftops	
b. Driveways	
c. Patios	
d. Parking Lots	
e. Other	
Total Gross Impervious Area	
If Gross Impervious Area <2,500 ft^2, write "EXEMPT". Otherwise continue to Sec. 3	
Section 3: PR Determination	
Watershed Management Zone (App. B)	
Net Impervious Area (from page 5)	
Performance Requirements (from Flow Charts)	

APPENDIX D

Definitions Related to Post-Construction Requirements

Bioretention – A Stormwater Control Measure designed to retain stormwater runoff using vegetated depressions and soils engineered to collect, store, treat, and infiltrate runoff. Bioretention designs do not include underdrains.

Biotreatment or Biofiltration Treatment –A Stormwater Control Measure designed to detain stormwater runoff, filter stormwater through soil media and plant roots, and release the treated stormwater runoff to the storm drain system. Biotreatment systems include an underdrain.

Discretionary Approval – A project approval which requires the exercise of judgment or deliberation when the MS4 decides to approve or disapprove a particular activity, as distinguished from situations where the MS4 merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

Dispersion – The practice of routing stormwater runoff from impervious areas, such as rooftops, walkways, and patios, onto the surface of adjacent pervious areas. Stormwater runoff is dispersed via splash block, dispersion trench, or sheet flow and soaks into the ground as it moves slowly across the surface of the pervious area.

Drainage Management Area (DMAs) – Following the low impact development principle of managing stormwater through small-scale, decentralized measures, DMAs are designated individual drainage areas within a Regulated Project that typically follow grade breaks and roof ridge lines and account for each surface type (e.g., landscaping, pervious paving, or roofs). Stormwater Control Measures for runoff reduction and structural facilities are designed for each DMA.

Equivalent Impervious Surface Area – is equal to *Impervious Tributary Surface Area* (ft^2) + *Pervious Tributary Surface Area* (ft^2), where *Impervious Tributary Surface Area* is defined as the sum of all of the site's conventional impervious surfaces, and *Pervious Tributary Surface Area* is defined as the sum of all of the site's pervious surfaces, corrected by a factor equal to the surface's runoff coefficient.

Evapotranspiration (ET) – The loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues).

Flow-Through Water Quality Treatment Systems – Stormwater Control Measures that are designed to treat stormwater through filtration and/or settling. Flow-through systems do not provide significant retention or detention benefits for stormwater volume control.

Gross Impervious Area – Impervious surfaces that are created or replaced by the project. Manufactured permeable surfaces (pervious paving, gapped paving stones, etc.) may be considered as a pervious

surface and are considered on a case by case basis. If sidewalks or new pavement in the City right of way is planned or required by code, these surfaces shall also be included in the total. Do not include the surface area of decks with gaps that allow runoff to drain to permeable surfaces below. Gross Impervious Area is used in the initial determination of performance requirements.

Groundwater Basins – Groundwater basin areas defined by the California Department of Water Resources (DWR) and used in the Central Coast Water Board Joint Effort for Hydromodification Control to identify groundwater receiving-water issues and areas where recharge is a key watershed process. DWR based identification of the groundwater basins on the presence and areal extent of unconsolidated alluvial soils identified on a 1:250,000 scale from geologic maps provided by the California Department of Conservation, Division of Mines and Geology. DWR then further evaluated identified groundwater basin areas through review of relevant geologic and hydrogeologic reports, well completion reports, court-determined adjudicated basin boundaries, and contact with local agencies to refine the basin boundaries.

Impervious Surface – A hard, non-vegetated surface area that prevents or significantly limits the entry of water into the soil mantle, as would occur under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether the thresholds for application of Performance Requirements are exceeded. However, for modeling purposes, open, uncovered facilities that retain/detain water (e.g., retention ponds, pools) shall be considered impervious surfaces. There are three methods of calculating impervious surface area, depending on the context of the calculation. For more details, see ***Net Impervious Area, Gross Impervious Area, and Equivalent Impervious Area*** definitions.

Land recycling – The reuse of abandoned, vacant, or underused properties for redevelopment or repurposing

Landscaped Areas – Areas of soil and vegetation not including any impervious surfaces of ancillary features such as impervious patios, BBQ areas, and pools.

Large River – A river draining 200 square miles or more.

Low Impact Development (LID) – A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Ministerial Approval – A project approval which involves little or no personal judgment by the MS4 as to the wisdom or manner of carrying out the project and only involves the use of fixed standards or objective measurements.

Native Vegetation – Vegetation comprised of plant species indigenous to the Central Coast Region and which reasonably could have been expected to naturally occur on the site.

Net Impervious Area – The sum of new and replaced post-project impervious areas, minus any reduction in total imperviousness from the pre-project to post-project condition: *Net Impervious Area = (New and Replaced Impervious Area) – (Reduced Impervious Area Credit),* where *Reduced Impervious Area Credit* is the total pre-project to post-project reduction in impervious area, if any.

New Development – Land disturbing activities that include the construction or installation of buildings, roads, driveways and other impervious surfaces. Development projects with pre-existing impervious surfaces are not considered New Development.

Percentile Rainfall Event (e.g., 85th and 95th) – A percentile rainfall event represents a rainfall amount which a certain percent of all rainfall events for the period of record do not exceed. For example, the 95th percentile rainfall event is defined as the measured rainfall depth accumulated over a 24-hour period, for the period of record, which ranks as the 95th percentile rainfall depth based on the range of all daily event occurrences during this period.

Permeable or Pervious Surface – A surface that allows varying amounts of stormwater to infiltrate into the ground. Examples include pasture, native vegetation areas, landscape areas, and permeable pavements designed to infiltrate.

Pre-Project – Stormwater runoff conditions that exist onsite immediately before development activities occur. This definition is not intended to be interpreted as that period before any human-induced land activities occurred. This definition pertains to redevelopment as well as initial development.

Project Site – The area defined by the legal boundaries of a parcel or parcels of land within which the new development or redevelopment takes place and is subject to these Post-Construction Stormwater Management Requirements.

Rainwater Harvest – Capture and storage of rainwater or stormwater runoff for later use, such as irrigation (without runoff), domestic use (e.g. toilets), or storage for fire suppression.

Receiving Waters – Bodies of water, surface water systems or groundwater that receive surface water runoff through a point source, sheet flow or infiltration.

Redevelopment – On a site that has already been developed, construction or installation of a building or other structure subject to the Permittee's planning and building authority including: 1) the creation or addition of impervious surfaces; 2) the expansion of a building footprint or addition or replacement of a structure; or 3) structural development including construction, installation or expansion of a building or other structure. It does not include routine road maintenance, nor does it include emergency construction activities required to immediately protect public health and safety.

Replaced Impervious Surface – The removal of existing impervious surfaces down to bare soil or base course, and replacement with new impervious surface. Replacement of impervious surfaces that are part of routine road maintenance activities are not considered replaced impervious surfaces.

Self-Retaining Areas – (also called "zero discharge" areas), are designed to retain some amount of rainfall (by ponding and infiltration and/or evapotranspiration) without producing stormwater runoff. Self-Retaining Areas may include graded depressions with landscaping or pervious pavement.

Self-Treating Areas – are a portion of a Regulated Project in which infiltration, evapotranspiration and other natural processes remove pollutants from stormwater. The self-treating areas may include conserved natural open areas and areas of native landscaping. The self-treating area only treats the rain falling on itself and does not receive stormwater runoff from other areas.

Routine Road Maintenance – includes pothole and square cut patching; overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage; shoulder grading; reshaping/regrading drainage systems; crack sealing; resurfacing with in-kind material without expanding the road prism or altering the original line and grade and/or hydraulic capacity of the road.

Single-Family Residence – The building of one single new house or the addition and/or replacement of impervious surface associated with one single existing house, which is not part of a larger plan of development.

Stormwater Control Measures – Stormwater management measures integrated into project designs that emphasize protection of watershed processes through replication of pre-development runoff patterns (rate, volume, duration). Physical control measures include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water use. Design control measures include but are not limited to conserving and protecting the function of existing natural areas, maintaining or creating riparian buffers, using onsite natural drainage features, directing runoff from impervious surfaces toward pervious areas, and distributing physical control measures to maximize infiltration, filtration, storage, evaporation, and transpiration of stormwater before it becomes runoff.

Stormwater Control Plan – A plan, developed by the Regulated Project applicant, detailing how the project will achieve the applicable Post-Construction Stormwater Management Requirements (for both onsite and offsite systems).

Tributary Area – The entire project area except for undisturbed areas of planted areas with native vegetation that do not receive runoff from other areas and impervious surface areas that discharge to infiltration areas that will not produce runoff or create nuisance ponding. The Drainage Management Areas are smaller Tributary Areas that cumulatively make up the Tributary Area of the entire site.

APPENDIX E

Hydrologic Analysis and Stormwater Control Measure Sizing Guidance

Project site conditions will influence the ability to comply with the Water Quality Treatment and Runoff Retention Performance Requirements. This Appendix provides the acceptable Stormwater Control Measure (SCM) sizing methodology to evaluate runoff characteristics. This guidance provides a simple event-based approach and a runoff routing approach. Both of these approaches are based on sizing for a single-event and avoid the necessity of using calibrated, continuous simulation modeling. The project applicant may use a locally/regionally calibrated continuous simulation-based model to improve hydrologic analysis and SCM sizing.

1) Determination of Retention Tributary Area

Determining the Retention Tributary Area is the basis for calculating the runoff volumes subject to Performance Requirement Number 3. Retention Tributary Area should be calculated for each individual Drainage Management Area to facilitate the design of SCMs for each Drainage Management Area. The generic equation below illustrates how various portions of the site are addressed when determining the Retention Tributary Area. The Retention Tributary Area calculation must also account for the adjustments for Redevelopment Projects subject to Performance Requirement No. 3.

a) Compute the Retention Tributary Area, using the equation:

Retention Tributary Area = (Entire Project Area) – (Undisturbed or Planted Areas) – (Impervious Surface Areas that Discharge to Infiltrating Areas)***

* As defined under Drainage Management Areas 2.a (in Section 3)

** As defined under Drainage Management Areas 2.b. (in Section 3)

a) Adjustments for Redevelopment Project Retention Tributary Area – Where the Regulated Project includes replaced impervious surface, the following Retention Tributary Area adjustments apply:

i) Redevelopment Projects outside an approved Urban Sustainability Area, as described in the Alternative Compliance Section. – The total amount of replaced impervious surface area shall be multiplied by 0.5 when calculating the Retention Tributary Area.

ii) Redevelopment Projects located within an approved Urban Sustainability Area, as described in the Alternative Compliance Section. – The replaced impervious surface areas may be subtracted from the Retention Tributary Area. The total amount of runoff volume to be retained from replaced impervious surfaces shall be equivalent to the pre-project runoff volume retained.

2) Determination of Retention Volume

a) Based on the Regulated Project's Watershed Management Zone, determine the Regulated Project's Runoff Retention Requirement (e.g., Retain 95th Percentile 24-hour Rainfall Event, or, Retain 85th Percentile 24-hour Rainfall Event).

b) Determine the 85th or 95th percentile 24-hour rainfall event (Appendix I)

c) Compute the Runoff Coefficient[4] "C" for the area tributary to the SCMs, using the equation:

$$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$$

Where "i" is the fraction of the tributary area that is impervious[5]

d) Compute Retention Volume:

Retention Volume for 95th Percentile 24-hr Rainfall Depth = C x Rainfall Depth$_{95th}$ x Retention Tributary Area

or,

Retention Volume for 85th Percentile 24-hr Rainfall Depth = C x Rainfall Depth$_{85th}$ x Retention Tributary Area

All rainfall directly incident to each SCM must be considered in determining runoff, including: tributary landscaping, impervious areas, pervious pavements, and bioretention features.

Note: For redevelopment projects located within an approved Urban Sustainability Area the total amount of runoff volume to be retained from replaced impervious surfaces shall be equivalent to the pre-project runoff volume retained.

3) Structural Stormwater Control Measure Sizing

The Project engineer shall use structural SCMs that optimize retention and result in optimal protection and restoration of watershed processes, such as Structural Control Measures associated with small-scale, decentralized facilities designed to infiltrate, evapotranspirate, filter, or capture and use stormwater, to address the volumes calculated in 2 (above). Where the Project is within a Watershed Management Zone where infiltration is required, SCM designs that optimize infiltration of the entire Retention Volume is required, to minimize the potential need for off-site mitigation. Various resources provide design guidance for fully infiltrative SCMs including:

- The Contra Costa C.3 Manual
- The City of Santa Barbara LID BMP Manual
- The City of San Diego LID Design Manual, July 2011
- Central Coast LID Initiative Bioretention Design Guidance

[4] As set forth in WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998), pages 175-178 and based on the translation of rainfall to runoff using a runoff regression equation developed using two years of data from more than 60 urban watersheds nationwide.

[5] As defined in Post-Construction Requirements Attachment D.

a) Calculate SCM Capture Volume – Calculate the required SCM Capture Volume, associated with the Regulated Project's Runoff Retention Requirement, by one of the following methods:

Method 1: Simple Method

SCM Capture Volume = Retention Volume for 95th Percentile 24-hr Rainfall Depth

or,

SCM Capture Volume = Retention Volume for 85th Percentile 24-hr Rainfall Depth

Method 2: Routing Method

Use a hydrograph analysis[6] to determine the SCM Capture Volume needed to retain the Retention Volume for 95th or 85th Percentile 24-hr Rainfall Depth calculated in 2 (above). The SCM Capture Volume shall be based on both the rate of flow from tributary areas into the SCM, and the rate of flow out of the SCM through infiltration into the underlying soil during the rain event. When conducting the hydrograph analysis, adhere to the criteria included in Table 1. The SCM shall be designed such that a single 95th or 85th Percentile 24-hr Rainfall Event will not overflow the SCM.

If the Retention Volume cannot infiltrate within 48-hours, a multiplier of 1.20 shall be applied to the SCM Capture Volume calculated through the routing method.

TABLE 1: Routing Method Criteria

Parameter	Criteria
Hydrograph Analysis Method	National Resources Conservation Service
Pond Routing Method	Storage-indication, unless otherwise justified to be more correct based on site and storage conditions.
Infiltration Rate	Underlying soil saturated infiltration rate, as indicated by on-site testing.
Rainfall Distribution	National Resources Conservation Service Type I[7] or based on local rainfall data
Time of Concentration	No less than 10 minutes
Time Increment	0.10 hour, unless otherwise justified to be more correct based on rainfall distribution

[6] HydroCAD is an example of a commonly used and widely accepted program for performing hydrograph analyses and design of stormwater infrastructure. HydroCAD is based on U.S. Department of Agriculture Soil Conservation Service's (now Natural Resources Conservation Service) TR-55: Urban Hydrology for Small Watersheds.

[7] The National Resources Conservation Service developed standard 24-hour rainfall distributions for hydrograph analyses. These rainfall distributions were intended to represent intensities associated with shorter duration storms, ranging from durations of 30 minutes to 12 hours. The National Resources Conservation Service Type 1 storm applies to the California West Coast, including the Central Coast Region. The Type 1 rainfall distribution was derived using National Oceanic Atmospheric Administration Atlas 2 rainfall statistics for the 1-year through 100-year storm.

b) Demonstration of Compliance – Project engineer shall demonstrate that site SCMs: a) will infiltrate and/or evapotranspirate the Retention Volume or, b) will provide sufficient Capture Volume to retain the Retention Volume. Any outlet (i.e., underdrain) installed in a structural SCM shall be installed above the elevation of any portion of the structural SCM dedicated to Retention Volume storage.

Compliance with Water Quality Treatment Performance Requirement – Projects that propose to use the retention-based structural Stormwater Control Measures, shall also meet the Water Quality Treatment Performance Requirement, and demonstrate in the Stormwater Control Plan, that the Water Quality Treatment Performance Requirement is being fully met.

APPENDIX F

Ten Percent Adjustment to Retention Requirement – Calculation Instructions

Where technical infeasibility, as described in the Alternative Compliance, prevents full on-site compliance with the Runoff Retention Performance Requirement, on-site retention of the full Retention Volume per Section PR.3 is not required and the Project is required to dedicate no less than ten percent of the Project's Equivalent Impervious Surface Area to retention-based Stormwater Control Measures. The Water Quality Treatment Performance Requirement is not subject to this adjustment, i.e.,

Calculating Ten Percent of a Project's Equivalent Impervious Surface Area

The area of the project that must be dedicated to structural SCMs to waive off-site compliance with the Runoff Retention Requirement is equal to ten percent of the project's Equivalent Impervious Surface Area, defined as:

Equivalent Impervious Surface Area (ft^2) = (Impervious Tributary Surface Area (ft^2) + (Pervious Tributary Surface Area (ft^2))

Impervious Tributary Surface Area is defined as the sum of all of the site's conventional impervious surfaces. When calculating Impervious Tributary Area:

- Do include: concrete, asphalt, conventional roofs, metal structures and similar surfaces
- Do not include: green roofs

Pervious Tributary Surface Area is defined as the sum of all of the site's pervious surfaces, corrected by a factor equal to the surface's runoff coefficient. When calculating Pervious Tributary Surface Area:

- Do include surfaces such as: unit pavers on sand; managed turf[8]; disturbed soils; and conventional landscaped areas (see Table 1 for correction factors).

  Example:

  Project Site includes 500 ft^2 of unit pavers on sand.

  Pervious Tributary Surface Area = 500 ft^2 x C = 50 ft^2

  Where C = Correction Factor for unit pavers, 0.1, from Table 1.

- Do not include: Infiltration SCM surfaces (e.g., SCMs designed to specific performance objectives for retention/infiltration) including, bioretention cells, bioswales; natural and

[8] Managed Turf includes turf areas intended to be mowed and maintained as turf within residential, commercial, industrial, and institutional settings.

undisturbed landscape areas, or landscape areas compliant with the Model Water Efficient Landscape Ordinance (California Code of Regulations, Title 23. Waters, Division 2. Department of Water Resources, Chapter 2.7.), or a local ordinance at least as effective as the Model Water Efficient Landscape Ordinance.

TABLE 1: Correction Factors[9] for Use in Calculating Equivalent Impervious Surface Area

Pervious Surface	Correction Factor
Disturbed Soils/Managed Turf (dependent on original Hydrologic Soil Group)	A: 0.15 B: 0.20 C: 0.22 D: 0.25
Pervious Concrete	0.60
Cobbles	0.60
Pervious Asphalt	0.55
Natural Stone (without grout)	0.25
Turf Block	0.15
Brick (without grout)	0.13
Unit Pavers on Sand	0.10
Crushed Aggregate	0.10
Grass	0.10

[9] Factors are based on runoff coefficients selected from different sources: Turf and Disturbed Soils from *Technical Memorandum: The Runoff Reduction Method.* Center for Watershed Protection & Chesapeake Stormwater Network. p.13, April 18, 2008.

http://town.plympton.ma.us/pdf/land/scheuler_runoff_reduction_method_techMemo.pdf. All other correction factors from *C.3 Stormwater Handbook, Santa Clara Valley Urban Runoff Pollution Prevention Program, Appendix F*, p. F-9., May 2004.

http://www.sanjoseca.gov/planning/stormwater/pdfs/appendices_files/Appendix_F_Final.pdf

APPENDIX G

Calculating Off-Site Retention Requirements When Less Than 10 Percent of the Project Site Equivalent Impervious Surface Area is Allocated to Retention-Based Structural Stormwater Control Measures

The following instructions demonstrate how to determine the Off-Site Retention Requirements when a Project subject to the Runoff Retention Performance Requirement, cannot allocate the full 10% of the project site's Equivalent Impervious Surface Area[10] to retention-based Stormwater Control Measures (SCMs).

STEP A. Potential Off-Site Mitigation Retention Volume

First calculate the Potential Off-Site Mitigation Retention Volume, which represents the additional volume of runoff that would have been retained on-site, had the full 10% of Equivalent Impervious Surface Area been dedicated to retention-based SCMs.

Equation A:

Potential Off-Site Mitigation Retention Volume = (the portion of the 10% Equivalent Impervious Area not allocated on-site) X (the On-Site Retention Feasibility Factor)

Where:

- *The portion of the 10% Equivalent Impervious Surface Area not allocated on-site* is that portion not allocated to on-site structural retention-based SCMs. For example, if 10% of Equivalent Impervious Surface Area is 1,000 ft^2 and only 8% (800 ft^2) is allocated to retention-based SCMs, the remaining 2% (200 ft^2) is the value inserted in the equation.

- *The On-Site Retention Feasibility Factor* is the ratio of Design Retention Volume[11] managed on-site (ft^3), to actual area (ft^2) allocated to structural SCMs. This establishes the site's retained volume:area ratio, expressed as cubic feet of retained runoff volume per square foot of area. For example, if a project is able to infiltrate 3,500 ft^3 of runoff over an 800-ft^2 area, this ratio of 3,500:800, or 4.38, is the On-Site Retention Feasibility Factor.

STEP B. Actual Off-Site Mitigation Retention Volume

Next, determine the Actual Off-Site Mitigation Retention Volume, which may be less than the Potential Off-Site Mitigation Retention Volume. The Actual Off-Site Mitigation Retention Volume is the lesser of the volume calculated in Equation A, and the remaining portion of the Design Retention Volume,

[10] Calculate Equivalent Impervious Surface Area using guidance in Post-Construction Requirements Attachment E

[11] Calculate Design Retention Volume using guidance in Post-Construction Requirements Attachment D, or equivalent method. Final Design Retention Volumes should reflect the applicant's demonstrated effort to use non-structural design measures to reduce the amount of runoff (e.g., reduction of impervious surfaces) as required by the Post-Construction Requirements' LID Development Standards (Section B.4.d).

calculated per Appendix E, not controlled on-site. There are two possible outcomes when the Runoff Retention Performance Requirement is not met on-site and less than 10% of the site's Equivalent Impervious Surface Area is allocated to retention-based SCMs:

- Potential Off-Site Mitigation Retention Volume is the Actual Off-Site Mitigation Retention Volume
- Remaining Design Retention Volume represents Actual Off-Site Design Retention Mitigation Volume

APPENDIX H
Soil Infiltration Assessment

Introduction and Purpose

This document provides guidance for conducting a Soil Infiltration Assessment to support the use of shallow or deep infiltration based stormwater control measures (SCMs), such as low impact development. This guidance is intended to provide a universal starting point for assessment of the infiltration characteristics of each project site and provide useful data in a cost-effective manner. Consideration and discussion of the application of these guidelines among the jurisdiction, the design professional and the geotechnical engineer is encouraged. They should be modified using sound engineering and geologic judgment to accommodate the unique characteristics of each project as they relate to each unique site.

The guidelines walk the user through a step-wise process from an Initial Site Assessment to a level of soil/geotechnical methodology appropriate for the site. The concept is to obtain information to:

1. Assess the general potential within the site for infiltration based SCMs
2. Provide a preliminary methodology to obtain soil infiltration data while balancing the need for data with the cost of acquiring the data.
3. Provide an extended or more comprehensive soil/geotechnical methodology where the results from the preliminary methodology as well as other site considerations warrant a more thorough soil analysis to facilitate better SCM design.

Note: Throughout this document the term "boring" is used for the purpose of observing the soil profile. However, except as indicated otherwise, an "excavation" may be substituted for the same purpose. Similarly, the term "drill" is the term used as the means of creating the boring. Except as otherwise indicated, it is meant to be synonymous with "excavating" or "digging" of an excavation. The two methods are meant to be interchangeable.

THESE METHODS DO NOT ADDRESS HEALTH OR SAFETY ASPECTS ASSOCIATED WITH THEIR USE. HEALTH AND SAFETY OF PERSONEL CONDUCTING THE METHODOLOGIES AND OF PEDESTRIANS, PASSERS-BY, SITE OWNERS OR TENANTS, ETC. SHOULD BE CONSIDERED. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE HEALTH AND SAFETY LAWS, REGULATIONS, POLICIES AND PROCEDURES, AND TO ENSURE THAT THE METHODOLOGIES ARE USED SAFELY.

The methodologies are guidelines only for the means of assessing the infiltration rates. Aspects related to permits, disposal of soil cuttings and samples, backfill, compaction, site restoration, etc. are not addressed. It is incumbent on the user to follow all laws, regulations, policies and procedures in decommissioning the borings.

Step 1: Initial Site Assessment

Initial Site Assessment is encouraged early in the design of post-construction SCMs. Infiltration SCMs may be required to comply with State post-construction stormwater control requirements. Various

characteristics of a site may limit or preclude the use of infiltration SCMs including soil and geotechnical constraints. Early in the project planning phase, the Project Applicant should identify all site characteristics that may influence (both positively and negatively), the ability of the site to infiltrate stormwater. The list below relates to soil and geotechnical feasibility only and the Project Applicant is encouraged review the full list of possible infeasibility constraints as provided by the municipality.

Initial Site Assessment related to infiltration potential should include, but is not limited to:

- Slope / topography of parcel
- Descending slopes nearby
- Protected Vegetation (endangered species, heritage oaks, etc.)
- Springs, seeps
- Bedrock outcrops
- Soil types from USDA Soil Charts, local geologic and geotechnical knowledge, etc.
- Area(s) available for infiltration
- Nearby wells
- Soil of groundwater contamination
- Other geotechnical constraints that may impact public safety or property

Step 2: Interpretation of Initial Site Assessment

If the Initial Site Assessment indicates that there is documentation of characteristics that entirely preclude the use of shallow or deep infiltration based SCMs, go to **Step 2A**. Examples of such characteristics might be unstable slopes throughout the site; high groundwater, shallow impervious bedrock throughout the site, etc. Note: poor soils do not necessarily preclude the use of infiltration based BMPs but may limit the amount of infiltration.

If the Initial Site Assessment indicates that site characteristics do not preclude the use of infiltration based SCMs, go to **Step 2B**.

Step 2A: Omit use of infiltration-based SCMs, Infiltration analysis complete.

When site conditions entirely preclude the use of infiltration-based SCMs, the Project Applicant will need to contact the municipal representative responsible for the project to determine any required documentation of the infiltration infeasibility and the adjusted post-construction requirements for the project.

Step 2B: Conduct Quick Infiltration Testing

If Initial Site Assessment indicates that use of shallow infiltration-based SCMs (e.g. vegetated swales, bioswales, bioretention facilities, shallow infiltration basins, etc.) may be feasible, a "Shallow Quick Infiltration Test" may provide information to refine shallow SCM siting within the project and associated sizing calculations. See **Attachment 1** for Shallow Quick Infiltration Test methodology.

If Initial Site Assessment indicates that use of deep SCMs (e.g. seepage pits, deep infiltration basins, etc.) may be feasible, a "Deep Quick Infiltration Test" may provide information to refine deep SCM siting within the project and associated sizing calculations. See **Attachment 2** for Deep Quick Infiltration Test methodology.

Step 2C: Interpretation of Quick Infiltration Test Results

If results of the "quick" test (shallow or deep) are 5 inches/hour or slower (moderate to poor soils), then no further data are needed and soil infiltration assessment is complete. Design of SCMs should be based upon the data acquired, as modified by appropriate factors (i.e. factors for size and scale of the SCM, anticipated maintenance, initial and final silt loading, etc.)

Similarly, if results of the Quick Infiltration Testing (shallow or deep) indicate good soils (infiltration rates faster than 5 inches/hour), AND no further data are considered to be necessary for the SCM design, soil infiltration assessment is complete. Design of SCMs should be based upon the data acquired, as modified by appropriate factors (i.e. factors for size and scale of the SCM, anticipated maintenance, initial and final silt loading, etc.).

If results of the Quick Infiltration Testing (shallow or deep) indicate good soils (i.e. infiltration rates faster than 5 inches/hour), AND other considerations may necessitate more soil data, then "Extended Infiltration Testing" should be conducted. See **Attachment 3** for Extended Infiltration Testing methodology.

ATTACHMENT 1

Shallow Quick Infiltration Testing Methodology

1. For small sites with limited areas for infiltration-based SCMs, drill 1 profile boring and 2 infiltration test borings in each potential SCM area.

2. For acreage and unconstrained sites:
   - Up to 5 acres: drill 1 profile boring and 2 infiltration test borings per acre potentially usable for SCMs.
   - Over 5 acres: drill 1 profile boring and 2 infiltration test borings per geologic unit that may be usable for SCMs, with 2 to 4 infiltration test borings associated with each profile boring.

3. Profile borings should be 6" to 12" diameter. Where the planned SCMs will be constructed near the site's existing grade, borings should be 10' to 15' deep. If significant cuts will be necessary to install the SCMs, the borings should extend 5' to 10' below the invert of the planned SCM. The boring cuttings should be observed and the soils in the borings sampled as necessary to allow accurate logging. Where excavations are utilized to determine the profile, they should be no wider than necessary to facilitate logging of the strata with the same level of detail as for borings.

4. All soil strata should be identified on the logs as to USCS classification, consistency, presence of moisture or free water, color, impermeable and permeable zones, and any other characteristics that may be pertinent to infiltration potential. All logs should include the boring identification, date of drilling, auger type and diameter, sampling methods, and surface elevation (known or assumed).

5. Infiltration test borings should also be 6" to 12" diameter. They should be of depths such that the zone tested will range from about the elevation of SCM invert, to about 2' below the elevation of the invert.

6. Infiltration test excavations should be dug by any means to approximately the elevation of the *top* of the planned SCM. From the elevation of the top of the planned SCM to 2' below the elevation of the *invert* of the SCM, a hand auger or hand shovel should be used to excavate the actual test zone. Preferably, the test zone should be 6" to 12" in diameter; if conditions mandate a larger diameter, it should be as close to 12" as is practicable.

7. A perforated pipe, of a diameter that will facilitate the taking of the test measurements should be placed in each test boring or in the test zone of each test excavation.

8. The annulus between each perforated pipe and the boring sidewall should be filled with fine gravel.

9. A suitable elevation datum should be established from which each measurement can be taken. The elevation of the datum relative to the elevation of the top of the SCM should be noted.

10. Using a hose equipped with a water meter, a graduated water tank, or other suitable means of measuring water volume, add water to the approximate elevation of *top* of the planned SCM and maintain the head for 30 minutes.

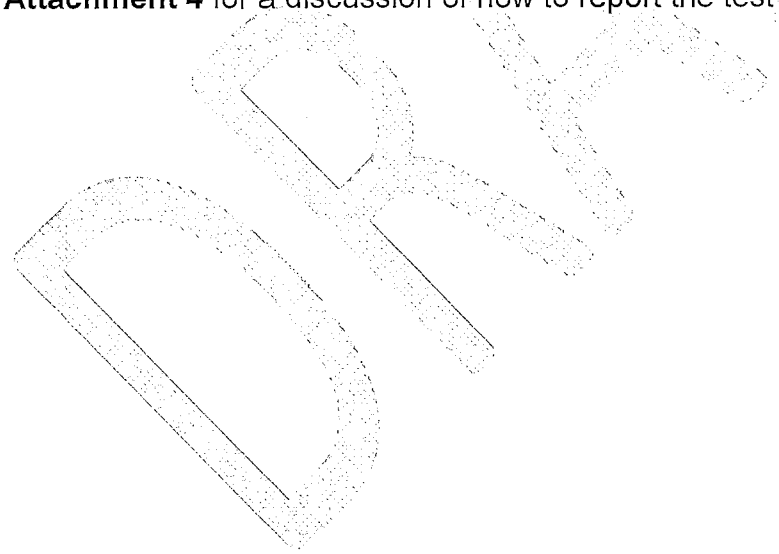
11. At the end of the 30-minute period, shut off water and record volume of water that entered the test boring.

12. As the water level falls, measure from the datum to the water level at suitable intervals. Measurements should be to the degree of precision practicable (usually 1/8-inch or 0.01 foot) for a period of 2 hours. Depending upon the rate of fall, intervals between measurements may need to be from 1 minute to 30 minutes. Intervals should be as uniform as is practicable, however, as the water level falls and the head is reduced, the infiltration rate may decrease and the measurement intervals may need to be incrementally lengthened.

13. If a test boring runs dry within 2-hour measurement period, refill the boring and continue measuring the falling head to end of original 2-hour period. If it runs dry again, refill and continue measurements to the end of the original 2-hour period. If it runs dry a third time, do not refill, the testing of that boring is complete.

14. If the fall recorded in any test boring is less than 6" in 2 hours, continue taking measurements for an additional 2 hours (4 hours total).

15. See **Attachment 4** for a discussion of how to report the test results.



ATTACHEMENT 2

Deep Quick Infiltration Testing Methodology

1. For small sites with limited areas for infiltration-based SCMs, drill 2 profile / test borings in each potential deep SCM area.

2. For acreage and unconstrained sites:
   - Up to 5 acres: drill 3 profile / test borings per acre potentially usable for SCMs.
   - Over 5 acres: drill 4 profile / test borings per geologic unit that may be usable for SCMs.

3. Profile / test borings should be 6" to 12" diameter. The borings should extend 5' to 10' below the bottom of the planned SCM. The boring cuttings should be observed and the soils in the borings sampled as necessary to allow accurate logging. Use of excavations for deep testing is probably not practical.

4. All soil strata should be identified on the logs as to USCS classification, consistency, presence of moisture or free water, color, permeable and impermeable zones, and any other characteristics that may be pertinent to infiltration potential. All logs should include the boring identification, date of drilling, auger type and diameter, sampling methods, and surface elevation (known or assumed).

5. A perforated pipe, of a diameter that will facilitate the taking of test measurements should be placed in each profile / test boring.

6. The annulus between each perforated pipe and the boring sidewall should be filled with fine gravel.

7. A suitable elevation datum should be established from which each measurement can be taken. The elevation of the datum relative to the elevation of the top of the SCM should be noted.

8. Using a garden hose equipped with a water meter, a graduated water tank, or other suitable means of measuring water volume, add water to approximate elevation of *top* of the planned SCM and maintain the head for 30 minutes.

9. At the end of the 30-minute period, shut off water and record volume of water that entered the test boring.

10. As the water level falls, measure from the datum to the water level at suitable intervals. Measurements should be to the degree of precision practicable (usually 1/8-inch or 0.01 foot) for a period of 2 hours. Depending upon the rate of fall, intervals between measurements may need to be from 1 minute to 30 minutes. Intervals should be as uniform as is practicable, however, as the water level falls and the head is reduced, the infiltration rate may decrease and the reading intervals may need to be incrementally lengthened.

11. If a test boring runs dry within the 2-hour measurement period, refill the boring and continue measuring the falling head to end of original 2-hour period. If it runs dry again, refill and

continue measurements to the end of the original 2-hour period. If it runs dry a third time, do not refill, the testing of that boring is complete.

12. If the fall recorded in any test boring is less than 6" in 2 hours, discontinue testing as deep infiltration is not practical.

13. See **Attachment 4** for a discussion of how to report the test results.

ATTACHMENT 3

Extended Test Methodology

The following "extended" methodology is intended to provide more comprehensive soil/geotechnical information where the results from the Initial Site Assessment and/or Quick methodology, as well as other site and design considerations warrant a more thorough soil analysis to facilitate better SCM design.

1. Extended test methodology for *deep* SCMs is too complex an issue to be adequately addressed in these guidelines. Test locations, depths, methods, etc. should be discussed among the jurisdiction, the design professional and the geotechnical engineer and a consensus reached as to the appropriate means of securing the data required for design of the deep SCMs on the specific site.

2. For *shallow* extended testing, locations, depths, continuity of subsurface conditions, etc. should be discussed among the jurisdiction, the design professional and the geotechnical engineer. Consideration should be given to drilling and testing at least twice as many test borings as recommended under Quick Testing.

3. Extended shallow test methodology should be essentially the same as Steps 3 through 14 under Quick Testing, except for the following:
   a. Consideration should be given to presoaking the test borings for up to 24 hours prior to commencing testing.
   b. Measurements for extended testing should continue for 4 hours or more, regardless of infiltration rates.
   c. The 30-minute constant head period may be excluded if adequate constant head data were obtained during Quick Testing.

4. See **Attachment 4** for a discussion of how to report the test results.

ATTACHMENT 4

Reporting of Test Results

1. Reporting of test results, whether quick or extended, shallow or deep, should contain essentially the same information.

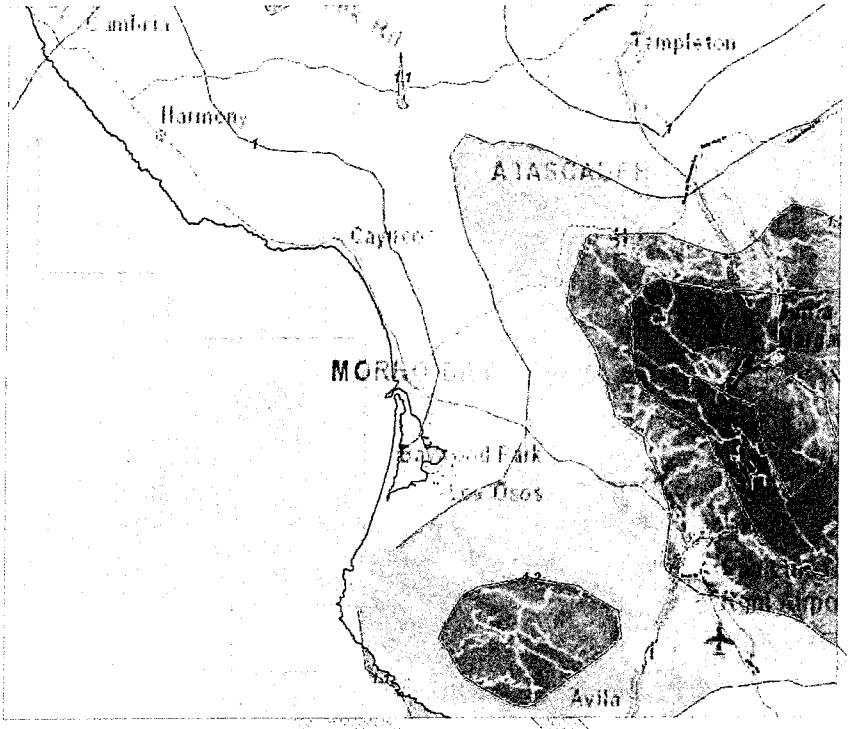
2. For each test boring, tabulate the test data showing:
   a. Test identification
   b. Date drilled
   c. Date tested
   d. Test boring diameter
   e. Perforated pipe diameter
   f. Test boring depth
   g. Stratum present in the test zone
   h. Elevation of top of SCM (known or assumed)
   i. Elevation of invert of SCM (known or assumed)
   j. Test duration
   k. Volume introduced between commencement of filling and the end of the 30-minute constant head period, typically in units of cubic feet
   l. Head during initial 30-minute period
   m. Time of the first falling head measurement and depth to the water surface
   n. Time of each subsequent measurement and depth to the water surface
   o. Intervals between measurements
   p. Incremental drop between measurements
   q. Infiltration rate between measurements, typically in units of inches per hour

3. Provide a map showing the approximate locations of all profile and test borings, as well as property lines, landmarks, planned improvements and SCM locations (if known), and other pertinent features that will help the user better understand the boring and testing program.

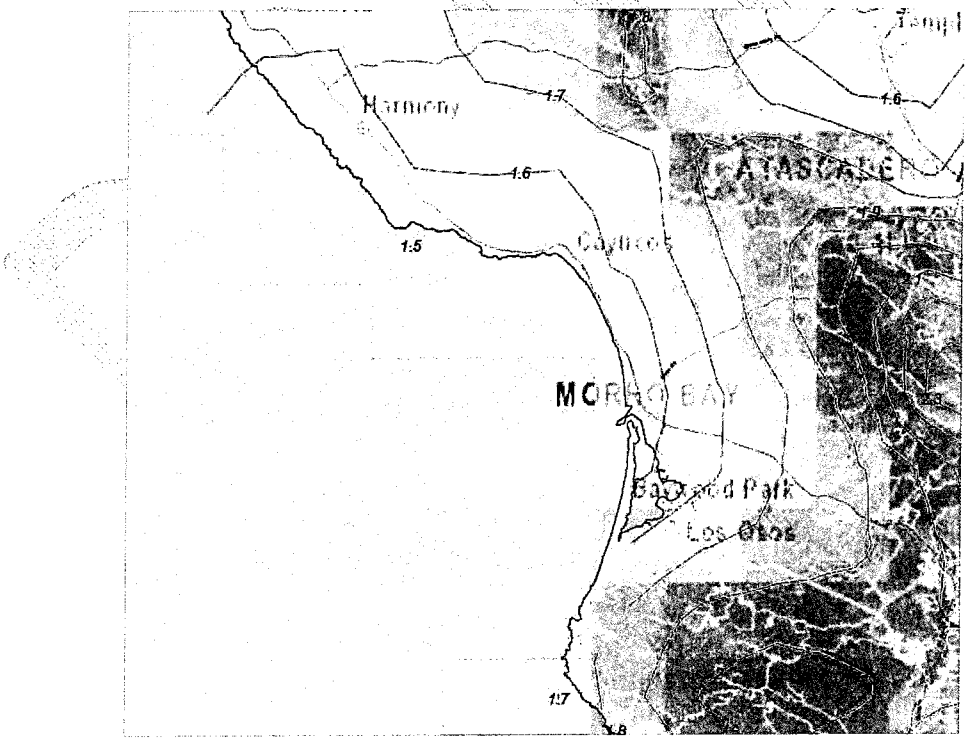
4. Provide log of each profile boring

5. Provide report summarizing data and discussing the potential for use of infiltration based SCMs on the site or area(s) tested.

APPENDIX I
85th and 95th Percentile 24-hr Rainfall Depth Maps



85th Percentile



95th Percentile

APPENDIX J
Operations, Maintenance and Reporting

POST CONSTRUCTION STORMWATER MANAGEMENT SYSTEM OPERATIONS AND MAINTENANCE FORMS INSTRUCTIONS

INSTRUCTIONS FOR RECORDING CONSTRUCTIVE NOTIFICATION

After determining a development is required to complete a Stormwater Control Plan (SWCP) with post construction Best Management Practices (BMPs) the applicant (land owner/developer) shall record a Constructive Notification for Private Stormwater Management System Operations and Maintenance with the San Luis Obispo County Clerk-Recorder's office. The constructive notification shall be recorded prior to occupancy.

The standard constructive notification and attachments can be obtained from the following locations:

- http://www.morro-bay.ca.us/stormwater
- Public Services Department 955 Shasta Ave Morro Bay Ca 93442

The applicant shall fill out the constructive notification (per the instructions below) and submit to the City for review and approval. Following City approval, the applicant shall have the constructive notification notarized then filed with the County Clerk-Recorder. The property owner shall then complete annual self-inspections and submit to the Planning and Building Department.

OVERVIEW OF PROCEDURE

I. Complete Constructive Notification and Exhibits

The applicant shall fill out the three (3) part constructive notification prior to submitting for review and approval. (See DETAILED INSTRUCTIONS below for filling out the Constructive Notification, EXHIBIT A and EXHIBIT B forms.)

II. Submit the Constructive Notification & Exhibits to the Engineering Department

Upon completion of the draft constructive notification, the applicant shall submit a copy to the City for review and approval. The constructive notification shall be submitted to the following address (or submitted via email to the City contact person):

City of Morro Bay Public Services Department
955 Shasta Ave
Morro Bay, CA 93465

III. Revise and Resubmit (if applicable)

The applicant shall make any necessary modifications to the constructive notification based on the City's review. The revised constructive notification shall then be resubmitted to the City.

IV. Notarize Constructive Notification

Following City approval (including City Representative signature on EXHIBIT A), the constructive notification shall be notarized.

The applicant shall retain a notary public to notarize the constructive notification. The applicant shall sign the constructive notification and the notary shall complete and sign the constructive notification.

V. Record Constructive Notification

Following notarizing, the constructive notification (and Exhibits) shall be recorded with the County Clerk Recorders office located at:

County of San Luis Obispo Clerk-Recorder's Office
1055 Monterey Street Room D120
San Luis Obispo, CA 93408-3237

The Clerk-Recorder will keep the document for processing and mail the original back to the Public Services Department. The applicant may purchase a copy of the constructive notification.

For additional information on recording documents and associated fees, visit the County Clerk-Recorder's website at http://www.slocounty.ca.gov/clerk.htm.

VI. Inspections

Annually, the current property owner (or representative) shall complete a self-inspection of the Project Stormwater Management System. EXHIBIT B of the recorded constructive notification shall be completed and submitted annually by June 15th to:

City of Morro Bay
Public Services Department
Annual Reporting Requirements
955 Shasta Ave,
Morro Bay, CA 93442

-or-

brands@morro-bay.ca.us
Subject: Annual Reporting Requirements

For questions please contact the Engineering Department at (805) 772-6215 or the Public Services Department at (805) 772-6261.

DETAILED INSTRUCTIONS

CONSTRUCTIVE NOTIFICATION

The following information shall be completed:

- Property Address
- Property APN
- Permit/Project #
- Property Legal Description NOTE: The legal description is available in the property owner's title report.

See section IV above regarding Notarize Constructive Notification

EXHIBIT A - POST CONSTRUCTION STORMWATER MANAGEMENT SYSTEM OPERATIONS AND MAINTENANCE PLAN

PART 1A - GENERAL INFORMATION

1 **Property APN(s):** If the project has a shared Stormwater Management System (i.e. HOA), insert all the Property APNs served by the SYSTEM. Highlight the Property APN which contains the shared Structural Stormwater Control Measures (SCMs), such as a basin.

2 **Project Address(es):** where the Structural Stormwater Control Measures (SCMs) to be maintained are located.

3-6 Self-explanatory

7-8 **Designer** and **Company/Firm:** Insert name of the original designer of the stormwater management system. In the case that the Designer is not longer available or practicing, the Company/Firm to which the designer worked will be considered responsible to supply information regarding the SYSTEM.

9-11 Self-explanatory

12 **Estimated Annual Cost for Maintenance Once Established (Attach Cost Estimate Spreadsheet):** Designer to provide an estimate of annual cost to owner for services to inspect, maintain, and report on SYSTEM per instructions provide in this Exhibit. (Consider line item for inflation.)

13 **Other Pertinent Info:** For example, is the SYSTEM shared? Specifics of how will it be managed.

PART 1B - STRUCTURAL CONTROL MEASURE (SCM) DETAILS

General: Data provided on these sheets should match information provided in the Stormwater Control Plan (SWCP) or other plans approved by the City of Morro Bay for the permitted project.

A Structural Control Measure (SMC) is defined by the RWQCB as: *Any structural facility designed and constructed to mitigate the adverse impacts of storm water and urban runoff pollution.*

Numbers for SCMs shall be assigned by the City of Morro Bay officials at approval of the project SWCP or other plan.

1 **Purpose(s) of SCM (check all that apply):** See City Morro Bay Stormwater Management Requirements.

2 Self explanatory

3 **Description & Location of SCM (As necessary, refer to PART 2 – Drawings & Photos):** The most effective means to describe the location of SCMs on a project site is in reference to a Drawing. (See Part 2 explanation.) If there is a basin serving multiple properties on its own lot, note which properties (by APN) the SCM serves.

4 **Drainage Design Criteria:** Per approved SWCP or Drainage Plan.

5 **Design Details (as applicable):** Per approved SWCP or Drainage Plan. If it does not apply, write N/A.

6 Self-explanatory

7 **SCM Inspection & Maintenance Requirements:** These requirements will be based on the design life and considerations of the SCMs ability to meet requirements for water quality and/or flow control as set out by RWQCB and the City Morro Bay.

Short Term Requirements include those things that will be required within a reporting year, i.e. clearing of debris, sediment or other obstructions to inlets.

Long-Term Requirements would be those things done on multiple-year schedule (2-year, 5 year, 10 year) to ensure the continual proper functioning of the SCM. For example, for a filter strip or biofiltration swale, include a plan ensuring the vegetation is healthy and method for replacement of plants (planting plan). For basins (infiltration or detention), provide a schedule for vegetation management and sediment removal. The replacement of inlet grates or other devices that could rust or degrade should be considered in this area, along with the design life.

PART 2 - DRAWINGS AND PHOTOS

The official documents related to the approved design of the Project's Stormwater Control Measure(s) (signed by the Engineer of Record) are required as a part of the Plan. If changes are made to the design of the SCM during construction, Record Drawings must be submitted. Include dated photos of the completed SCM with pertinent notes (i.e. direction from which the photo was taken.)

Reduced size Site and Drainage Plans and/or Details Sheets shall be provided. Any relevant details shall be copied at the original scale on 8.5x11 (for example, on an exhibit) for inclusion in the Plan. Ensure any exhibits include all the listed components.

PART 3 - CERTIFICATION AND APPROVAL

Along with the Owner and Designer, the designer or a 3rd party professional engineer, geologist, architect or landscape architect is required to field verify the Stormwater Control Measure(s) per RWQCB Resolution No. R3-2013-0032 Attachment 1, Section D. Field Verification of Post-Construction Stormwater Control Measures. Prior to the submittal of this Plan, it is recommended that the field verifier signatory and City official signatory visit the site together to inspect the SCMs, discuss the proposed plan and any potential issues prior to submittal.

EXHIBIT B - POST CONSTRUCTION STORMWATER MANAGEMENT SYSTEM OPERATIONS AND MAINTENANCE CHECKLIST TEMPLATE

General: The initial purpose of Exhibit B is to produce a template checklist which will be used for inspections and submitted to the City annually by June 15th. The approved template will be included in the recorded document, so consideration of checklist items that meet the short and long term maintenance requirements of the SCM is important. Since each SYSTEM design is different, it is the responsibility of the designer/engineer to advise the owner in completing the checklist, which must be approved by the City prior to recordation.

For this reason, the template can change in content to meet the particular SCM's maintenance needs. Two examples are included for a Biofiltration Area/Swale and Catch Basin(s).

Suggestions for Inspection Timing: Note that the official rainy season in California is October 15th – April 15th, so annual inspections of SYSTEMS would logically occur before October 15th to beat the possibility of a storm coming before any required maintenance is undertaken. Monthly inspections could be scheduled along with planned landscaping maintenance of the overall site, so the removal of vegetation debris or sediment could be done simultaneously. If the Project is a HOA-run development or similar, it will be beneficial to consider the project Operations & Maintenance schedule and add the SYSTEM maintenance therein.

Inspectors: It is required for a licensed Civil Engineer or Qualified SWPPP Practitioner (QSP) to sign off on the checklist annually. However, this does not prevent the signatory from delegating inspection responsibly to trained maintenance staff. All inspectors must be listed, and initialed to designate who did each inspection. However, the responsibility for certifying that the information provided is true & correct rests on the signatory.

Corrective Action/ Required Maintenance: Inspectors shall estimate how long it will take to rectify the situation in discussion with the owner, and re-inspect promptly. Any issues that are not addressed shall be recorded.

RECORDING REQUESTED BY:

WHEN RECORDED, PLEASE RETURN TO
County of San Luis Obispo Planning and Building Department
County Government Center, Room 208
San Luis Obispo, CA 93408
Ph: (805) 781-5600

NOTICE OF ADDITIONAL INFORMATION

Building Permit #_____ *(for office use–staff to provide)*

Property Address: _____
(Street No. & Street Name, City, State, Zip)

Property APN: _____ **Permit/Project#:** _____

Property Legal Description:

_____

_____

Owner of the aforesaid property does here by give

CONSTRUCTIVE NOTIFICATION

For Private Stormwater Management System Operations and Maintenance

The Applicant (Individual, Married Person, a HOA, A for Profit, or non-Profit Corporation), herein after referred to as **"OWNER"** of the real property referenced above, hereby required by existing City codes and regulations to utilize "on-site stormwater management systems (i.e. structural and/or non-structural) to minimize runoff and pollutants in runoff and to provide permanent storm drainage to control, manage, retain, treat, infiltrate and dispose of" (1) "on-site storm drainage for the Project" and (2) "ancillary street and site drainage from the adjoining street and sites" as stipulated in the approved project plans and contained within the required Stormwater Management System Operations & Maintenance Plan.

The Owner is solely responsible for the **Private Stormwater Management System,** hereinafter referred to as "**SYSTEM**" and attached as Exhibit "A". The Owner agrees to the following conditions in compliance with all local, state, federal laws and regulations:

1. **MAINTENANCE:** OWNER shall maintain, monitor, inspect, clean and repair the SYSTEM as required in Exhibit "A" – Post Construction Stormwater Management System Operations & Maintenance Plan.

2. **DOCUMENT & REPORT:** OWNER shall document all maintenance, monitoring, inspections, cleanings and repairs made to the SYSTEM in the annual report **submitted to the City by June 15th of each year** in the form as approved by the City as detailed in Exhibit "B" – Post Construction Stormwater Management System Operations & Maintenance Checklist.

3. **CITY RIGHTS & AUTHORITY:** the City has the right and authority to inspect the SYSTEM to determine compliance with this constructive notification (i.e. maintenance, monitoring, inspections, cleanings, repairs, documentation and reporting) which may result in enforcement activities and/or abatement if necessary pursuant to existing and future laws and regulations.

1. **FAILURE TO MAINTAIN, MONITOR, INSPECT, CLEAN, REPAIR AND REPORT SYSTEM:** Failure to maintain, monitor, inspect, clean, repair, or document and report as required herein shall constitute a public nuisance. The City may remedy such public nuisance through any of the applicable procedures as set forth in the City of Morro Bay Municipal Code, and/or may pursue any other legal or equitable remedies to abate such public nuisance.

5. **INDEMNIFICATION:** Owner further agrees to defend, indemnify, protect and hold the City and its agents, officers and employees harmless from and against any and all claims asserted or liability established for damages or injuries to any person or property, including to Owner's tenants, guests, invitees, agents or employees, which arise from or are connected with or caused or claimed by the acts or omissions of Owner, and its agents, employees or contractors, in performing the obligations specified herein, and all expenses of investigating and defending against same; provided, however, that Owner's duty to indemnify and hold harmless all not include any claims or liability arising from the established sole negligence or willful misconduct of the City, its agents, officers or employees.

6. **BINDING ON FUTURE OWNERS:** This covenant shall run with the land and shall be binding upon the undersigned owners, their heirs, executors, administrators, assigns and successors in interest.

OWNER(S) OF RECORD:

_____ _____

(Owner's Signature) (Owner's Signature)

_____ _____

(Owner Print Name & Title) (Owner Print Name & Title)

State of California
County of San Luis Obispo

On_____,20 ,before me,_____
_____ and _____

_____, personally appeared before___ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signatures(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____(Seal), Notary Public

City of Morro Bay

For Private Stormwater Management System Operations and Maintenance

EXHIBIT A – Post Construction Stormwater Management System Operations & Maintenance Plan

The 'Stormwater Management System Operations & Maintenance Plan' is to be filled out by landowner/designer and attached to the Constructive Notification for Private Stormwater Management System Operations and Maintenance upon recording. **NOTE: EXHIBIT B – 'Post Construction Stormwater Management System Operations & Maintenance Checklist' template is to be attached to the Constructive Notification. The approved and recorded template shall be filled out by the owner and submitted to the City by June 15th of each year.**

PART 1A – General Information

General Information		
1	Property APN(s):	
2	Project Address(es):	
3	Owner:	
4	Address:	
5	Phone:	
6	Email:	
Stormwater Management System Information		
7	Designer:	☐CE ☐QSP ☐QSD ☐ Other
8	Company/Firm:	
9	Address:	
10	Phone:	
11	Email:	
12	Estimated Annual Cost for Maintenance Once Established*:	
13	Other Pertinent Info:	

*Attach Cost Estimate Spreadsheet

PART 1B: STRUCTURAL CONTROL MEASURE (SCM) DETAILS

SCM#: _____

1. Purpose(s) of SCM (check all that apply):	☐ Water Treatment		☐ Runoff Retention		☐ Peak Management
2. Type(s) of SCM Installed:	☐ Retention/Infiltration Basin, Trench, or Swale ☐ Subsurface Basin ☐ Detention Basin		☐ Biofiltration Swale ☐ Catch Basin ☐ Filter Strip(s)		☐ Water Quality Unit ☐ Proprietary Devices ☐ Other: _____
3. Description & Location of SCM (As necessary, refer to PART 2 – Drawings & Photos):	☐ Onsite Description:			☐ Offsite	
4. Drainage Design Criteria:	Design Storm Flow (cfs):				
	Design Storm Capacity (ft^3):				
5. Design Details (As applicable):	Length (ft):			Surface Area (ft^2):	
	Width (ft):			Capacity/Volume (ft^3):	
	Depth (ft):			Vegetation Height (in):	
	Slope (ft/ft):			Design Life (yrs):	
6. SCM Product Specifications (attach applicable specification sheets):	Product Name:				
	Manufacturer/Model Number:				
	Number Installed:				
	Product Life:				
7. SCM Inspection & Maintenance Requirements:	Date of installation:				
	Short Term Required Maintenance (describe or attach plan):				
	Long Term Required Maintenance (describe or attach plan):				

Include additional pages for multiple SCMs as necessary.

Page ___ of ___

PART 2 – Drawings & Photos

In addition to the location description, provide a copy of drawings showing each Structural Control Measure. Provide a plan view showing SCM location(s) relative to the parcel property lines. Include any details of the SCM and any additional sheets, reduced site plans or dated post construction photos to clearly define the limits of the SCM(s).

Ensure the drawings include the following:

- ☐ North Arrow
- ☐ Scale or Dimensions
- ☐ Length/Width
- ☐ Volume Depth
- ☐ Slopes
- ☐ Surface Area
- ☐ Cross Section(s)
- ☐ Unique Number for Each Structural Control Measure (SCM) as assigned by the City

PART 3 – Certification and Approval

I certify the information provided in EXHIBIT A – Post Construction Stormwater Management System Operations & Maintenance Plan and EXHIBIT B – Post Construction Stormwater Management System Operations & Maintenance Checklist to be true and correct.

Owner (Print Name)	Signature	Date
Designer (Print Name)	Signature	Date

The Post Construction Stormwater Management System has been reviewed, field verified and approved by (professional engineer, geologist, architect or landscape architect) :

Verifier (Print Name)	License No.	Signature	Date

The 'Post Construction Stormwater Management System Operations & Maintenance Plan' and 'Post Construction Stormwater Management System Operations & Maintenance Checklist' has been reviewed and approved by:

City Representative (Print Name, Title)	Signature	Date

EXAMPLE TEMPLATE

City of Morro Bay

For Private Stormwater Management System Operations and Maintenance

EXHIBIT B – Post Construction Stormwater Management System Operations & Maintenance Checklist

The following TEMPLATE shall be tailored to the Project SCMs and submitted with EXHIBIT A – Post Construction Stormwater Management System Operations & Maintenance Plan for approval. Remove all unnecessary text or instructions such as 'EXAMPLE' prior to submission. Contact the City for electronic forms.

Completed forms shall be submitted annually by June 15th to:

City of Morro Bay
Public Services Department
955 Shasta Ave
Morro Bay, CA 93442

-or-

brands@morro-bay.ca.us
Subject: Annual Reporting Requirements

General Information			
Property APN(s):			
Project Address(es):			
Owner:			
Address:			
Phone:		Email:	
Report Year:			
Inspector(s) (First & Last Name, Initials):			
Date of Inspection(s):			
SCM Number(s) Inspected:			

I certify the provided information to be true and correct and that the Structural Stormwater Control Measures (SCMs) on my property have been maintained, monitored, inspected, cleaned and repaired as required in EXHIBIT A – Post Construction Stormwater Management System Operations & Maintenance Plan.

Owner	Inspecting Party Representative ☐ Licensed Civil Engineer or ☐ QSP No._____
Printed Name	Printed Name
Signature	Signature
Date	Date

During this reporting period (check all that apply):

- ☐ Completed inspections as required in EXHIBIT A – Post Construction Stormwater Management System Operations & Maintenance Plan
- ☐ Completed required short and long term maintenance as required in EXHIBIT A
- ☐ Completed corrective action(s) per the inspection (if applicable)
- ☐ Updated the EXHIBIT A - Post Construction Stormwater Management System O&M Plan to reflect revised site conditions. (Attach any updates.)
- ☐ No spills or system upsets occurred on site.
- ☐ Cleaned all spills promptly and reported the spill as required. *

*For all site spills, list spill date, content, volume and resolution:

Date	Content	Volume	Resolution	Inspector's Initials

Property APN: _____ SCM # _____ Page ___ of ___

EXAMPLE 1: Biofiltration Areas /Swales

Inspection and Maintenance Checklist

Inspected by (Print Name, Initials): *If multiple, list all.*		Report Year:	
Areas Inspected: *(see SCM location map in Post Construction Stormwater Management System Operations & Maintenance Plan)*		*If corrective action is required AND a re-inspection is warranted, indicate* Re-check date:	

Inspection frequency key: A = Annually on_____ ___(*Specify Date, i.e. October 15th*) of each year, M = Monthly, S = after major storm events

Inspection Items	Inspection Frequency	Date Inspected	Inspectors Initials	Maintenance Needed? (Yes/No)	Comments/Description
Is there standing water longer than 1 week after a storm event?	S				
Evidence of erosion?	S				
Vegetation appropriate and healthy?	A				
Area free of debris?	M				
Inlets free of obstructions?	M				
Is there obviously trapped sediment in need of removal (covers vegetation or greater than 3-inches at any spot)?	A				

Inspector comments: *(Use additional sheets or back of this sheet if more room is necessary, include Inspector's initials.)*

Overall condition of facility: ☐ Acceptable ☐ Unacceptable

Corrective Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

Property APN: _____ SCM # _____ Page ___ of ___

EXAMPLE 2: Catch Basin(s)

Inspection and Maintenance Checklist

Inspected by (Print Name, Initials): *If multiple, list all.*		Report Year:	
Areas Inspected: *(see SCM location map in Post Construction Stormwater Management System Operations & Maintenance Plan)*		*If corrective action is required AND a re-inspection is warranted, indicate* Re-check date:	

Inspection frequency key: A = Annually on _____(*Specify Date, i.e. October 15th*) of each year, M = Monthly, S = after major storm events

Inspection Items	Inspection Frequency	Date Inspected	Inspector's Initials	Maintenance Needed? (Yes/No)	Comments/Description
Inlets free of obstructions?	A				
Basins free of obstructions, debris (vegetation)?	A				
Drainage area & slopes leading to catch basin free of sediment & debris?	A				
Is there obviously trapped sediment in need of removal (greater than 3 inches)?	A				

Inspector comments: *(Use additional sheets or back of this sheet if more room is necessary, include Inspector's initials.)*

Overall condition of facility: ☐ Acceptable ☐ Unacceptable

Corrective Action Needed	Due Date

The next routine inspection is scheduled for approximately: _____

STORM WATER MANAGEMENT GUIDANCE MANUAL FOR LOW IMPACT DEVELOPMENT & POST-CONSTRUCTION REQUIREMENTS

EZ MANUAL

March 6, 2014

DRAFT

City of Morro Bay, California

Introduction

Post-Construction Stormwater Management Performance Requirements

The primary objective of these Post-Construction Stormwater Management Performance Requirements is to minimize the downstream impact of increased stormwater runoff that often occurs as the result of development or redevelopment projects. The Post-Construction Requirements emphasize protecting and, where degraded, restoring key watershed processes to create and sustain healthy watersheds. Maintenance and restoration of watershed processes is necessary to protect water quality and beneficial uses.

The intention of this Guidance Manual is to provide developers a tool to both determine the specific requirements for a given project and to plan and design the project so that those requirements are met as efficiently as possible.

This manual can be used for individual single-family residence projects (Net Impervious Area <15,000 SF) here in Morro Bay; if your project doesn't fit into this category then the Main Manual shall be used.

Definitions Related to Post-Construction Requirements

Discretionary Approval – A project approval which requires the exercise of judgment or deliberation when the MS4 decides to approve or disapprove a particular activity, as distinguished from situations where the MS4 merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

Dispersion – The practice of routing stormwater runoff from impervious areas, such as rooftops, walkways, and patios, onto the surface of adjacent pervious areas. Stormwater runoff is dispersed via splash block, dispersion trench, or sheet flow and soaks into the ground as it moves slowly across the surface of the pervious area.

Evapotranspiration (ET) – The loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues).

Gross Impervious Area – Impervious surfaces that are created or replaced by the project. Manufactured permeable surfaces (pervious paving, gapped paving stones, etc.) may be considered as a pervious surface and are considered on a case by case basis. If sidewalks or new pavement in the City right of way is planned or required by code, these surfaces shall also be included in the total. Do not include the surface area of decks with gaps that allow runoff to drain to permeable surfaces below. Gross Impervious Area is used in the initial determination of performance requirements.

Impervious Surface – A hard, non-vegetated surface area that prevents or significantly limits the entry of water into the soil mantle, as would occur under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether the thresholds for application of Performance Requirements are exceeded. However, for modeling purposes, open, uncovered facilities that retain/detain water (e.g., retention ponds, pools) shall be considered impervious surfaces. There are three methods of calculating impervious surface area, depending on the context of the calculation. For more details, see ***Net Impervious Area, Gross Impervious Area, and Equivalent Impervious Area*** definitions.

Landscaped Areas – Areas of soil and vegetation not including any impervious surfaces of ancillary features such as impervious patios, BBQ areas, and pools.

Low Impact Development (LID) – A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Ministerial Approval – A project approval which involves little or no personal judgment by the MS4 as to the wisdom or manner of carrying out the project and only involves the use of fixed standards or objective measurements.

Native Vegetation – Vegetation comprised of plant species indigenous to the Central Coast Region and which reasonably could have been expected to naturally occur on the site.

Net Impervious Area – The sum of new and replaced post-project impervious areas, minus any reduction in total imperviousness from the pre-project to post-project condition: *Net Impervious Area = (New and Replaced Impervious Area) – (Reduced Impervious Area Credit),* where *Reduced Impervious Area Credit* is the total pre-project to post-project reduction in impervious area, if any.

New Development – Land disturbing activities that include the construction or installation of buildings, roads, driveways and other impervious surfaces. Development projects with pre-existing impervious surfaces are not considered New Development.

Permeable or Pervious Surface – A surface that allows varying amounts of stormwater to infiltrate into the ground. Examples include pasture, native vegetation areas, landscape areas, and permeable pavements designed to infiltrate.

Pre-Project – Stormwater runoff conditions that exist onsite immediately before development activities occur. This definition is not intended to be interpreted as that period before any human-induced land activities occurred. This definition pertains to redevelopment as well as initial development.

Project Site – The area defined by the legal boundaries of a parcel or parcels of land within which the new development or redevelopment takes place and is subject to these Post-Construction Stormwater Management Requirements.

Rainwater Harvest – Capture and storage of rainwater or stormwater runoff for later use, such as irrigation (without runoff), domestic use (e.g. toilets), or storage for fire suppression.

Receiving Waters – Bodies of water, surface water systems or groundwater that receive surface water runoff through a point source, sheet flow or infiltration.

Redevelopment – On a site that has already been developed, construction or installation of a building or other structure subject to the Permittee's planning and building authority including: 1) the creation or addition of impervious surfaces; 2) the expansion of a building footprint or addition or replacement of a structure; or 3) structural development including construction, installation or expansion of a building or other structure. It does not include routine road maintenance, nor does it include emergency construction activities required to immediately protect public health and safety.

Replaced Impervious Surface – The removal of existing impervious surfaces down to bare soil or base course, and replacement with new impervious surface. Replacement of impervious surfaces that are part of routine road maintenance activities are not considered replaced impervious surfaces.

Routine Road Maintenance – includes pothole and square cut patching; overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage; shoulder grading; reshaping/regrading drainage systems; crack sealing; resurfacing with in-kind material without expanding the road prism or altering the original line and grade and/or hydraulic capacity of the road.

Self-Retaining Areas – (also called "zero discharge" areas), are designed to retain some amount of rainfall (by ponding and infiltration and/or evapotranspiration) without producing stormwater runoff. Self-Retaining Areas may include graded depressions with landscaping or pervious pavement.

Self-Treating Areas – are a portion of a Regulated Project in which infiltration, evapotranspiration and other natural processes remove pollutants from stormwater. The self-treating areas may include conserved natural open areas and areas of native landscaping. The self-treating area only treats the rain falling on itself and does not receive stormwater runoff from other areas.

Single-Family Residence – The building of one single new house or the addition and/or replacement of impervious surface associated with one single existing house, which is not part of a larger plan of development.

Stormwater Control Measures – Stormwater management measures integrated into project designs that emphasize protection of watershed processes through replication of pre-development runoff patterns (rate, volume, duration). Physical control measures include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water use. Design control measures include but are not limited to conserving and protecting the function of existing natural areas, maintaining or creating riparian buffers, using onsite natural drainage features, directing runoff from impervious surfaces toward pervious areas, and distributing physical control measures to maximize infiltration, filtration, storage, evaporation, and transpiration of stormwater before it becomes runoff.

Tributary Area – The entire project area except for undisturbed areas of planted areas with native vegetation that do not receive runoff from other areas and impervious surface areas that discharge to infiltration areas that will not produce runoff or create nuisance ponding. The Drainage Management Areas are smaller Tributary Areas that cumulatively make up the Tributary Area of the entire site.

Does My Project Need to Meet Post-Construction Performance Requirements?

Projects subject to these Post-Construction Performance Requirements include all New Development or Redevelopment projects that create and/or replace ≥2,500 square feet of impervious surface (collectively over the entire project site). In general, the larger the impervious surface created or replaced, the more rigorous the requirements become. However, a single family residence (SFR) project has a higher threshold before advance requirements apply. Consequently, these two elements (gross impervious area and project type) need to be determined and quantified as a first step in the process.

1. **Gross Impervious Area**: Gross Impervious Area is the total of newly created and replaced impervious surfaces. Existing impervious surfaces that are within the project site but are not being replaced do not count in this calculation. Impervious surfaces are any hard, non-vegetated surface areas that prevent or significantly limit the entry of water into the soil. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Manufactured permeable surfaces (pervious paving, gapped paving stones, etc.) may be considered as pervious surfaces and are considered on a case by case basis. If sidewalks or new pavement in the City right of way is planned or required by code, these surfaces shall also be included in the total. Surface areas of decks with gaps that allow runoff to drain to permeable surfaces below are not considered imperious areas. For redevelopment projects, both new and replaced impervious surfaces are included. If the Gross Impervious Area is less than 2,500 square feet, the project is exempt from requirements.
2. **Type of Project**: A list of types of projects that are exempt for all stormwater requirements is detailed below. If not exempt:
    a. Is the project a new development or redevelopment project? Projects are classified as redevelopment if the project replaces or adds to existing impervious surfaces. Projects located on land with no existing impervious surfaces are considered new development.
    b. Does the project involve the construction or reconstruction of one detached single family residence (SFR)? If not, the applicant must use the Main Manual.

The Performance Requirement Determination Form in Appendix A is provided to document the results of the above assessment. It shall be completed and filed with the Planning permit application. If the project is exempt, no further documentation is required. If not exempt, a calculation of the Net Impervious Area is required.

PROJECTS EXEMPT FROM STORMWATER REQUIREMENTS

Project that are exempt from the Post-Construction Performance are as follows (check any box on the list and no further action is required):

- ☐ Road and Parking Lot maintenance:
  - Road surface repair including slurry sealing, fog sealing, and pothole and square cut patching
  - Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
  - Shoulder grading
  - Cleaning, repairing, maintaining, reshaping, or re-grading drainage systems
  - Crack sealing
  - Resurfacing with in-kind material without expanding the road or parking lot
  - Practices to maintain original line and grade, hydraulic capacity, and overall footprint of the road or parking lot
  - Repair or reconstruction of the road because of slope failures, natural disasters, acts of God or other man-made disaster
- ☐ Sidewalk and bicycle path or lane projects, where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas
- ☐ Trails and pathways, where no other impervious surfaces are replaced or created, and built to direct stormwater runoff to adjacent vegetated areas
- ☐ Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics
- ☐ Curb and gutter improvement or replacement projects that are not part of any additional creation or replacement of impervious surface area (e.g., sidewalks, roadway)
- ☐ Second-story additions that do not increase the building footprint
- ☐ Raised (not built directly on the ground) decks, stairs, or walkways designed with spaces to allow for water drainage
- ☐ Photovoltaic systems installed on/over existing roof or other impervious surfaces, and panels located over pervious surfaces with well-maintained grass or vegetated groundcover, or panel arrays with a buffer strip at the most down gradient row of panels
- ☐ Temporary structures (in place for less than six months)
- ☐ Electrical and utility vaults, sewer and water lift stations, backflows and other utility devices
- ☐ Above-ground fuel storage tanks and fuel farms with spill containment system

Net Impervious Area Calculation

Net Impervious Area is the Gross Impervious Area minus any reduction in total imperviousness from the pre-project to post-project condition: Net Impervious Area = (Gross Impervious Area) - (Reduced Impervious Area Credit), where Reduced Impervious Area Credit is the total pre-project to post-project reduction in impervious area, if any. The result of this calculation is used to determine if a project is subject to the requirements described in this EZ Manual

Examples of Calculating **Net Impervious Area**

Example 1:

The project is a property that is an existing residence with 20,000 sf of impervious surface, including residence, garage, driveway, tennis court, etc. The new project will redevelop the site and have a total impervious area of 18,000 sf.
The **Reduced Imperious Area Credit** is 20,000 – 18,000 = 2,000 sf.
The **Net Impervious Area** is 18,000 – 2, 000 = 16,000 sf.
The **Net Impervious Area** is 16,000 sf which is greater than 15,000 sf .
The project is subject to requirements in the Main Manual.

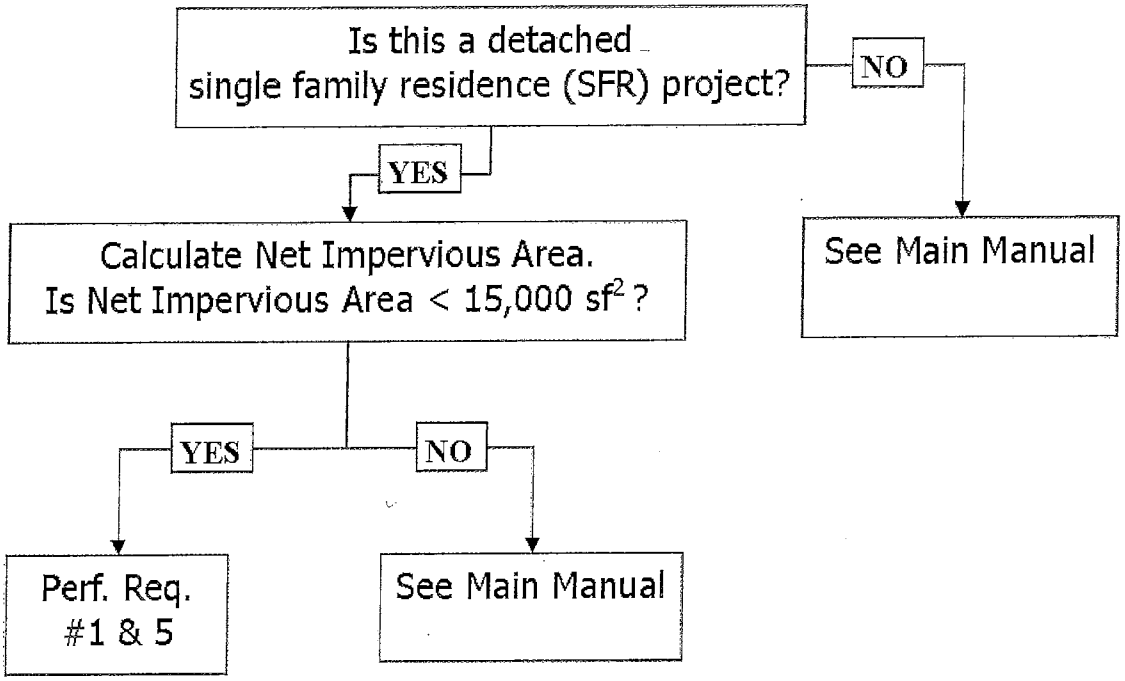
Example 2:

The project is a property that is an existing residence with 20,000 sf of impervious surface, including residence, garage, driveway, tennis court, etc. The new project will redevelop the site, replacing the 4,000 SF paved tennis court with natural grass bocce courts and landscaping resulting in a total impervious area of 16,000 sf.
The **Reduced Imperious Area Credit** is 20,000 – 16,000 = 4,000 sf.
The **Net Impervious Area** is 16,000 – 4, 000 = 12,000 sf.
The **Net Impervious Area** is 12,000 sf which is less than 15,000 sf .
The project is subject to requirements in this Manual.

Once the Net Impervious Area Calculation is determined, use the following flow chart to determine the Post-Construction Performance Requirements for the project. Complete the Performance Requirement Determination Form (Appendix A) once the Flow Chart has been used to determine Performance Requirements.

Flow Chart

Performance Requirements Flow Chart for non-exempt projects



Performance Requirement No. 1

Site Design and Runoff Reduction

Projects subject to Performance Requirement No. 1 (PR.1) are:

Projects that create and/or replace $\geq$ 2,500 square feet of impervious surface (collectively over the entire project site), including detached single-family homes.

The Project Engineer shall submit a stamped and signed copy of the Performance Requirement No.1 Certification, as included on the following page; certifying Low Impact Development design strategies are included in the project design. Each strategy that has been incorporated into the design should be initialed by the project engineer, or marked NA if not applicable.

PERFORMANCE REQUIREMENT NO. 1 CERTIFICATION		
	LOW IMPACT DEVELOPMENT (LID) DESIGN STRATEGY	INCORPORATED
1.	Limit disturbance of creeks and natural drainage features.	
2.	Minimize compaction of highly permeable soils.	
3.	Limit clearing and grading of native vegetation at the site to the minimum area needed to build the project, allow access, and provide fire protection.	
4.	Minimize impervious surfaces by concentrating improvements on the least sensitive areas of the site, while leaving the remaining land in a natural undisturbed state.	
5.	Minimize stormwater runoff by implementing one or more of the following design measures:	
	a) Direct roof runoff into cisterns or rain barrels for reuse.	
	b) Direct roof runoff onto vegetated areas safely away from building foundations and footings.	
	c) Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas safely away from building foundations and footings.	
	d) Direct runoff from driveways and/or uncovered parking lots onto vegetated areas safely away from building foundations and footings.	
	e) Construct bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios with permeable surfaces.	

I, _____, acting as the Project Engineer for _____ project, located at _____, hereby state that the Site Design and Runoff Reductions design strategies initialed above have been incorporated into the design of the project.

_____ _____

Signature Date

Performance Requirement No. 5

Large Peak Flow Control

All non-exempt new development or redevelopment projects that create or replace more than 2,500 square feet of impervious surfaces are subject to Performance Requirement 5. Exempt projects are those that are located in areas that have no potential for downstream flooding. For example, projects along the west side of the Embarcadero that drain directly to the bay are exempt from flood control requirements.

Goal:

For peak runoff flow control, post-development peak runoff flows shall be reduced to within 5% of the pre-development flows from the 10, 25, 50 and 100-year rainfall events. For the purposes of runoff flow control, the pre-development condition shall be natural soil and vegetation.

Methods:

- Detention basin design shall include development of a post-construction runoff hydrograph that is routed through the basin. If NRCS TR-20 is used, the following assumptions shall apply:
  - Storm Type: Type 1, 24-hr, San Luis Obispo D, or custom rainfall curve for Morro Bay[1]
  - Antecedent Moisture Condition: 2
  - Storm Duration: 24 hours
  - 24-hour rainfall depths: per NOAA Precipitation maps (http://hdsc.nws.noaa.gov/hdsc/pfds)
- Detention storage may be surface or subsurface. Parking areas may be used for detention as long as flood depth does not exceed six inches in the 100-year event.
- The detention facility may be designed to satisfy PR.1 by incorporating infiltration capacity or dead storage volume for reuse.
- For other detention basin design standards, refer to the current version of the SLO County Public Improvement Standards.

[1] Some hydrologic modeling programs, such as HydroCAD v.10, have built in Storm Types for San Luis Obispo (taken from the SLO Creek WMP). Such programs also have the ability to create custom storm curves. The analysis may use the standard Type 1 or one of the storm types specific to the site.

Section 8

Maintenance and Reporting

An Operation and Maintenance Plan (O&M) is required for all projects that utilize Structural Control Measures (SCMs) to satisfy Performance Requirements 1 and 5. A maintenance program is essential to ensure that the stormwater facilities continue to function as designed to maintain treatment, peak flow control and prevent possible flooding and property damage.

A proper maintenance plan must include:

- Site map of all facilities requiring O&M practices to function as designed
- Procedures are provided for each structural control measure including, but not limited to, LID facilities, retention/detention basins, and outlet control structures.
- Short and long term maintenance requirements
- Estimated cost for maintenance

Appendix K in the Main Manual has templates to aid in the development of the O&M Plan.

The O&M plan shall be prepared under the direction of a professional civil engineer registered in the State of California. The plans shall be stamped, signed and include a certifying statement indicating that all stormwater BMPs have been designed to meet the City's stormwater management requirements.

Applicants of regulated projects subject to Performance Requirement 5 are required to demonstrate compliance with these requirements on an annual basis.

APPENDIX A

SFR PERFORMANCE REQUIREMENT DETERMINATION FORM

The following form shall be completed for all SFR development and redevelopment projects. Projects that are exempt from performance requirements are required to complete Section 1 & 2 only.

Section 1: General Information	
Project name	
Project Address	
Assessor's Parcel Number(s)	
Name of Applicant	
Applicant email address:	
Applicant phone:	
Project Type (e.g. single-family residential, commercial, etc.)	
Section 2: Area Information	
Total Project Area	
Total Existing impervious surface area	
Proposed Gross Impervious Area Calculation	
a. Rooftops	
b. Driveways	
c. Patios	
d. Parking Lots	
e. Other	
Total Gross Impervious Area	
If Gross Impervious Area <2,500 ft^2, write "EXEMPT". Otherwise continue to Sec. 3	
Section 3: PR Determination	
Net Impervious Area	
Performance Requirements (from Flow Chart)	

AGENDA NO: C-2

MEETING DATE: February 20 , 2014

Staff Report

TO: **Public Works Advisory Board** **DATE: February 14, 2014**

FROM: **Rob Livick, PE/PLS – Public Services Director**

SUBJECT: Water Status Report

RECOMMENDATION

That the Public Works Advisory Board receive a presentation of the draft **Water Status and Drought Conditions** and provide comments to staff.

DISCUSSION

The City Council received an update on the City's water supply status and drought conditions at their January 28, 2014 City Council meeting. Then on February 11, 2014 the City Council received the required annual water report and established the water allocations for the upcoming year.

On January 17, 2014 California Governor Jerry Brown declared an emergency due to drought conditions. This declaration called for a voluntary 20-percent reduction in water consumption. Additionally, on January 22, 2014 the City of Morro Bay implemented Mandatory Water Conservation Requirements for Severely Restricted Water Supply Conditions. Then on January 31, 2014, County staff informed the State Water Project subcontractors that the allocation for 2014 is now officially at 0-percent, and only stored water is available to meet delivery requests. The City of Morro Bay has approximately 3073 Acre-Feet of water stored in San Luis Reservoir. If the City is able to achieve a 20-percent reduction in water consumption from approximately 1270 acre-feet/year to 1016 acre-feet per year, that will provide for a little over three years' worth of supply, unfortunately due to system constraints this water may only be available in 2014. The City is working with the County and other agencies in order to store the State Water Project Water water locally, perhaps in Lopez Lake and take the water over the next three years through exchanges with other local water providers.

Council requested that the PWAB review the Water Equivalency Unit retrofit policy and procedures at a special meeting in March (C-3).

CONCLUSION

After hearing the presentation regarding Morro Bay's water status, the Board should make recommendations to staff.

ATTACHMENTS

1. Presentation prepared and presented at the January 28, 2014 City Council meeting
2. Annual Water Report presented at the February 11, 2014 City Council meeting

Prepared By: RL **Dept Review: RL**

AGENDA NO: B-2

MEETING DATE: February 11, 2014

Staff Report

TO: **Honorable Mayor and City Council** **DATE: February 4, 2014**

FROM: **Rob Livick, PE/PLS – Public Services Director/City Engineer**

SUBJECT: **2013 Annual Water Report and Allocation of 2014 Water Equivalency Units**

RECOMMENDATION:

Staff recommends that the City Council adopt Resolution No. 14-14 approving the following:

1. Allocate the mix of residential units as 60 percent single-family and 40 percent multi-family units; and authorize the corresponding water equivalency allocation for residential uses at 50 WEU's (water equivalency units).
2. Process Residential Allocations limits on a first-come first-serve basis, based on the priorities contained in the current General Plan and Local Coastal Plan policies.
3. Authorize allocation of 130% of the residential water equivalency units which is equal to 65 WEU's to commercial and industrial projects, within the priority categories consistent with the current Local Coastal Plan and General Plan policies.
4. Does not preclude the potential for rolling over unused water allocations to next year.
5. New WEU's requested for 2014 be offset on a ~~one~~-to-one basis by providing retrofits to existing uses. The Public Services Director is responsible for the review and approval of the proposed retrofits to ensure that they offset the water supply requested by new development in accordance with Morro Bay Municipal Code Chapter 13.20.080.
6. Provide direction to staff to bring back revisions to Morro Bay Municipal Code Section 13.20 that reflects the realities of report preparation dates.

ALTERNATIVES

As an alternative to authorizing WEU's, Council can place a moratorium on new WEU's until such time the City receives its full allocation of State Water Supply and the Governor rescinds the drought declaration or the City develops significant new water supplies.

FISCAL IMPACT

There are no fiscal impacts directly associated with the allocation of water equivalency units. Staff performs the annual water report and makes the recommendation on the authorization of water equivalency units as a routine annual task. Although, a moratorium on new WEU's

Prepared By: __RL____ **Dept Review:**_____

City Manager Review: _____

City Attorney Review: _____

will reduce the amount of revenue that the City receives through building and planning fees, property taxes, sales taxes and other property related revenues.

BACKGROUND

Pursuant to the Amended Section 13.20.060 of the Municipal Code, the Annual Water Report has been prepared by the Public Services Department and forwarded to the City Council for consideration and adoption. This report describes the uses that have received water equivalency allocations in 2013 (Table 1), and provides the Director's recommendation regarding the building allocation for residential units and the suggested mix of multi-family and single family residential units for 2013 as indicated in City Council Resolution No. 78-00. That Resolution indicates that the City Council would continue to set an annual limit on residential units and their mix as set forth in Ordinance 266. In addition, this report provides a snapshot of the City's population (Table 2), water production (Table 3), per capita water use trends (Table 4), and water loss estimates (Tables 5 & 6).

DISCUSSION

History of the WEU's allocation**:**

Historically the City Council allocated a total of 160 residential WEU's for both types of residential and 130 percent of that allocation to commercial and industrial until 2002. That number was increased to a total of 230 residential WEU's until the 2006 allocation approval when the Council reduced the total by half or to 115 WEU.

Water Management Plan:

On January 17, 2014 California Governor Jerry Brown declared an emergency due to drought conditions. This declaration called for a voluntary 20-percent reduction in water consumption. Additionally, on January 22, 2014 the City of Morro Bay implemented Mandatory Water Conservation Requirements for Severely Restricted Water Supply Conditions. Then on January 31, 2014, County staff informed the State Water Project subcontractors that the allocation for 2014 is now officially at 0-percent, and only stored water is available to meet delivery requests. The City of Morro Bay has approximately 3073 Acre-Feet of water stored in San Luis Reservoir. If the City is able to achieve a 20-percent reduction in water consumption from approximately 1270 acre-feet/year to 1016 acre-feet per year, that will provide for a little over three years' worth of supply.

The City's other sources of water are also constrained. The Chorro Valley wells require stream flows in Chorro Creek to exceed 1.4 cfs in order to pump ground water from those wells; additionally water pupped from those wells is high in nitrates and cannot be used without treatment or blending. The Morro Valley wells are also high in nitrates and require treatment at the City's water treatment plant to remove them. The salt water well, outfall and associated piping components of the City's Water Treatment Plant (desalinization and brackish water reverse osmosis) do not have a valid coastal development permit. The Coastal Development Permit issued for these components in 1994 was valid for five years with conditions to make the permit permanent. Perhaps due to the availability of the seeming endless supply of State Water in the late 1990's, the City did not renew this permit. This expired permit was discovered in 2012 during the permitting of the Wastewater

Treatment facility. City staff has applied for a permanent Coastal Development Permit for the afore mentioned water treatment component and is working with Coastal Commission staff to address the new California Ocean Plan requirements and other issues prior to going to hearing later in 2014, where we expect to receive a permit.

As stated in last year's report, in 2008 City Council reviewed the conditions of the community's long-term potable water supply and as a result approved the Water Management Plan Status Report. This report, performed at least every 5 years, looked at: "any changes in climatic, hydrological, technological, or political conditions that could affect the City's long-term water supply whether negatively or positively." It was determined as a result of the review that the existing resources are adequate and sustainable for build-out of the community in accordance with the General Plan. While the findings of the Water Management Plan stated that the City's water supplies are adequate for build-out, the report did not anticipate the drought conditions described above. Therefore it seems prudent for staff to recommend that any New WEU's requested be offset on a one-to-one basis by providing retrofits to existing uses. These retrofits can come in the form of installation of rainwater catchment systems to dual/ultra-low flush toilets. The Public Services Director will review the proposed retrofits and ensure that they offset the water supply requested by new development. This would apply to any new WEU requests received after the adoption of City Council Resolution 14-14.

Potable Water Production Data: As shown in Table 3, for calendar year 2013 no water was extracted from the City's Chorro Basin, 27 acre feet came from the Morro Basin un-treated and blended, 1137 acre-feet were delivered from the State Water Project (SWP), and 107 acre feet of treated Morro Basin well water from the water treatment (Brackish Water Reverse Osmosis) plant. Table 3 shows the total water production for this year was 1271 acre-feet.

Table 4 provides an historical record of water production and use from 1960 through 2013. Beginning in 1997, per capita water use has been re-calculated, based upon the amount of water delivered to customers (metered/sold) rather than gross production, to closely reflect actual community consumption practices.

Table 5 shows the calculations for this year's un-metered and unaccounted water loss, and Table 6 provides the history of unaccounted water loss from 1985 through 2013. Due to the City's proactive maintenance in leak repairs and replacement of under registering meters, unaccounted water loss continues to be less than five percent.

The 2013 average consumption was 117 gallons per capita per day (gpcd). In accordance with the Water Management Plan (page 1, Section 2), this consumption is below the 130-gpcd threshold.

Water Allocation Mix: Water equivalencies units (WEUs's) are allocated each year for residential, commercial and industrial uses. Tables 1, shows that historically the majority of residential permits issued have been single family units. The current allocation mix provides

sufficient allocations for the single family development while providing sufficient multiple family allocations to encourage and facilitate their development. The City's 2009 Housing Element indicates that for the period from 2009 to 2014, Morro Bay's fair share of housing will be 98 residential units. Staff recommends that in 2014, the Council continues to allocate, as it has historically done in 2007-2013, 50 residential WEU's with 60 percent of these units allocated to single family and 40 percent to multiple family and that 115 WEU's (130% of residential) be allocated to commercial/industrial uses, with the stipulation that any new WEU's need to be offset by water conservation retrofits.

Summary of 2013 activity:
The Council authorized 50 WEU's for 2013 with 60 percent to be used for single family dwellings and 40 percent for multiple family dwellings with no rollovers. These WEU's were allocated on a first-come, first-serve basis. The tracking of the WEU's utilized in 2013 indicates that a total of 20.91 WEU's were used as follows:

- 0.37 Commercial
- 20.54 Single Family
- 0 Multiple Family

This is not a comprehensive list of all building activity but rather a list of those activities which required a WEU allocation.

Additional Considerations
Section 13.20 of the City's Municipal Code requires the delivery of the annual water report to City Council in January of each year. Unfortunately due to the complexities of the City's water supply, staffing constraints and when the State Water data is received, it is not possible to portray an accurate assessment of the City's water supply in January, especially if input is desired from the Planning Commission. Therefore, staff requests that the City Council provide direction to make modifications to the MBMC that reflect the time to receive and process the data from the previous year.

CONCLUSION

By adopting Resolution 14-14 the Council will be following the guidelines provided in Ordinance 266, ensuring that water usage will continue to be monitored.

ATTACHMENTS

1. Table 1: Distribution of Water Equivalency Units
2. Table 2: Population
3. Table 3: Water Production
4. Table 4: Per Capita Water Use
5. Table 5: Unaccounted for Water Loss for 2013
6. Table 6: Historical Unaccounted for Water Loss

RESOLUTION NO. 14-14

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORRO BAY, CALIFORNIA, APPROVING THE 2013 ANNUAL WATER PROGRESS REPORT AND ADOPTING A WATER ALLOCATION PROGRAM FOR 2014

THE CITY COUNCIL
City of Morro Bay, California

WHEREAS, Chapter 13.20 of the Morro Bay Municipal Code, calls for the City Council of the City of Morro Bay to adopt a yearly Water Allocation Program based on a report by the Public Services Director after review by the City of Morro Bay Planning Commission and Public Works Advisory Board; and

WHEREAS, the Local Coastal Program Land Use Plan and Ordinance Number 266, requires the City Council to set an annual limit on new residential units and to prescribe the mix of multi-family and single family residences allowed within that limit; and

WHEREAS, on January 17, 2014 California Governor Jerry Brown declared a water emergency, due to drought conditions; calling for a voluntary 20-percent reduction in water consumption; and

WHEREAS, on January 22, 2014 the City of Morro Bay implemented Mandatory Water Conservation Requirements for Severely Restricted Water Supply Conditions; and

WHEREAS, on January 31, 2014, County staff informed the City of Morro Bay that the State Water Project allocation for 2014 is now officially at 0-percent, and only stored water is available to meet delivery requests; and

WHEREAS, on the 11th day of February, 2014 the City Council did hold a duly noticed Public Hearing on the 2013 Annual Water Progress Report and the proposed 2014 Water Allocation Program.

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Morro Bay, California, as follows:

A. The City Council of the City of Morro Bay hereby receives and accepts the 2013 Annual Progress Water Report as submitted by the Public Services Director, as incorporated herein as if attached hereto; and

B. A Water Allocation Program for the year 2014 is hereby adopted by the City Council of the City of Morro Bay containing the following elements:

1. Allocate the mix of residential units to 60 percent single-family and 40 percent multi-family units; and authorize the corresponding water equivalency allocation for residential uses at 50 Water Equivalency Units;

2. Process Residential Allocations limits on a first-come/ first-serve basis, based on the priorities contained in the current General Plan and Local Coastal Plan policies. Unused multiple family residential WEU's may be rolled over to single family dwellings after September 30, 2013;

3. Authorize allocation of 130% of the residential water equivalency units to commercial and industrial projects, within the priority categories consistent with the current Local Coastal Plan and General Plan policies;

4. The potential for rolling over unused water allocations to next year is not precluded by this action; and

5. ~~New WEU's requested for 2014 be offset on a one-to-one basis by providing retrofits to existing uses. The Public Services Director is responsible for the review and approval of the proposed retrofits and ensure that they offset the water supply requested by new development.~~ TWO.

PASSED, APPROVED, AND ADOPTED, by the City of Morro Bay City Council, at a regular meeting held on this 11th day of February, 2014 by the following vote:

AYES:

NOES:

ABSENT:

_____
Jamie L. Irons, Mayor

ATTEST:

_____
JAMIE BOUCHER, City Clerk

Table 1

HISTORIC TRACKING OF ALLOCATIONS

Allocations tracked on a calendar year basis

Allocation Year (January 1-December 31)	Total WEU Available	Number of Residential WEUs available	Single Family Residential WEUs allocated	Number of SFR Units	Multiple Family Residential WEUs allocated	Number of Multiple Family Units	Number of Commercial/Industrial WEU available	Commercial "A"	Commercial "B"	Industrial	Total WEU Allocated
2013	115	50	20.54	20.54	0	0	0.37	**0**	0.37	**0**	20.91
2012	115	50	7	7	0	0	65		7.13	**0**	14.13
2011	115	50	4.54	5	0	0	65	3.85	**0**	**0**	8.85
2010	115	50	9.54	10	0	0	65	0.74	0	0	10.28
2009	115	50	2.62	5	2.62	0	65	0	0	0	2.62
2008	115	50	6.54	7	1.6	1	65	3.97	0	0	12.11
2007	115	50	25.7	28	10.2	18	65	1.15	0	0	37.44
2006	230	100	35.62	37	5.76	8	130	3	3.84	0	48.22
2005	230	100	40.48	46	6.17	10	130	15.5	1.63	0	63.78
2004	230	100	28	28	11.42	19	130	0	2.44	0	41.86
2003	262	100	54	54	8.86	15	130	7.56	0	0	70.42
2002	160	69.52	28	28	5.24	8	90	6.1	9.3	0	48.64
2001	160	69.52	63	63	6.89	11	90	4.77	0	0	74.66
2000	160	69.52	68	68	4.86	9	90	9.39	0	0	82.25
1999	160	69.52	53	53	1.32	2	90	0	0	0	54.38
1998	156	68	56.62	66	6.48	18	90	1.38	0	0	64.48

Allocations tracked on a fiscal year basis.

Allocation Year (July 1 of previous year to June 30 of the year shown)	Total WEU Available	Number of Residential WEUs available	Single Family Residential WEUs allocated	Multiple Family Residential WEUs allocated	Number of Commercial A WEU available	Commercial "A" allocated	Number of Commercial B WEU available	Commercial "B" allocated	Number of Industrial WEU available	Industrial allocated	Total WEU Allocated
1997	153.13	66.12	7.54	0.36	62.37	0.05	0.05	11.71	12.93	0	7.95
1996	153.13	66.12	23	0	62.37	62.37	11.71	2.63	12.93	0	88.00
1995	146.65	63.74	29.44	0	60.11	19.15	11.29	4.06	12.46	0	52.83
1994	147.6	63.74	29	0.36	60.11	0	11.29	0	12.46	0	29.36
1993	149.55	64.58	43	1.56	60.9	9.54	11.44	0.57	12.63	0	54.67
1992	149.55	64.58	46	10.25	60.9	0	11.44	8.07	12.63	0.43	64.75

Notes:

In 2003 there was a one time allocation for Colmer Tract 2285

In 1998, 2000, 2001 & 2002there were residential rollover of WEUs

Commercial "A" (Commercial fishing/Agriculture, coastal dependent uses, coastal related, public, quasi-public and institutional uses, visitor accommodations, campgrounds)

Commercial "B" (Visitor-serving uses except visitor accommodations)

TABLE 2
PROJECTED GROWTH RATES VERSUS ACTUAL POPULATION INCREASES

	Population		Housing	
Year	Population Per Ord. 266/LCP [1]	Actual Population [2]	Units Per Ord. 266 Projections	Actual No. Of Housing Units [3]
1980	9425	9064	N/A	5180
1981	9705	9206	N/A	5298
1982	9998	9297	N/A	5302
1983	10298	9435	N/A	5326
1984	10400	9599	N/A	5363
1985	10505	9747	5440	5403
1986	10610	9881	5517	5473
1987	10716	9819	5594	5548
1988	10823	9975	5671	5638
1989	10931	10133	5748	5647
1990	11040	9664	5825	5694
1991	11150	9806	5902	5760
1992	11262	9736	5979	5760
1993	11489	9979	6056	5845
1994	11489	10071	6133	5877
1995	11604	9518	6210	5888
1996	11720	9687	6287	5922
1997	11837	9696	6364	5960
1998	11955	9845	6441	6005
1999	12123	9871	6518	6048
2000	12196	9981	6595	6104
2000	12196	10410 *	6595	6104
2001	12200 [4]	10486	6672 [4]	6178
2002	12200 [4]	10510	6672 [4]	6220
2003	12200 [4]	10510	6672 [4]	6289
2004	12200 [4]	10522	6672 [4]	6336
2005	12200 [4]	10270	6672 [4]	6392
2006	12200 [4]	10491	6672 [4]	6437
2007	12200 [4]	10436	6672 [4]	6483
2008	12200 [4]	10506	6672 [4]	6492
2009	12200 [4]	10555	6672 [4]	6496
2010	12200 [4]	10608	6672 [4]	6506
2010	12200 [4]	10234*	6672 [4]	6506
2011	12200 [4]	10294	6672 [4]	6511
2012	12200 [4]	10274	6672 [4]	6518
2013	12200 [4]	10317	6672 [4]	6538

[1] This column represents population based on Ordinance 266's projected growth of 77 units per year. These figures indicate that the City's growth rate is behind the Ordinance 266 schedule.

[2] Actual population figures are taken from the California Department of Finance "Housing Estimates" report. The 1990 decennial census is the benchmark for the estimates prior to 2000. After 2000 the 2000 decennial census is used and a second entrée for 2000 shows the adjustment for the new census. Again the 2010 Census adjusts the population figure for 2010. The figures represent totals as of January 1st of each year indicated. The population figure includes an estimated 21% vacancy rate. A lower vacancy rate would result in a higher population.

[3] The total number of Housing units includes the addition of all new residential units to the City's Housing Stock, as well as the deduction of all units lost through demolition, removal, or change of use from residential to non-residential.

[4] This is the maximum population or housing under Ordinance 266 without an election to allow further building.

TABLE 3

WATER PRODUCTION DATA 1980 - 2012
(Acre Feet - AF)

Year	Chorro Basin	Morro Basin	** R/O Plant	State Water	TOTAL (AF)
1980	1079	672	*	*	1751
1981	1143	584	*	*	1727
1982	1061	526	*	*	1587
1983	995	537	*	*	1532
1984	1097	572	*	*	1669
1985	1108	582	*	*	1690
1986	1059	552	*	*	1611
1987	1124	531	*	*	1655
1988	1120	528	*	*	1648
1989	1047	512	*	*	1559
1990	963	564	*	*	1527
1991	808	449	*	*	1257
1992	1049	270	*	*	1319
1993	994	397	*	*	1391
1994	954	460	*	*	1414
1995	986	420	*	*	1406
1996	1261	240	*	*	1501
1997	985	249	*	301	1535
1998	38	*	*	1288	1326
1999	34	*	*	1359	1393
2000	4	*	*	1396	1400
2001	11	*	*	1399	1410
2002	1	32	48	1373	1454
2003	1	28	13	1379	1421
2004	49	213	10	1205	1477
2005	204	150	0	1007	1361
2006	257	80	25	1009	1371
2007	276	35	19	1116	1446
2008	184	52	28	1175	1439
2009	235	80	64	1069	1448
2010	74	54	258	873	1259
2011	14	0.5	84	1144	1243
2012	0	3.9	70	1129	1203
2013	0	27	107	1137	1271

** R/O Plant Production numbers include both Morro Groundwater treated via Brackish Water Reverse Osmosis (BWRO) as well as Sea Water Reverse Osmosis (SWRO).

TABLE 4

TOTAL HISTORIC WATER PRODUCTION & RAINFALL
FOR THE CITY OF MORRO BAY

Attachment 4

Year	Rainfall	City Population	Production in acre feet	Production in millions of gallons	Average daily production in millions of gallons	Average use in gallons per capita per day
1960	10.48	5,599	894	291	0.8	142
1961	8.6	*	842	274	0.75	*
1962	17.22	*	999	326	0.89	*
1963	18.52	*	840	274	0.75	*
1964	11.26	*	881	287	0.79	*
1965	16.08	6,400	1000	326	0.89	140
1966	11.24	6,500	1188	387	1.06	163
1967	20.09	6,600	1194	389	1.07	161
1968	9.64	6,750	1298	423	1.16	172
1969	28.74	6,900	1255	409	1.12	162
1970	9.84	7,109	1534	500	1.37	193
1971	14.2	7,450	1533	500	1.37	184
1972	7.41	7,517	1547	504	1.38	184
1973	27.51	7,725	1424	464	1.27	165
1974	22.35	7,942	1482	483	1.38	167
1975	14.43	8,165	1510	492	1.35	165
1976	11.38	8,394	1574	513	1.41	167
1977	8.35	8,525	1249	407	1.12	131
1978	29.68	8,625	1430	466	1.28	148
1979	17.06	9,150	1614	526	1.44	157
1980	20.99	9,064	1651	538	1.47	162
1981	13.11	9,206	1727	563	1.54	168
1982	20.01	9,297	1586	517	1.42	152
1983	35.01	9,435	1534	500	1.37	145
1984	10.08	9,599	1669	544	1.49	155
1985	10.02	9,747	1691	551	1.51	155[129]
1986	17.17	9,881	1614	526	1.44	146[120]
1987	12.29	9,819	1655	539	1.48	150[127]
1988	15.01	9,975	1648	537	1.47	147[124]
1989	10.88	10,133	1559	508	1.39	137[118]
1990	8.78	9,664	1527	498	1.36	141[115]
1991	16.01	9,806	1256	410	1.12	114[92]
1992	19.63	9,736	1319	430	1.18	121[98]
1993	24.21	9,979	1391	452	1.24	124[98]
1994	11.05	10,071	1414	462	1.26	126[106]
1995	40.01	9,518	1418	462	1.27	133[110]
1996	15.47	9,687	1501	462	1.34	138[110]
1997	18.56	9,696	1535	489	1.37	141[115]
1998	18.01	9,845	1326	432	1.18	120[102]
1999	13.11	9,871	1393	454	1.24	126[108]
2000	19.63	10,410	1400	456	1.25	120[103]
2001	16.04	10,486	1410	459	1.26	118[107]
2002	9.36	10,510	1454	474	1.3	123[108]
2003	13.75	10,485	1421	466	1.28	122[108]
2004	9.48	10,522	1477	481	1.32	125[105]
2005	30.19	10,270	1361	444	1.22	118[106]
2006	18.9	10,491	1371	447	1.23	117[104]
2007	7.24	10,436	1446	471	1.29	118[109]
2008	13.34	10,548	1439	469	1.23	122[111]
2009	12.25	10,555	1448	472	1.29	120[107]
2010	17.26	10,608	1259	410	1.12	106
2011	12.99	10,234	1243	405	1.11	108[102]
2012	10.16	10,327	1203	392	1.07	105[102]
2013	4.05	10,370	1349	440	1.21	117[104]

a: [average] determined from metered water sold, not water produced

TABLE 5

COMPUTATIONS: UNACCOUNTED FOR WATER LOSS TABLE - 2013
ACRE FEET (AF)

	AF
WATER PRODUCED	
From the City of Morro Bay Public Services	1,246
WATER SOLD	
From the City of Morro Bay Finance Department	1,186
DIFFERENCE	60
CITY WATER USE/LOSS (Unmetered & Estimated)	
Fire Hydrant Flushing	0.4
Fire Training	0.1
Fire Fighting	0
Sweeper	0.1
Hydrocleaner	0.9
Dead End Flushing, Water Leaks, Fire Hydrant/Line Breaks	0.2
Meter Error (estimated at 0% average)	0
TOTAL	1.7
UNACCOUNTED FOR WATER LOSS	58.3
LOSS AS PERCENT OF PRODUCTION	4.7%

TABLE 6

UNACCOUNTED FOR WATER LOSS (Acre Feet - AF)						
Year	Water Produced	Water Sold	Difference	City Water Use/Loss	Unaccounted for Water Loss	Percent of Production
1985	1690	1411	280	73	207	12.2%
1986	1610	1330	281	69	212	13.1%
1987	1655	1370	259	70	189	11.4%
1988	1641	1386	255	71	184	11.2%
1989	1559	1343	216	47	170	10.9%
1990	1527	1249	279	47	232	15.2%
1991	1256	1008	248	45	203	16.2%
1992	1319	1068	250	36	215	16.3%
1993	1391	1178	213	0.8	213	15.3%
1994	1414	1194	220	33	187	13.2%
1995	1418	1173	245	60	184	13.0%
1996	1501	1194	307	33	274	18.2%
1997	1535	1247	288	49	239	15.6%
1998	1326	1131	195	17	178	13.4%
1999	1393	1185	208	17	191	13.7%
2000	1400	1206	194	27	167	11.9%
2001	1410	1251	159	29	130	9.2%
2002	1454	1269	185	24	161	11.1%
2003	1421	1258	162	25	138	9.7%
2004	1477	1264	213	26	187	12.7%
2005	1361	1219	143	22	121	8.9%
2006	1371	1219	152	19.2	133	9.7%
2007	1446	1276	171	21.6	149	10.3%
2008	1439	1306	133	67.3	66	4.6%
2009	1448	1264	184	84.9	99	6.8%
2010	1259	1255	4	1.4	3	0.2%
2011	1243	1173	70	1.7	68	5.5%
2012	1203	1163	40	1.4	38.6	3.2%
2013	1246	1186	60	1.7	58.3	4.7%

Statewide unaccounted for water loss in municipal systems varies between 1 to 20 percent. The median is 10 to 15 percent.

Water Supply Update

City of Morro Bay

City Council Meeting

January 28, 2014

Sources of Water

- State Water Project
- Groundwater/Brackish Water Reverse Osmosis
- Sea Water
- Conservation
- Reclaimed Water - Future

State Water Project

- Annual Allocation – 1,313 Acre – Ft/Year (428 Mil Gal)
- Drought Buffer – 2,290 Acre –Ft/Year
- Stored Water – 3,072 Acre -Ft
- Issues
  - An Interruptible Water Supply
  - Allocations Fluctuate
  - 2014: 5 - percent
  - 2013: 35 - percent
  - 2012: 65 – percent
  - 2011: 80 - percent

Groundwater

- Historically Morro Bay's primary source of water
- Chorro Creek Groundwater Basin Wells
  - 1,142.5 Acre-Ft/Yr Permitted /5 Active Wells
  - Requires Chorro Creek stream flow ≥ 1.4 CFS
  - High in Nitrates
  - Connections outside City Make using wells problematic
- Morro Wells
  - 591 Acre-Ft/Yr Permitted /4 Active Wells
  - High in Nitrates
  - Feed water for BWRO at the Desal Plant

Sea Water - Desalinization

- Permitted Capacity 645 Acre-Ft/Year
- Feed Water from 5 Salt Water Wells Along Embarcadero Rd
- Iron and Manganese Fouling Issues – Prefiltration required
- Only ran using feed from salt water wells during the mid 90's
- Coastal Permit for Saltwater Wells and Outfall Expired in 1999. City has made Application to make facilities permanent

Conservation

- Least Expensive Source of “New” Water
- Historic High Water Use (1970) – 193 Gal/person/day
- Current Water Use (2013) – 117 Gal/person/day
- Severe Water Supply Conditions as of Today
- People Can Do more than Minimum Required
- Information will be rolling out over next couple weeks
- http://wateruseitwisely.com/100-ways-to-conserve/

Reclaimed Water -Future

- City Local Coastal Plan Anticipates 770 Acre/Ft-Year to Offset Agricultural and Landscape Irrigation Demands
- Councils Priority to pursue a new Water Reclamation Facility Site as quickly as possible
- State Regulatory agencies including CCC and RWQCB are supportive of a Water Recycling Program
  - Issues: Salt in reclaimed water can be a hindrance to the use of the recourse
  - Cost

Water Conservation Notice

The City of Morro Bay has implemented Mandatory Water Conservation Requirements for Severely Restricted Water Supply Conditions

Since 2013 has been the driest calendar year in 119 years of California rainfall records, Governor Jerry Brown declared a drought emergency on January 17, 2014. Brown is asking for Californians to reduce their water usage by 20%. Therefore the City of Morro Bay has gone to the next level of water conservation per Municipal Code section 13.04.345 (c) Severely Restricted Water Supply Conditions.

Some of the restrictions set forth are as follows:

Water Conservation Requirements

1. Outdoor Water Use:

a. Use of water which results in gutter runoff is prohibited.

b. No water shall be used for cleaning driveways, patios, parking lots, sidewalks, streets, except where necessary to protect the public health or safety

c. Washing cars by use of a hose is prohibited. Use of a bucket is permitted subject to non-wasteful applications.

Water Conservation Requirements

2. Outdoor Irrigation

a. Outdoor irrigation is prohibited between the hours of 10am and 4pm.

b. Irrigation of landscaping & gardens is permitted at even numbered addresses on Wednesdays and Sundays, & at odd numbered addresses on Tuesdays and Saturdays.

Water Conservation Requirements

3. Marinas and Waterfront Installations

a. Use of fresh water to wash down boats or docks, or for other incidental activities, is prohibited.

b. All hoses shall have spring-loaded shutoffs or similar devices.

Water Conservation Requirements

4. Restaurants shall serve water only in response to a specific request by a customer.

5. Emptying and refilling swimming pools and spas are prohibited except to prevent structural damage and/or to comply with public health regulations.

6. Use of potable water for compaction or dust-control purposes in construction activities is prohibited.

Water Conservation Requirements

For more info/flyers:

(805) 772-6261

www.saveourh2o.org

www.morro-bay.ca.us

dhanson@morro-bay.ca.us