PACIFIC GROVE AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) COMPLIANCE PLAN

Submitted in Compliance with State Water Resources Control Board Resolution No. 2012-
--31 (Ocean Plan Special Protections for ASBS)

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CITY OF PACIFIC GROVE & CITY OF MONTEREY

PACIFIC GROVE AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) REVISED FINAL COMPLIANCE PLAN

SEPTEMBER 19, 2016

Prepared by:

FALL CREEK ENGINEERING, INC.

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FINAL

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Submitted in Compliance with State Water Resources Control Board Resolution No. 2012-31 (Ocean Plan Special Protections for ASBS)

Submitted to:

State Water Resources Control Board

Submitted by:

City of Pacific Grove and City of Monterey

September 20, 2016

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1 CONTENTS

2 ACRONYMS & ABBREVIATIONS

ASBS	Areas of Special Biological Significance
AMS	Applied Marine Sciences, Inc.
BMP	Best Management Practice
CCLEAN	Central Coast Long-term Environmental Assessment Network
CCRMP	Central Coast ASBS Regional Monitoring Program
CCTV	Closed-Circuit Television
CDS	Continuous Deflective Separation
CEQA	California Environmental Quality Act
CPA	Compliance Plan Area
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
EPA	Environmental Protection Agency
EPIC	Environmental Passive Irrigation Chamber
FIB	Fecal Indicator Bacteria
FEIR	Final Environmental Impact Report
FOG	fat/oil/grease
IDDE	Illicit Discharge Detection and Elimination
Interim Report	Central California Regional Monitoring Program Stormwater Discharges into Areas of Special Biological Significance Interim Report (2013-2014)
IRWMP	Integrated Water Resources Management Planning
LID	Low Impact Development
MBNMS	Monterey Bay National Marine Sanctuary
MCM	Minimum Control Measures
MEP	Maximum Extent Practicable
MMA	Marine Managed Areas
MOU	Memorandum of Understanding
MRSWMP	Monterey Regional Storm Water Management Program
MRWPCA	Monterey Regional Water Pollution Control Agency
MS4	Municipal Separate Storm Sewer System
MST	Microbial Source Tracking
NGO	Non-governmental organization
NPDES	National Pollutant Discharge Elimination System
O&M	Operations & Maintenance
Ocean Plan	California Ocean Plan
OWOW	Our Water Our World

Acronyms & Abbreviations, Continued	
PAHs	Polynuclear aromatic hydrocarbons
PEAIPs	Program Effectiveness Assessment and Improvement Plans (PEAIPs)
PE/PO	Public Education and Outreach
Phase II General Permit	SWRCB Order No. 2013-0001-DWQ NPDES General Permit No. CAS000004 Waste Discharge Requirements for Stormwater Discharges from Small MS4s
Prop 13 grant	Proposition 13 Clean Beach Initiatives grant
Prop 84 ASBS grant	SWRCB Proposition 84 ASBS grant
ROW	Right-of-way
RTP	Regional Treatment Plant
RWQCB	Central Coast Regional Water Quality Control Board
SCCWRP	Southern California Coastal Water Research Project
SCM	Structural Control Measure
SMCA	State Marine Conservation Areas
SMR	State Marine Reserve
Special Protections	Phase II General Permit, Attachment C, *Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges*
SSMP	Sanitary Sewer Management Plan
SSO	Sanitary System Overflows
SWRCB	State Water Resources Control Board
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWQPAs	Storm Water Quality Protection Areas
URDP	Urban Runoff Diversion Project
WDR	Waste Discharge Requirements
WQO	Water Quality Objective

3 INTRODUCTION

The Pacific Grove Area of Special Biological Significance is one of 34 designated Areas of Special Biological Significance (ASBS) in near shore waters along the California coast. The Pacific Grove ASBS extends for 3.2 miles along the Pacific Grove shoreline west from the Monterey Bay Aquarium to Asilomar Boulevard just before Point Pinos, with close to 500 ocean acres within the Monterey Bay National Marine Sanctuary (MBNMS). The Pacific Grove ASBS receives runoff from approximately 822 acres in Pacific Grove and 100 acres in Monterey including a small portion from the federal U. S. Army Presidio of Monterey.

ASBS are a subset of state water quality protection areas in the ocean along California's coast that require special protection per the California Marine Managed Areas Improvement Act. Their protection is promulgated by State Water Resources Control Board (SWRCB) through the California Ocean Plan (Ocean Plan). The Ocean Plan prohibits the discharge of waste, including stormwater runoff, to designated ASBS.

On March 20, 2012 the SWRCB adopted a General Exception to the Ocean Plan waste discharge prohibition in relation to the ASBS. The General Exception, which is described in SWRCB Resolution No. 2012-0012 and amended by Resolution No. 2012-0031, governs point and non-point source waste discharges to California's ASBS, which include municipal stormwater discharges.

The General Exception includes "Special Protections" for Beneficial Uses of ASBS and requires development of ASBS Compliance Plans to demonstrate local compliance by permitted point source dischargers, such as municipal dischargers and others to the ASBS. Twenty-seven (27) applicants, including the City of Pacific Grove and City of Monterey, applied for and received coverage under the General Exception related to runoff reaching the Pacific Grove ASBS through City of Pacific Grove storm drainage system with points of discharge into the ASBS. This ASBS Compliance Plan describes how the Cities of Pacific Grove and Monterey will comply with the Special Protections.

Stormwater point-source discharges originating from both agencies and flowing into local waterways, including the Pacific Grove ASBS, are permitted under SWRCB Order No. 2013-0001-DWQ *National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004 Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)*", otherwise known as the "Phase II General Permit". The Phase II General Permit Order was approved by the SWRCB on February 5, 2013, and ASBS monitoring provisions and General Exception regulations were folded into Phase II General Permit Sections, including but not limited to E.13.a, and Attachment C *Special Conditions (Specific Provisions) for Traditional and Non-Traditional Small MS4 ASBS Discharges*, hereinafter referred to as the "Special Protections", and Attachment D *ASBS Discharges List*. This draft Compliance Plan is intended to fulfill requirements contained in Phase II General Permit Attachment C Section I.A.2.

The Cities of Pacific Grove and Monterey participate in two regional efforts to collaborate on water quality protection and regulatory needs, such as those of the ASBS. First, both Cities participate in the Monterey Regional Storm Water Management Program (MRSWMP) to maximize regional collaboration and cost-sharing when possible on annual compliance efforts related to the Phase II General Permit. Since receiving permit coverage and regional Storm Water Management Plan (SWMP) approval in 2006, the Cities of Pacific Grove and Monterey have been actively implementing pollution prevention and best management practices (BMPs) within their respective permit boundaries and on the regulatory-required subjects of Public Education and Outreach, Public Participation and Involvement, Illicit Discharge Detection and Elimination, Construction Site Runoff Control, Post-Construction Runoff Control, and Municipal Pollution Prevention through Good Housekeeping. In addition, both Cities along with other MRSWMP member agencies have annually reported on compliance efforts and program effectiveness through measurable goals. Both the City of Pacific Grove and Monterey also manage a City-specific stormwater program and operate and maintain their respective storm drainage infrastructure for drainage efficiency while also ensuring compliance with applicable water quality regulations.

Second, and as further outlined in Section 5 below, both Cities participate in the Central Coast ASBS Regional Monitoring Program (CCRMP), a collaboration of various ASBS dischargers from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This collaborative CCRMP effort is accomplishing water quality research needs related to the ASBS Special Protections and in collaboration with and feedback from SWRCB, Regional Board, and Southern California Coastal Water Research Project (SCCWRP) staff. The CCRMP results will inform future Pacific Grove ASBS compliance efforts to better protect the Pacific Grove ASBS.

Over the past several years, the cities of Monterey and Pacific Grove have evaluated alternative stormwater management projects to address the ASBS regulatory requirements. These efforts are further described in Section 7.

3.1 PLAN CONTENT AND ORGANIZATION

The content and organization of this ASBS Compliance Plan (Plan) follows the requirements described in Phase II General Permit Attachment C Provision I.A.2. Following this introduction, the report gives a regulatory background to describe the fundamental provisions of the Special Protections. The following sections then describe the characteristics of the Pacific Grove ASBS, summarize the ASBS monitoring program, and describe the structural and non-structural BMPs (both existing and planned for the future) to comply with the Special Protections. Finally, the report includes a compliance and implementation schedule.

This Plan was originally developed and submitted as a Draft Compliance Plan to the SWRCB in September 2014 and subsequently updated and submitted to the SWRCB in September 2015 as a revised Plan. This September 2016 update includes results and recommendations stemming from the CCRMP final sampling results.

3.2 STAKEHOLDER COORDINATION

As compliance approaches are developed and/or the respective City Councils' move through public consideration(s) of specific project(s) and funding, the cities anticipate continued input and coordination with the public, interested stakeholders, and other General Exception permittees in relation to the Pacific Grove ASBS. Some key stakeholders include, but are not limited to, the Monterey Bay National Marine Sanctuary, Monterey Bay Aquarium, Stanford Hopkins Marine Station, and Monterey Regional Storm Water Management Program. As needed, the Cities anticipate continued information-sharing with other ASBS permittees in the Central Coast and statewide, as determined beneficial toward learning effective methods for water quality protection and compliance.

4 ASBS REGULATORY BACKGROUND

In 1972, the SWRCB adopted the Ocean Plan. The SWRCB is responsible for reviewing, revising, and adapting the Ocean Plan's water quality standards in accordance with Clean Water Act Section 303(c)(1) and California Water Code Section 13170.2(b). With this responsibility, the SWRCB has revised the Ocean Plan on numerous occasions since 1972.

Revisions to the Ocean Plan in 1983 effectively prohibited all non-stormwater discharges in and around ASBS "…to assure maintenance of natural water quality conditions in these areas." In October 2004, the SWRCB notified various dischargers to either cease stormwater and nonpoint source waste discharges into California's ASBS or request an exception under the Ocean Plan. In January 2005, ASBS became a subset of State Water Quality Protection Areas (SWQPAs) subject to special protection, including point-source waste and thermal discharges being prohibited and nonpoint-source discharges requiring control to the extent practicable.

The Ocean Plan prohibits the discharge of waste to designated ASBS, such as the Pacific Grove ASBS. ASBS represent ocean areas requiring protection of their environment -biological community and/or specific species found there – and the protections shall exist to the extent that the alteration of natural water quality is not desired nor allowed. For state water quality protection areas, such as ASBS, waste discharges are prohibited or may be limited by special conditions imposed by the SWRCB as waste discharges are considered a threat to the integrity of the ASBS. Any special conditions must be in accordance with the Porter-Cologne Water Quality Control Act, Water Code Section 13000 et seq., and any implementing regulations such as those included in the Ocean Plan or the California Thermal Plan.

The SWRCB received 27 applications from nonpoint source dischargers and point source water dischargers for an exception to the Ocean Plan prohibition of waste discharges into the ASBS. The Cities of Pacific Grove and Monterey were included in these applications. Ocean Plan provisions allow for the SWRCB to grant exceptions to the waste or thermal prohibition where the public interest will be served by the circumstances presented and conditions applied such that a discharge shall not compromise the protection of the ASBS environment and associated beneficial uses.

Over the course of several years, the SWRCB developed, and potential dischargers reviewed and commented on, draft conditions and provisions for the ASBS General Exception. On March 20, 2012, the SWRCB adopted Resolution No. 2012-0012 a General Exception to the Ocean Plan ASBS waste discharge prohibition for stormwater and nonpoint source discharges to the ASBS, which included Special Protections for Beneficial Uses. This action also solidified coverage under the General Exception for those parties applying for exceptions to the Ocean Plan prohibition, including the Cities of Pacific Grove and Monterey. In June 2012, the SWRCB further clarified through Resolution No. 2012-0031 that compliance with natural ocean water quality conditions must be gained within six (6) years of the effective date of the General Exception.

The General Exception Special Protections were incorporated into the Phase II General Permit,

approved by the SWRCB through Order No. 2013-0001-DWQ in February 2013, and effective as of July 1, 2013. The Cities of Pacific Grove and Monterey are listed as ASBS Discharges in Phase II General Permit Attachment D, and are subsequently subject to associated ASBS regulations in Phase II General Permit Section E.13.a., Attachment C Special Protections, and other regulations as enunciated throughout the permit.

The Central Coast Regional Water Quality Control Board (RWQCB) manages permits in the Monterey Region and along the Central Coast of California for the SWRCB. Close coordination with both the SWRCB and RWQCB staff is anticipated as both Cities continue ASBS compliance activities, such as monitoring, BMP implementation, and reporting tasks.

4.1 SPECIAL PROTECTIONS

This ASBS Compliance Plan describes how the Cities will comply with the Special Protections. Implementation of the ASBS Compliance Plan is reported in the Cities' MRP Annual Reports.

4.1.1 PERMITTED POINT SOURCE STORMWATER DISCHARGES

Point sources are any discernible, confined, and discrete conveyance including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operations, landfill leachate collection systems, vessel, or other floating craft, from which pollutants are or may be discharged.

Permitted point source stormwater discharges are listed in the Phase II General Permit Attachment C for the ASBS areas and include discharges essential for flood control, to prevent soil erosion, and discharges that are composed of only stormwater runoff. Discharges into the ASBS are allowed only under one of three conditions as set forth by Provision I.A.1.a of the Special Protections: (1) when authorized by order; (2) comply with all applicable terms, prohibitions, and special conditions in the Special Protections of Attachment C; and (3) discharges that are (i) essential for flood control or slope stability, including roof, landscape, road and parking lot drainage; (ii) designed to prevent soil erosion; (iii) occur only during wet weather; and (iv) composed of only stormwater runoff.

The Special Protections also require that discharges composed of stormwater runoff not alter the natural ocean water quality in an ASBS.

4.1.2 PERMITTED POINT SOURCE NON-STORMWATER DISCHARGES

Non-stormwater discharges are any runoff entering an ASBS that is not composed entirely of stormwater resulting from a precipitation event and are commonly referred to as "dry weather discharges".

Non-stormwater discharges into an ASBS are prohibited except as provided in the Special Protections. Types of permissible non-stormwater discharges are set forth in Provision I.A.1.e.(2) of the Special Protections and include discharges associated with emergency firefighting, foundation and footing drains, crawl spaces or basement pumps, and naturally occurring groundwater seepage via a storm drain.

An NPDES permitting authority "may authorize non-stormwater discharges to an MS4 with a direct discharge to an ASBS only to the extent the NPDES permitting authority finds that the discharge does not alter natural ocean water quality in the ASBS." Special Protections Provision I.A.1.e.(3) states that "authorized non-stormwater discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS."

4.2 WATER QUALITY OBJECTIVES

Chapter II of the Ocean Plan sets forth narrative and numeric limits or levels of water quality parameters for ocean waters to protect beneficial uses, and includes bacterial (for water contact recreation and shellfish harvesting), physical, chemical, and biological standards. Provision II.A.3 of the Ocean Plan states that "compliance with the water quality objectives of this chapter shall be determined from samples collected at stations representative of the area within the waste field where initial dilution is completed."

4.2.1 NATURAL WATER QUALITY DEFINITION

In response to regulatory concerns about ASBS, the SWRCB empanelled eight experts from different scientific disciplines to develop a functional definition of "natural water quality." Recognizing that natural ocean water would vary by location and time period, naturally occurring large-scale ocean cycles that dramatically influence water quality characteristics, and that truly natural water quality is likely nonexistent in California's coastal ocean, criteria were developed that could be used to define operational natural water quality for an ASBS.

In September 2010, the *Summation of Findings Natural Water Quality Committee 2006-2009*, Southern California Coastal Water Research Project (SCCWRP), determined that the "natural ocean water quality" is:

That water quality (based on selected physical chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, i.e., an absence of significant amounts of:

a) *man-made constituents (e.g., DDT),*
b) *other chemical (e.g., trace metals), physical (temperature/thermal pollution, sediment burial) and biological (e.g., bacteria) constituents at levels that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question, and*
c) *non-indigenous biota (e.g., invasive algal bloom species) that have been introduced either deliberately or accidentally by man.*

SCCWRP (2010) further concluded that:

"*…it is not practical to identify a unique seawater composition as exhibiting natural water quality* [yet the scientists believed that] *…it is practical to define an operational natural water quality for an ASBS, and that such a definition must satisfy the following criteria:*

- *it should be possible to define a reference area or areas for each ASBS that currently*

approximate natural water quality and that are expected to exhibit the likely natural variability that would be found in that ASBS,

- *any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes.*

Such criteria will ensure that the beneficial uses identified by the Ocean Plan are protected for future generations."

5 PACIFIC GROVE ASBS DESCRIPTION

The City of Pacific Grove is located approximately 100 miles south of San Francisco, on the northwestern tip of the Monterey Peninsula, between Pebble Beach and the City of Monterey (Figure 1). Pacific Grove is an urbanized community covering only 2.87 square miles, but supporting a population of over 15,000 people, a density comparable to San Jose, CA (US Census Bureau 2010). The City of Pacific Grove shares a border with the City of Monterey, Pebble Beach, and the Pacific Ocean and Monterey Bay Coastlines.

The Pacific Grove ASBS, one of 34 designated ASBS areas in near shore waters along the California coast, extends for 3.2 miles along the Pacific Grove shoreline west from the Monterey Bay Aquarium to Asilomar Boulevard just before Point Pinos, with close to 500 ocean acres within the Monterey Bay National Marine Sanctuary (MBNMS). The Pacific Grove ASBS receives runoff from approximately 822 acres in the City of Pacific Grove and 100 acres in the City of Monterey including a small portion from the federal U. S. Army Presidio of Monterey. The Cities of Pacific Grove and Monterey are covered by the Phase II General Permit throughout the entire ASBS watershed area (MS4 permit boundary). Figure 1 identifies the ASBS watershed which is the area addressed in this draft ASBS Compliance Plan. This area is hereinafter referred to as the Compliance Plan Area, or CPA, and covers an area of approximately 922 acres. No Clean Water Act Section 303(d)-listed impaired water bodies exist nor are listed in the Pacific Grove ASBS watershed or associated ocean area.

5.1.1 PACIFIC GROVE STATE MARINE MANAGED AREAS

This ASBS overlaps with the Pacific Grove Marine Gardens State Marine Conservation Area (SMCA) and the Lovers Point State Marine Reserve (SMR) and is bordered to the south by the Edward R. Ricketts SMCA (Figure 2). These marine managed areas (MMAs) were established by the Fish and Game Commission to protect and preserve aquatic life[1]; within the SMR, damage or take of all marine resources (living, geologic, or cultural) including recreational and commercial take is prohibited. Within the SMCA some recreational and/or commercial take of marine resources is allowed.

This area contains extensive intertidal and subtidal reef habitat and provides easy access to intertidal areas from shore. It also provides a source of kelp for local aquaculture businesses. Only fish and invertebrates other than mollusks or crustaceans may be taken recreationally. Commercial fishing is restricted to using ring net, lampara net, or bait nets for sardines, mackerel, anchovies, squid, and herring.

Existing enforcement is relatively effective as the area is easily-observed from shore by law enforcement personnel as well as private citizens, is well-known and heavily populated, and benefits from an increased community awareness of marine resources.

The Pacific Grove Marine Gardens SMCA was established in 1984 with an area of approximately 1.2 square nautical miles (1.32 sq. mi.) and a shoreline length of about 2.5

[1] http://www.dfg.ca.gov/marine/mpa/

nautical miles (2.88 mi.) with depths ranging from 0 to 60 feet. The Marine Gardens SMCA is mostly granite reef with smaller portions of sand, especially on its outside edge. Rock reefs in deeper water have been surveyed by submersibles. Surrounding habitat types are similar except there is a higher proportion of sand bottom offshore.

Many researchers and several academic institutions have conducted life-history studies, recruitment studies, and tagging studies in the MMA. Tenera Environmental, Inc. completed a study in 2003 which investigated the effects of visitor use on the intertidal area and established baseline levels of the more common intertidal species (Tenera, 2003). Submersible studies of deeper-water fishes have also been conducted offshore of this site.

5.1.2 PRECIPITATION AND TEMPERATURE

The climate of the Monterey Peninsula, including Pacific Grove and Monterey, is regulated by its proximity to the Pacific Ocean, culminating in a warm-summer Mediterranean climate (Table 1). As a result, Pacific Grove's average high temperature ranges from around 61°F in winter to 72°F during the summer months. Pacific Grove's weather is usually characterized by fog layers, resulting in cooler temperatures. Average annual precipitation is approximately 19.73 inches (501.1 mm), with most rainfall occurring during the season between November and April, while little or no precipitation falls during the summer months. There is an average of 70 days with measurable precipitation annually.

5.2 LAND USE

The ASBS watershed area includes the City of Pacific Grove's historic downtown, many beaches and City park facilities, and residential and commercial areas. A small portion of the City of Monterey and U.S. Army Presidio of Monterey drains into Pacific Grove's storm drain system and subsequently into the ASBS area. The predominant land use in Pacific Grove ASBS watershed is residential, mostly single-family. Figure 2 identifies land use within the ASBS watershed based on each of the Cities' General Plan categories.

Commercial uses are largely related to goods and services, with very little land available for industrial services. In the City of Pacific Grove, a generous amount of land is devoted to parks and natural areas that are free and open to the public. Most significantly, the area is mostly built out. There is very little buildable vacant land in both Cities, and the primary land use issues focus on managing existing uses and infill development. The primary land use in the City of Monterey ASBS drainage area is residential with a much smaller amount of commercial land use in the City's lower portion of the ASBS drainage area.

Table 2 summarizes the MS4 land use categories within each of the Cities and for the entire ASBS drainage area. The Compliance Plan Area consists of: 8.6% commercial and institutional parcels, 34 % single-family residential, 16.6 %, medium and high density residential, 12.5% open space, and 28.2% roads.

5.3 PARKS AND RECREATION FACILITIES

The City of Pacific Grove and its scenic coast offer residents and visitors a wide range of

recreational opportunities, ranging from simply enjoying a view of the Monterey Bay to more formal nature study, walking, jogging, kayaking, cycling, diving, surfing, and sport fishing. The City, the State, and the Pacific Grove Unified School District each own and operate an extensive system of parks, recreation facilities, and open space areas in Pacific Grove. The Recreation Department administers City park and recreation programs, and maintains recreation facilities. City parks are maintained by the City's Public Works Department.

The City of Monterey has one park facility located in its Pacific Grove ASBS drainage area – Hilltop Park and Center, an eight-acre neighborhood park in the upper most portion of New Monterey at Jessie Street and David Avenue. It contains play equipment, turf area, picnic area, tennis and basketball courts and a multi-purpose community center.

The *Shoreline Park Network* includes all parks and recreation areas located on the coastal edge of the City of Pacific Grove. These facilities serve their contiguous neighborhoods, the community as a whole, and regional recreation needs.

Neighborhood Parks are intended to serve the recreation needs of people living or working within a half-mile of the park.

Community Parks are larger than neighborhood parks and are intended to provide recreation opportunities beyond those supplied by the smaller neighborhood parks. In the list below, these facilities are subdivided into areas with active and formal park and recreation uses and facilities, and parks principally having natural areas limited to passive use.

Table 4 lists each of the parks located in the ASBS watershed with a brief description. Table 5 lists each of the parking facilities located in the ASBS watershed.

City park facilities present *potential* pollutant sources to the ASBS watershed in the stormwater runoff from parking lots, sediment from the coastal recreation trail, pesticides and herbicides, and/or trash from visitors. Section 8 details the BMPs or other management measures that will be implemented to address potential pollution from City park facilities.

5.4 DRAINAGE BASINS

The City of Pacific Grove has two major drainage basins, each of which drains approximately half the city. The southwesterly basin drains westerly into the Pacific Ocean. The northeasterly basin drains northerly into Monterey Bay and into the ASBS, as shown in Figure 3. A portion of this northerly basin contains drainage areas that originate in the City of Monterey and U.S. Army Presidio of Monterey. Although no rivers or major streams flow through the City of Pacific Grove, there are underground springs and sub-surface drainage flows.

Runoff is influenced by both Cities' steeply sloped topography, soils, storm drain infrastructure, and urban development, such as buildings and other impervious surfaces. The drainage area ranges from sea level to 562 feet above mean sea level, consists primarily of sandy loam soils, and overlays sandstone and granodiorite bedrock layers. The eastern half of the City of Pacific

Grove and Upper New Monterey, which comprises the primary ASBS drainage area, is heavily paved, with a network of streets extending from upper elevations, downslope to the ocean. Over 44% of areas draining into the ASBS are impervious surfaces that are conveyed by the City's stormwater infrastructure.

The vast majority of runoff from Pacific Grove ASBS watersheds flows through the City of Pacific Grove's storm drainage system for discharge through ocean outfalls to the ASBS. Figure 3 shows the seventeen (17) ASBS subwatersheds classified as either discrete or distributed discharges to the ASBS. Thirty-two (32) outfalls discharging into the ASBS have been classified as an 'observable discrete outfall' if it drains a discrete subwatershed or an 'other mapped outfall' if it drains a distributed subwatershed. Sheet runoff into the ASBS is limited to the area seaward of the Recreation Trail and Ocean View Boulevard as identified in Figure 3. Table 3 lists each of the 32 confirmed outfalls along with size, type, alias names used in other monitoring programs where applicable, and a designation of high, medium or low priority level. Table 3a provides a reference key to outfall labels by stormwater program. Priority level was determined based on monitoring results described in Section 6 and pollutant load modeling predictions, where high priority outfalls are considered to pose the greatest water quality threat and have been prioritized for installation of structural BMPs. Additional description about the outfall priority designation can be found in Appendix C.

The subwatershed boundaries in Figure 3 have been updated since the last Compliance Plan submittal based on field verifications and consolidation to create subwatersheds with substantive size for developing management strategies. The City of Monterey performed further refinement of the ASBS watershed delineations within New Monterey since ASBS watershed mapping efforts previously were approximate and based on topographic information only. Utilizing the latest GIS data plus man-made infrastructure information available, City staff performed field assessment of the roads, gutters, and drains to determine the manmade influence of storm drainage pathways.

5.4.1 LANDSLIDES AND EROSION

Erosion is the physical detachment of soil due to wind or water. These physical detachments produce soil fractions that may become pollutant transported runoff; however, Pacific Grove and the New Monterey area are largely built out and not prone to landslides or significant erosion. The exposed granite rock shoreline of the ASBS is generally erosion-resistant; however, a combination of wave attack and heavy pedestrian use has resulted in localized shoreline erosion (Figure 4). The City has continually remedied this problem through an ongoing sea wall construction program, riprapping and/or diking. Development and improvements on both public and private property use permanent soil erosion BMPs that include vegetation and structures such as retaining walls, as well as other temporary BMP measures during construction to prevent erosion and sedimentation. Consequently, there are limited areas within both Cities that flow into the Pacific Grove storm drainage system that are prone to erosion.

Figure 4 identifies the Erosion Hazard Zone contiguous with the Pacific Grove ASBS as predicted with a sea-level rise of 55-inches, as predicted for the year 2100, occurring simultaneously with a

100-year coastal flooding event. These data were used in the City of Pacific Grove Climate Change Vulnerability Assessment prepared to support development of the Local Coastal Program update (EMC, 2015).

5.5 STORM AND SANITARY SYSTEM INFRASTRUCTURE

Figure 4 maps the stormwater conveyance and sanitary sewer system infrastructure within both Cities as described in this section.

5.5.1 STORMWATER CONVEYANCE

Paved surfaces, curbside drains, inlets, gutters, catch basins, and subsurface stormwater pipe networks collect stormwater in Monterey and Pacific Grove and direct it downslope to the near shore Pacific Grove ASBS. Both Cities' storm drainage piping and open channel stormwater conveyances are located within the paved public right-of-way or in public utility corridors located in or adjacent to private property parcels. The City of Monterey owns and operates its storm drainage infrastructure within its City limits.

The storm drain systems in the City of Pacific Grove and Monterey were developed over several decades and were expanded without established criteria for construction materials, slopes, sizing, or the benefit of a storm drainage Master Plan. Many developed areas of the City of Pacific Grove still lack any storm drain system, including areas previously within unincorporated areas of Monterey County (parts of Pebble Beach). Many properties in the ASBS watershed require the regular use of sump pumps due to high groundwater and poor drainage, which discharges water into the storm drain system.

5.5.2 SANITARY SEWER SYSTEM

The regional collection and treatment of wastewater is performed and managed by the Monterey Regional Water Pollution Control Agency (MRWPCA), a regional Joint Powers Authority. The regional wastewater treatment facility (RTP) produces treated wastewater and recycled water – the recycled water is reused for farmland irrigation in the coastal plain of the Salinas Valley watershed.

Within the City of Pacific Grove, storm drainage pipelines are parallel to or cross sanitary sewer pipelines, which are owned and operated by the City of Pacific Grove. There are seven sewer lift stations located in the ASBS, five owned by the City of Pacific Grove and two owned by the MRWPCA. All lift stations are operated and maintained by MRWPCA. Neither City is located in the vicinity of the RTP, which is owned and operated by the MRWPCA and located in Marina as shown in Figure 4.

5.5.3 MAP UPDATING

Both Cities storm drainage maps are updated as necessary to reflect any changes or additions that have been made to it. Updates to the map are included in required NPDES annual records.

A procedure has been developed to update the maps and data included in this ASBS Compliance Plan, which relies on data from both municipalities. All relevant files and data inventories will be

stored on a server to which both Cities have access and the figures will be updated annually, or as needed. When map updates occur the dates of all the shapefiles that each City manages will be checked for any updates and the latest version loaded into the geodatabase on the shared server. GIS coordinator and stormwater managers from each City will put a recurring annual meeting notice in their calendars to review the shared data folder and update the geodatabase as necessary.

6 MONITORING

6.1 HISTORICAL AND CURRENT MONITORING

Historical and current water quality data from the Pacific Grove ASBS can be accessed via the Central Coast Water Quality Monitoring Viewer[2]. The following sections describe three monitoring programs with robust sampling inventories that were used to inform the determination of exceedances to natural water quality and identification of priority outfalls and subwatersheds.

6.1.1 URBAN WATCH

The citizen Urban Watch monitoring program[3] run and organized by the National Marine Sanctuary, samples stormwater outfalls multiple times per year and analyzes the data to determine if there are any illicit discharges to the Pacific Grove ASBS.

The Urban Watch monitoring program provides a way for local residents and community members to become involved in learning more about water quality and urban pollution issues by becoming an Urban Watch volunteer monitor for the dry weather months (June-October). The Urban Watch Program monitors storm drain outfalls during the dry weather months to help Cities understand sources of pollution that may be impacting local creeks and the Monterey Bay National Marine Sanctuary. Volunteers perform field measurements for pH, temperature, and conductivity, and collect water samples that are then tested for ammonia, phosphate, chlorine and detergents using an EPA approved Storm Water Test Kit. The Urban Watch Water Quality Monitoring Program is a collaborative effort between the Cities of Pacific Grove, Capitola, the Coastal Watershed Council, and the Monterey Bay National Marine Sanctuary. Since 1998, teams of volunteers trained in water quality monitoring have been collecting water samples and conducting basic field analysis. This continuing program has helped Pacific Grove and the Monterey Bay National Marine Sanctuary identify and implement targeted educational programs aimed at addressing urban pollutants entering the Monterey Bay National Marine Sanctuary including the Pacific Grove ASBS.

6.1.2 MONTEREY BAY NATIONAL MARINE SANCTUARY FOUNDATION

The MRSWMP monitoring program provides a way for local residents and community members to become involved in learning more about water quality and urban pollution issues by become a volunteer monitor for the dry weather months (June-October). The MRSWMP has worked with the Monterey Bay National Marine Sanctuary Foundation for over 16 years to implement this regional volunteer program and collect important water quality data from MS4 outfalls. This program recently produced a program-wide assessment of the data its volunteers have collected over its time.

The City of Pacific Grove maintains and monitors the dry weather diversion facilities. The City has contracted with MBNMS for outfall monitoring activities in compliance with the Phase II General

[2] http://sanctuarymonitoring.org/regional_sections/maps/wqviewer/

[3] http://montereybay.noaa.gov/getinvolved/volunteer/urbanwatch.html

Permit.[4] Procedures and results are summarized in the MRSWMP Annual Report.

6.1.3 CENTRAL COAST ASBS REGIONAL MONITORING PROGRAM

The Central Coast ASBS Regional Monitoring Program (CCRMP) is a three year collaboration of various agencies and entities, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. The project includes monitoring requirements (i.e. water sampling and analysis for various pollutants of concern) specified in the Special Protections for ten (10) participants designated as Responsible Parties that include: The Counties of Marin, Monterey, San Mateo; the Cities of Carmel-by-the-Sea, Monterey, Pacific Grove; Caltrans, Hopkins Marine Station, Monterey Bay Aquarium and the Pebble Beach Company. The Scope of Work for the Central Coast ASBS CCRMP has been developed through discussions with staff from State and Regional Water Boards, as well as the responsible parties discharging stormwater into ASBS.

In early 2013, a CCRMP Memorandum of Agreement (see Appendix A) was executed between all parties to perform a coordinated monitoring effort to investigate concentrations of pollutants of concern at particular freshwater reference sites, ocean receiving water sites, and urban stormwater discharge sites. Additionally, the program includes biological and bioaccumulation monitoring. The purposes of the CCRMP are to leverage limited agency funds to address shared monitoring compliance needs by providing consistent methods and data quality among all participants, while also performing the scientific work required by the Special Protections in a manner so the final data can be compared to or contrasted with those from other regional efforts along the California coastline.

Applied Marine Sciences (AMS) was selected to direct and perform the scientific monitoring needs of the CCRMP members, including field and follow-up analytical and statistical work. Monterey Bay National Marine Sanctuary staff and volunteers also assist with portions of the ASBS monitoring program.

In total, the CCRMP has 40 sampling locations. Ten (10) urban stormwater discharges are sampled along the Pacific Grove ASBS to assist in better understanding the relative health of this ASBS ecosystem and the effects of discharges entering it. A list of all sampling sites, including their respective sampling requirements and the overall sampling scheme, are outlined in Appendix B, AMS Scope of Work. For the Pacific Grove ASBS, the Hopkins site was chosen to be sampled for receiving water quality and rocky Intertidal biological monitoring, as well as urban stormwater outfall/discharge monitoring. Bioaccumulation studies are occurring at Fanshell Overlook in the Pebble Beach near shore area and are being performed by Central Coast Long-term Environmental Assessment Network (CCLEAN) in collaboration with this CCRMP. Those data are planned for use in determining the existing relative health of Peninsula near shore biological environment for this CCRMP effort.

As of September 2014, only one sampling season had been completed – Season 1, Winter 2013/2014. Final results were not available for inclusion in the Draft Compliance Plan in September 2014. Season 1 winter data were presented in the *Central California Regional*

[4] http://sanctuarysimon.org/monterey/sections/waterQuality/overview.php

Monitoring Program Stormwater Discharges into Areas of Special Biological Significance Interim Report (Winter 2013-2014) (Interim Report) and summarized in the 2015 ASBS Compliance Plan submittal. As of August 2016 the monitoring program was completed and six samples were collected at each of three locations within the Pacific Grove ASBS over the course of three years starting in February 2014 through March 2016. The sampling locations and sample collection dates are summarized in Table 6.

6.2 DEFINITION OF OPERATIONAL NATURAL WATER QUALITY

In accordance with these findings, the CCRMP developed an operational natural water quality for the Central Coast through the use of water quality data from "reference sites". The "reference" data and subsequent constituent concentration ranges define an operational natural water quality envelope that sets an 85th percentile threshold of reference water quality data. The 85th percentile threshold was used to analyze water quality monitoring results in the Pacific Grove ASBS and determine if natural water quality exceedances occurred.

Reference sites were selected in regions north and south of the Pacific Grove ASBS as part of the CCRMP. The reference site locations are in watersheds with greater than 90 percent open space and no listed water quality impairments (AMS, 2014). The northern three (3) reference sites span the coastline from San Mateo County into Monterey Bay and the southern six (6) reference sites are distributed along the open coast from Malpaso Creek to Big Creek. The northern reference sites are in the surf zone at the mouths of Tunitos Creek, Gazos Creek, and Scott Creek. The southern reference sites are in the surf zone at the mouths of Malpaso Creek, Soberanes Creek, Doud Creek, Big Sur River, Sycamore Creek, and Big Creek. Table 7 summarizes the preliminary and best available estimate of the 85th percentile reference threshold for the CCRMP northern, southern, and combined northern and southern reference sites.

To evaluate which reference data set is most applicable to the Pacific Grove ASBS, the dominant geologic units and rock types within the drainage areas to each reference site were compared to the Pacific Grove ASBS.[5] The northern reference sites are dominated by sandstone and mudstone, whereas the southern reference sites have a range of dominant rock types. Malpaso, Soberanes, and Doud Creeks are dominated by granodiorite and quartz monzonite, the Big Sur River and Big Creek by plutonic rock and gneiss, and Sycamore Creek by sandstone and mudstone. The Pacific Grove ASBS watershed is approximately 37% sandstone and mudstone and 63% granodiorite and quartz monzonite. These geologic units are located in the northern and southern reference sites, therefore based on this evaluation criteria, the combined north/south 85th percentile threshold appears applicable.

FCE was advised by AMS that due to technical and logistical difficulties the sampling regime for the three most southern sampling sites on the Big Sur Coast (Big Sur River, Big Creek and Sycamore) were not sampled with a frequency to reliably include in the combined 85th percentile

[5] Based on California Geologic Map Data available from the United States Geologic Society (USGS) https://mrdata.usgs.gov/geology/state/state.php?state=CA

threshold reference data set.[6] In coordination with nearby ASBS permittees the six most northern (6N) reference sites were considered the most reliable to establish as the 85th percentile threshold for the Pacific Grove ASBS. The six northern (6N) 85th percentile benchmark threshold data is presented in Table 7 and has been applied to evaluate natural water quality exceedances within the Pacific Grove ASBS.

6.3 DETERMINATION OF EXCEEDANCES

The process for determining if natural ocean water quality is exceeded in the Pacific Grove ASBS is outlined in the Special Protections[7]. Specifically, "if the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the Permittee must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded." A Flow Chart to Determine Compliance with Natural Water Quality[8] summarizes the process of identifying exceedances and is in reproduced included in Appendix C.

6.3.1 APPROACH TO COMPLIANCE

If it is determined that an exceedance of the natural water quality has occurred, the Special Protections require that "BMPs to control stormwater runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:
(1) Table B[9] Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or (2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for the reduction is the effective date of the Exception. The baseline for these determinations is the effective date of the Exception, and the reductions must be achieved and documented within six (6) years of the effective date." [10]

For the constituents analyzed in the CCRMP, Table 7 of this report identifies the Instantaneous Maximum Water Quality Objectives, if available, or notes that it is not available (NA). For the constituents analyzed in the CCRMP that do not have an Instantaneous Maximum Water Quality Objectives in Table B, a 90% reduction in pollutant loading during storm events is the required approach to compliance.

[6] Personal Communication from Dane Hardin, AMS, September 15, 2016.
[7] Section I.A.3.e of Attachment C of the Phase II Small MS4 General Permit
[8] Section IV.C. of Attachment C of the Phase II Small MS4 General Permit
[9] In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.
[10] March 20, 2018 will be six (6) years after the effective date of the Exception.

6.4 SUMMARY OF COMPLIANCE FINDINGS

Appendix C includes a technical memo with detailed analysis of each sample, site, and constituent for determination of exceedances and can be referenced for more detail and supporting data beyond what is summarized in this section.

Trace metals, Urea, , polynuclear aromatic hydrocarbons (PAHs), an organophosphate insecticide (Malathion), chronic toxicity (urchin fertilization), and fecal indicator bacteria (FIB) concentrations were identified as exceeding the natural ocean water quality from stormwater discharges into the ASBS. Below is a description of each of the constituents identified as exceeding natural ocean water quality in the Pacific Grove ASBS and a description of their potential sources:

- Trace Metals, sometimes called heavy metals, can be toxic at elevated concentrations. They are found naturally in rocks and soils and also can be elevated in association with anthropogenic sources such as architectural, construction, automotive, and other non-point source pollution.
- Polynuclear aromatic hydrocarbons, or PAHs, are compounds found in petroleum and combustion products and can be toxic at elevated concentrations. PAHs can originate from petroleum spills, natural seeps, vehicle leakage, and various combustion sources.
- Pyrethroid and Organophosphate pesticides are known to cause toxicity to aquatic organisms in urban streams. Pyrethroid pesticides were primarily developed to replace organophosphate pesticides, which are noted for causing significant toxicity in ambient waters.
- Toxicity measured in receiving water samples suggest that marine biological resources could be affected by ASBS discharges (AMS, 2016).
- Three fecal indicator bacteria (FIB) were measured, including Fecal Coliforms, Enterococcus, and E. coli. They are used as indicators of fecal contamination. FIBs can be elevated due to sewage leakage and domestic animal and wildlife feces.

Trace metals were all found in concentrations below the Ocean Plan Water Quality Objectives, and therefore these constituents are in compliance with the Special Protections. For the other constituents exceeding the water quality objective, a 90% reduction in pollutant loading during storm events is required to achieve compliance. Table 8 summarizes the PG ASBS constituents with exceedances and the proposed compliance approach.

The three CCRMP outfall sample locations were designated as high priority for identification of appropriate BMPs to improve the quality of runoff entering the ASBS. Table 9 summarizes the target constituents within each of these three priority outfall drainage areas. Urea is a target constituent in all three priority drainage areas, though based on the last sample results the 90% pollutant load reduction target was reached. Similarly, based on water quality objectives (WQO) for human health, all sites came into compliance for fecal coliform on the last sample event. Within the Forest Ave drainage area, which includes Lovers Point, all of the constituents not

in compliance are targeted: PAH, fecal coliform, ecoli, and enterococcus. Table 9 shows that 203PAC 080 (Forest/Lovers Point) is the only outfall out of compliance.

Pollutant load modeling was completed to confirm and refine outfall prioritization by estimating baseline urban catchment sediment loads (as TSS) before BMP implementation. The TSS modeling results combine contributions from the entire ASBS watershed including the portions draining from the City of Monterey into Pacific Grove. Based on the total pollutant load estimation, the drainage area to outfall 4a was also categorized as a high priority outfall, as shown in Table 3 and Figure 3. Additional information about the modeling approach is included in Appendix C.

7 EXISTING REGULATORY PROGRAMS ADDRESSING WATER QUALITY IN THE ASBS

Through the implementation of regulatory tasks required by the Phase II General Permit and Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, the Cities are actively mitigating existing and future potential water quality impacts throughout their jurisdictions, including those land areas that flow to the Pacific Grove ASBS. Pollution prevention and water quality protection are a priority task undertaken regionally and by each agency in all efforts to effectively implement the Phase II General Permit and Sanitary Sewer Overflow Reduction Program provisions.

7.1 PHASE II GENERAL PERMIT

Both Cities are subject to the Phase II General Permit. Permit coverage under this Order provides compliance through the SWRCB with the Clean Water Act. This Order was approved by the SWRCB on February 5, 2013, with a permittee implementation start date of July 1, 2013. Generally, the Phase II Permit includes the following program elements: education and outreach, public involvement and participation, illicit discharge detection and elimination, construction, pollution prevention and good housekeeping, post-construction stormwater management, water quality monitoring, and program effectiveness. The permit also includes Attachment C – Special Conditions (Specific Provisions) for ASBS Dischargers, and Attachment D –List of ASBS Dischargers.[11]

7.2 LOCAL COASTAL PROGRAM

The ASBS drainage area includes the City of Pacific Grove's Coastal Zone, as defined and delineated by the Coastal Commission, and includes 3.2 miles of coastline in the Coastal Zone. The City's current Local Coastal Land Use Plan, developed in 1989, includes policies that govern development in the Coastal zone.[12]

In April 2014, Pacific Grove was awarded a grant from the Coastal Commission to update the Local Coastal Program Land Use Plan, and also devise an Implementation Plan, with the intent of achieving a certified Local Coastal Program. A stormwater component will also form part of the final Program and will be informed primarily by the Phase II General Permit. The City anticipates completion of the update by late 2016 or 2017.

As seen in Figure 2, the Coastal Zone intersects a small portion of the lower ASBS watershed in the City of Monterey on the west side of David Avenue, between Lighthouse Avenue and Wave Street. The City of Monterey currently does not have a certified local coastal program and implementation plan for its coastal zone area, and thus, all applicable development within the Coastal Zone must be reviewed by the Coastal Commission. In 2015, the City of Monterey was awarded a California Coastal Commission and Ocean Protection Council grant to update its Local

[11] The entire permit can be found on the SWRCB website at http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

[12] The entire document can be found on the City's website at http://www.cityofpacificgrove.org/lcp

Coastal Program with community input. The City has retained a consultant to complete the LCP by summer 2017. As a part of that process, stormwater regulatory compliance needs, such as ASBS, shall be a part of the considerations.

8 ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) IN ASBS WATERSHED

This section describes the Cities' strategy to reduce pollutant loads through implementation of Best Management Practices (BMPs) to comply with the Special Protections. **Non-structural BMPs** involve operational, maintenance, regulatory (e.g. ordinance), studies, or educational activities designed to reduce or eliminate increased flow and pollutant related impacts to the ASBS. **Structural BMPs** involve the implementation of engineering solutions to provide physical treatment or infiltration of runoff to the ASBS. Both Cities have already implemented a number of non-structural and structural BMPs, described below, including public education, source control, and good municipal housekeeping practices as part of its Storm Water Management Program. The City of Pacific Grove has also installed structural BMPs consisting of dry-weather urban runoff diversions to the sanitary sewer collection system downstream of its largest ASBS watersheds and prior to discharge through outfalls to the ocean (see Section 7.2).

8.1 NON-STRUCTURAL BMPS

Non-structural BMPs describe non-physical programs or practices designed to reduce or eliminate pollutants entering dry- or wet weather runoff. For the purposes of this evaluation non-structural BMPs have been divided into six categories: (1) Inspection Programs, (2) Microbial Tracking, (3) Public Outreach and Education, (4) Illicit Discharge Detection and Elimination (IDDE), (5) Development Review, and (6) Good Housekeeping practices. The following describes the non-structural BMPs currently provided or managed by the Cities in each of these categories, along with non-structural BMPs proposed for future implementation.

8.1.1 INSPECTION PROGRAMS

Per the General Exception, the Cities are required to inspect facilities and/or sites in the ASBS at the following frequencies:

- ***Construction Sites: Weekly during the rainy season.*** In 2013, the City of Pacific Grove and Monterey developed a construction site inspection program specifically to meet the Special Protection requirements. On behalf of the City of Pacific Grove, the City of Monterey Building/Permits office completes these inspections. If deficiencies are identified, re-inspection and corrective actions are required per Pacific Grove's City Code Section 9.30 Storm Water Management and Discharge Control.

- ***Industrial Facilities: Monthly during the rainy season.*** There are no industrial facilities located in the ASBS watershed.

- ***Commercial Facilities: Twice during the rainy season.*** This category includes restaurants, gas stations, and auto repair shops. The Monterey Regional Water Pollution Control Authority (MRWPCA) currently completes restaurant inspections once per year within the City of Pacific Grove. The City of Monterey visits all their commercial facilities in the Monterey ASBS drainage area twice during the rainy season. In both instances, if deficiencies are identified, re-inspection and corrective actions would be required of the commercial facility.

- ***Outfalls greater than or equal to 18 inches in diameter: Once prior to the beginning of the rainy season (October 1) and once during the rainy season.*** All the ASBS outfalls are located within the City of Pacific Grove and inspected and maintained by the Pacific Grove Public Works staff. Inspection and maintenance occur during the same visit unless extensive damage is encountered. Removed material includes trash and other anthropogenic debris according to the Special Protections. The amount or type of removed material is logged. The records of these inspections are archived with both Cities and are available for review.

- ***Hazardous Materials.*** There is one hazardous material storage area in the ASBS watershed, located at the Municipal Golf Course at 77 Asilomar Boulevard in the City of Pacific Grove. The Municipal Golf Course is subject to random inspections by the Monterey County Agricultural Commissioner. There have been no inspection violations recorded and staff are trained on management of hazardous materials. There are no large-scale waste storage areas within the ASBS watershed, other than small localized refuse collection areas at businesses located in the City's commercial area.

Both Cities' inspection schedules comply with the minimum inspection frequencies, for all categories except Pacific Grove's commercial inspection program.

Non-Structural BMP Implementation Action

<u>City of Pacific Grove</u>

- City of Pacific Grove will increase the frequency of commercial inspections to twice during the rainy season for all commercial facilities in the ASBS watershed starting during the 2016 rainy season.

<u>For Both Cities</u>

- The MRWPCA is currently creating a Memorandum of Understanding (MOU) to complete inspections regionally inclusive of both Cities. The MOU can incorporate the minimum required ASBS commercial facility inspections for both Cities, and fat/oil/grease (FOG) inspections of food service establishments are included. This MOU is expected to be in place and effective by June 2017.

8.1.2 MICROBIAL SOURCE TRACKING

Fecal Indicator Bacteria (FIB) have been identified in the ASBS in exceedance of the 85th Reference concentration. Potential FIB sources may include the existing sanitary sewer collection system and waste from wildlife or domestic animals.

Pet Waste Management. Dogs on-leash are allowed on ASBS beaches and requirements are posted for owners to pick-up pet waste along the Recreational Trail. Pet waste collection bags are provided at two spots along the Recreational Trail (at Sea Palm and Hopkins), and are regularly restocked by a local veterinary hospital.

Non-Structural BMP Implementation Action

For Both Cities

- As part of a larger public education and outreach (PE/PO) effort, the Cities will include information in the City Manager's Weekly news update at the beginning of the rainy season and reach out to local papers to remind pet owners to clean-up the pet waste in their yard, especially prior to rain events, and to generally ensure no pollutants reside outside that may come into contact with rainfall.
- As public works projects or trail/park improvements occur, the Cities will identify opportunities to provide additional signage about pet-waste pick-up along with pet waste collection bags throughout the ASBS watershed.
- ***Pathogen Source Tracking.*** Monitoring strategies to identify FIB sources can range from simple and relatively inexpensive sample collection and analysis to more complex microbial source tracking approaches relying on advanced molecular methods. A tiered approach, starting with simple and relatively inexpensive basic flow fingerprinting followed by a microbial source tracking (MST) effort could be used to identify FIB sources to the Pacific Grove ASBS. Wet weather monitoring completed through the CCRMP provided information about the general bacterial load of the runoff and receiving waters to the ASBS. If needed, the focus of this effort will be in understanding the FIB sources and identifying non-structural and/or structural BMPs to address the specific contamination sources.

8.1.3 PUBLIC EDUCATION AND OUTREACH (PE/PO)

PE/PO programs can cover a range of ASBS specific topics including about bacterial impairments, non-chemical pest control options, and LID techniques. Both Cities have implemented a number of public outreach measures designed to inform and incentivize the constituents and local business to adhere to prohibitions against waste discharges within ASBS and also as a part of Monterey Regional Stormwater Management Program (MRSWMP) efforts. These measures include *RainScapes*, a rebate program designed to create financial incentives to property owners who incorporate Low Impact Development (LID) techniques on their site; lectures at the Community Center LID project site; website resources available at montereysea.org; collaboration with Monterey Peninsula Water Management District; and stenciling on storm drains.

RainScapes. The City of Pacific Grove implemented a residential retrofit program, "RainScapes: Landscape for Healthy Watersheds", funded through a Proposition 84 ASBS Grant. The RainScapes Rebate Program provided technical and financial assistance to encourage property owners to implement eligible LID techniques on their property. Through the RainScapes program the City of Pacific Grove created a website to showcase design guidelines and examples for six (6) LID techniques preferred for private properties in Pacific Grove: Roof Downspout Redirection, Creating Rain Gardens, Rainwater Harvesting, Replacement of Impervious Surfaces with Pervious Surfaces, New Tree Plating, and Gull Rooftop Deterrents. Two applications to the program were received and two rebates awarded to install new tree plantings and cisterns. For each project a maintenance agreement was required to ensure effectiveness after implementation. One retrofit

project was also completed at the Pacific Grove Community Center and another is in progress at the Pacific Grove Museum of Natural History. Rainscapes rebates were provided as part of a Proposition 84 grant, which is now expired and therefore no longer available to residents.

Monterey Regional Stormwater Management Program. Both Cities are Participating Entities in the MRSWMP. PE/PO Programs are carried out as a part of the Phase II General Permit, which are tasks within Phase II General Permit Provisions E.7 and E.8.

The existing PE/PO Programs increase public awareness of what constitutes poor and good stewardship of stormwater as a resource. The regional MRSWMP Public Education efforts focus on topics such as reducing pollution from lawn and gardening activities, improper disposal of household hazardous wastes, illegal disposal activities, pet wastes, improper handling and disposal of trash, restaurant activities, and automotive activities. Additionally, the City of Pacific Grove has conducted residential surveys, LID lectures, and workshops as part of the RainScapes Rebate Program.

Details of the PE/PO activities carried out each year are included in the MRSWMP Annual Report.[13] The following highlight some of the MRSWMP PE/PO activities affecting the ASBS watershed:

- The Cities support an annual Coastal Clean-up Day through MRSWMP; the sponsored beaches rotate each year, and so beaches in the ASBS have an opportunity to be highlighted every few years.
- MRSWMP conducts regional construction BMP seminars twice a year that typically have 50 attendees including staff, consultants/contractors, and the public. The last seminar was held on October 15, 2015 and had 165 attendees.
- MRSWMP has conducted regional LID training and learning opportunities through workshops and sustainability tours the last several years since new LID regulations were adopted by the RWQCB.
- MRSWMP conducts outreach to school groups within the ASBS watershed. The ASBS may be mentioned but is not a focus of the presentation. From July 2014 to June 2015 eight (8) programs were held in Pacific Grove school reaching 155 students. From July 2015 to June 2016 there were ten (10) programs reaching 221 students.

Herbicides and Pesticides. Both Cities participate in the Our Water Our World (OWOW) program through the regional MRSWMP program, which assists individual consumers in choosing least toxic and non-toxic pest management approaches to gardening, landscaping, and pest control. The program is publicized regionally through MRSWMP, including occasional outreach at home supply stores (e.g. Home Depot and Osh) and through flyers available at the Pacific Grove Farmer's Market information booth. The OWOW bilingual fact sheets have information about managing common pests, along with a list of less toxic and non-toxic pest control products

[13] http://montereysea.org/program-documents/

recommended for sale. Program effectiveness is measured through tracking regional pesticide sale data and recording the number of patrons contacted.

Both Cities' Department of Public Works perform pest control in compliance with BMPs, and State law and label requirements. The City of Monterey has recently chosen to voluntarily stop the use of regulated pesticides on City property, except in extreme cases. If a pesticide is used, application of alternative organic products is conserved, and quantities are limited to minimize any potential runoff.

The Pacific Grove golf course periodically uses pesticides to control disease outbreaks and broadleaf weeds. All pesticide applications are applied by an applicator that is licensed by the State of California and all product label requirements are strictly adhered to. No applications are conducted if the weather conditions are not optimal.

In June 2016, the City of Monterey hosted a MRSWMP regional Integrated Pest Management (IPM) municipal staff training session at Hilltop Park/Community Center at the top of the ASBS watershed. The training was well-attended and trained approximately 50 staff from participating agencies around the Monterey Peninsula and beyond, including attendees from the City of Pacific Grove and the City of Monterey. The City of Monterey anticipates hosting this training again in the future to continue expanding the knowledge and learning on this important landscape management topic for ASBS/water quality and as laws and regulations change.

Educational Signage. There is signage in the ASBS area that describes the greater Marine Protected Area. The signage includes a description of the Lover's Point State Marine Preserve and the Pacific Grove Marine Gardens State Marine Conservation Area. The signage includes messaging aimed at educating the public about the importance of preventing pollution.

Where feasible, both Cities have storm drains labeled (stenciled or emblems) in the ASBS watershed to educate residents about dumping and the storm drain connection to the Monterey Bay.

Community Monitoring Programs. Multiple local volunteer monitoring programs exist and have been sponsored by the Cities throughout the years and are described in Section 5.1. Through the MRSWMP, both Cities also sponsor community volunteer water quality events like Snapshot Day, Coastal Cleanup Day, and Earth Day events to educate the public and help residents be wiser about protecting the Monterey Bay. Both Cities also work with a number of local Non-Governmental Organizations (NGOs) to ensure general water quality awareness. These NGOs include, but are not limited to, Save The Whales, Surf Riders of Monterey, Sustainable PG, Ecology Action Collaboration, Save Our Shores, Zero Waste compostable, and more.

Non-Structural BMP Implementation Action

Both Cities

The ASBS website[14] will be updated to provide additional PE/PO materials and to serve as a portal to on-going activities and programs, such as:

- Access to Final CCRMP summary report;
- Access to Cities' ASBS-related projects and information
- Direct link to LID techniques[15] webpage, with an emphasis on resources and techniques previously developed for residents through the RainScapes program;
- Create link for visitors to sign up for the City Manager's Weekly email update that will occasionally include ASBS specific news and resources;
- Materials for ASBS related workshops and events;;
- Information and sign-up for volunteer monitoring programs;
- OWOW educational flyers;
- Links to/from the ASBS website from MRWSMP[16] and other City websites relevant to stormwater management[17]; and
- Brochures about architectural copper and potential water quality concerns for aquatic ecosystems.

Updates to the ASBS website will be in-place by summer 2017.

Coordinate with MRSWMP to:

- Ensure Annual Coastal Cleanup Day or other clean-up event periodically includes a beach within a local ASBS area, such as the PG ASBS.
    - Capitalize on PE/PO opportunity to provide information about ASBS specific issues, resources, and programs.
- Incorporate ASBS specific information into the existing PE/PO programs to school groups, as applicable.
    - To measure program effectiveness, record the number of students provided ASBS information.

These amendments to existing MRSWMP programs will be implemented by summer of 2018.

Both Cities will:

- Establish an Integrated Pest Management Policy and Program by 2018, with the goal of eliminating or reducing pesticide application on City property to the maximum extent feasible.

[14] http://www.cityofpacificgrove.org/living/green-pg/stormwater/pacific-grove-area-special-biological-significance
[15] http://www.cityofpacificgrove.org/living/green-pg/rainscapes-program/lid-techniques
[16] http://montereysea.org/asbs/
[17] http://monterey.org/en-us/Departments/Plans-Public-Works/Engineering/Storm-Water-Program#1077697-latest-news

- By summer 2017 the Cities will target OWOW PE/PO efforts in the ASBS watershed to build community awareness about practices to prevent or suppress pest problems with minimum impact on human health, the environment, and non-target species.[18]

Identify opportunities to incorporate educational signage while keeping with the Cities' character and aesthetic considerations, specifically:

- Develop a program to mark (stencil or emblem) storm drains in the ASBS watershed where feasible;
- Encouraging Pet-Waste pick-up at parks and at public trails;
- Identifying the limits of the ASBS watershed (e.g. "Now entering the ASBS Drainage Area") with new signs on or near the Coastal Recreation Trail. The signs would designate the entry/exit of the Pacific Grove ASBS drainage area and may include, but not limited to:
  - Funding provided by Prop 1 (if grant-funded)
  - Link to the City's project website, with Pacific Grove ASBS information, workshop information, and mobile app/tour

Opportunities for additional educational signage will be evaluated by summer of 2018.

Pending funding opportunities, the Cities propose to engage visitors and locals alike with an innovative and interactive mobile App/tour for visitors and residents to download, and learn about the Pacific Grove ASBS, as well as learn historical and environmental facts. The Cities would hire an outside consultant to develop a Mobile App/Tour to direct residents and tourists to tour "stops" located along the Pacific Grove ASBS that would provide educational (site features, project information, and historical facts) information.

8.1.4 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

Consistent with the Phase II General Permit, both Monterey and Pacific Grove prohibit illegal dumping and most non-stormwater discharges. The Phase II General Permit does not prohibit water line flushing, residential car washing, discharges from potable water sources, air conditioning condensation, dechlorinated swimming pool discharges, and incidental runoff from landscaped areas whereas the Special Protections prohibit these "non-storm water discharges" in the ASBS[19]. The control measures required under the Phase II General Permit for these discharges would maintain natural ocean water quality in the ASBS. The General Permit requires that these discharges are identified and that appropriate control measures to minimize the impact of such discharges are developed and implemented.

IDDE Programs. Through the Illicit Discharge Detection and Elimination (IDDE) Program, both Cities' stormwater and Code Enforcement staff respond to and track illicit discharge complaints and follow up actions through an existing database, consistent with the Phase II General Permit

[18] Establishing Integrated Pest Management Policies and Programs: A Guide for Public Agencies, University of California, Division of Agricultural and Natural Resources. http://anrcatalog.ucanr.edu/pdf/8093.pdf

[19] Other than Regional Board authorized, short-duration, intermittent non-stormwater discharges related to utilities, Phase II Small MS4 General Permit, Order No. 2013-0001-DWQ- Attachment C, Section 1.A.1.e

requirements. Additionally, the MRWSMP and Urban Watch monitoring programs[20] which are run and organized by the National Marine Sanctuary, samples stormwater outfalls multiple times per year and analyzes the data to determine if there are any IDDE discharges to the Pacific Grove ASBS.

The City of Monterey IDDE program is managed through the Plans and Public Works Department (PPW). Reported discharges are field inspected and if necessary enforcement actions taken to eliminate the discharge.

The City of Pacific Grove IDDE program is managed by the Public Works Environmental Programs. Though illicit discharges are rarely reported (less than once per year) they are field inspected and if necessary enforcement actions taken to eliminate the discharge.

Non-Structural BMP Implementation Action

Both Cities:

For subwatersheds with non-stormwater discharges not captured by the Dry-Weather Diversion system:

- Implement a PE/PO campaign regarding best practices to eliminate non-stormwater discharges from car washing, swimming pools, hot tub, and irrigation over-spray.
- Provide design review specific to managing illicit discharges from trash enclosures for new or redevelopment projects (excluding single-family residential projects).

8.1.5 DEVELOPMENT REVIEW

The goal of reviewing new and redevelopment projects is to ensure appropriate source control, site design, and stormwater treatment measures are incorporated into applicable new and redevelopment projects.

There is a moratorium on new water meters within the California-American Water service area, which includes the City of Pacific Grove and City of Monterey. Additionally, no new water credits are currently being distributed by the Monterey Peninsula Water Management District. This has resulted in very little development pressure within the Pacific Grove ASBS, and this will likely remain the situation for the foreseeable future.

Permit Tracking System. Construction and development permits for projects that could impact the ASBS are tracked using two databases. The City of Pacific Grove uses the iWorq database to track planning permits. Currently, the City of Pacific Grove contracts with the City of Monterey to provide building services. The City of Monterey uses the Permits Plus database system to track building permits, grading and encroachment applications, approvals, and follow-up activities such as inspections for both the City of Monterey and Pacific Grove.

[20] http://montereybay.noaa.gov/getinvolved/volunteer/urbanwatch.html

Construction BMPs. CCRMP data indicates detections of total copper in the ASBS exceeding the 85th percentile reference benchmark. The presence of total and dissolved copper could also be contributing to failed biological toxicity tests performed using water samples collected in the ASBS. Sources of total and dissolved copper in stormwater include from vehicle brake pads, automotive fluids, wash waters, and architectural building materials. For example, copper roofs and gutters immediately begin to weather and oxidize once installed, potentially creating a source of copper into the ASBS watershed. The City of Palo Alto estimates a copper roof on a new 2,500 square foot home has been estimated to corrode at a rate of 2.5 pounds of copper per year, or 1 pound/1,000 square feet.[21]

All construction projects must comply with the City of Pacific Grove Stormwater Management and Discharge Control Ordinance (Title 9.30) and the City of Monterey Urban Storm Water Quality Management and Discharge Control (Chapter 31.5 Article 2). Currently, the City of Pacific Grove contracts with the City of Monterey to provide building services, including the issuance of building permits. Permitted construction projects are tracked in the City of Monterey's Permits Plus database. New construction and alteration building permits issued by the City must also comply with the site development mandatory measures of the California Green Building Code.

The above mentioned codes require implementation of appropriate BMPs to prevent the discharge of construction wastes (including sediment) or contaminants from construction materials, tools, and equipment from entering a City storm drain. Disturbed surfaces must be protected against erosion by measures which the agency determines to be appropriate to the site and time of year. Minimum erosion and sediment BMP control measures include construction scheduling, use of fiber rolls or erosion control blankets, stockpile and materials management, drain inlet protection, and prevention of illicit discharges from the construction site.

Construction projects that disturb one acre or more of land must comply with the SWRCB Construction General Permit, which requires development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is reviewed by the Cities, and must describe the temporary construction BMPs that will be used during construction to manage sediment and materials on-site, and to prevent illicit discharges from a site.

Construction sites within the ASBS are considered priority, and as applicable, are inspected weekly during the rainy season according to Attachment C of the City's Phase II General Permit. All inspections are documented by the City. The City will report annual compliance to the State and Regional Water Board per Provision E.10 and Attachment C of the Phase II General Permit.

Additionally, through participation in the MRSWMP, this regional group sponsors or hosts educational programs regarding prevention of stormwater pollution from construction sites at construction contractor meetings, workshops, or seminars twice per year. These programs cover the four guiding principles for controlling runoff from construction sites:

- Construction site planning

[21] http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=343&TargetID=285, accessed 4/14/16.

- Erosion prevention and sediment control
- Materials management
- Good housekeeping practices

At these workshops and seminars, resources such as handouts are distributed providing participants with information on resources for construction site BMPs and where to access info such as construction site permitting procedures.

Post-Construction BMPs. The cities of Monterey and Pacific Grove require that structural BMPs, including Low Impact Development (LID) measures, be included in the design and post-construction operation of applicable new development and redevelopment projects. Both Cities' design requirements are derived from the Central Coast Regional Water Quality Control Board Resolution No. R3-2013-0032 (adopted July 12, 2013) Approving Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast. These regulations require project applicants that are proposing the replacement and/or addition of 2,500 square feet or more of impervious surfacing on a site to implement a variety of permanent structural control measures (SCMs). As applicable to the size of the development, these features provide stormwater pollutant source control, runoff reduction, water quality treatment, retention, or peak flow management. These regulations are meant to be considered at the early, site-planning phases for applicable development projects and assist with control of stormwater and for the overall goal of preventing stormwater pollution from developed urban environments on the Central Coast of California.

Non-Structural BMP Implementation Action

Both Cities:

- The Cities will develop an informational brochure about architectural copper and provide as a handout at the Cities' respective Community Development Counters. The handout will include information about the harm architectural copper can cause to acquatic environments and potential architectural alternatives.

8.1.6 GOOD HOUSEKEEPING (POLLUTION PREVENTION)

Trash Elimination. Both Cities provide a high number of trash receptacles throughout their Cities, and in the main tourism-oriented coastal areas along the ASBS. Service frequencies in the ASBS area range from daily at Lovers Point Park and the Central Business District to three times per week at the pull outs and parking lots along Ocean View Blvd. Both Cities have a strong desire to keep their respective land areas free from trash to present a clean environment, enhance visitor experiences, and protect the ASBS near shore waters.

The City of Pacific Grove has designed and installed seagull proof trash receptacle covers to prevent the birds from accessing and strewing trash from the receptacles in the downtown and the tourism-oriented coastal areas. Also in the last several years, the City of Monterey performed citywide solid waste bin retrofit with enhanced receptacles that promote greater solid waste recycling opportunities and better prevent bird access to trash. Both Cities receive

annual funds from CalRecycle to use for new waste and recycling receptacles in tourism-oriented areas.

Both Cities' Department of Public Works currently maintains and will continue to maintain park facilities, ensuring that there are adequate trash receptacles for visitor use and providing regular collection of trash as needed. Maintenance visits include the collection and proper disposal of any visible litter from Park facilities. In addition to these management measures, trash removal from stormwater outfalls occurs as needed. To this end, each City has implemented single-use plastic bag and polystyrene bans citywide to help curb littering of these products. Cities also participate in the Peninsula Illegal Dumping and Litter Abatement Task Force.

On April 7, 2015 the SWRCB adopted a statewide policy amendment for trash control in California. The objective of the Trash Amendments is to provide statewide consistency for the Water Boards' regulatory approach to protect aquatic life and public health beneficial uses, and reduce environmental issues associated with trash in state waters, while focusing limited resources on high trash generating areas. This amendment may be incorporated into the next Phase II Small Municipal General Permit term and/or may be implemented at another time through a State Order to municipal permittees. At which time is necessary, both Cities will evaluate the new regulations to be responsive to new trash control requirements.

Street Sweeping. City streets are swept regularly, as both Cities contract street sweeping services. The City of Pacific Grove street sweeping schedule is posted on the City of Pacific Grove's Public Works website.[22] The City of Monterey's interactive street sweeping map and schedule are available on the Monterey City Disposal Service website.[23] Municipal parking areas are swept weekly and before and after special events. Municipal parking areas are swept weekly and before and after special events.

In both Cities, vactor trucks vacuum every storm drain basin in hot spot areas once prior to the rainy season and complete visual inspections.

Road Maintenance. Operations and Maintenance protocols require BMPs to be implemented as appropriate for road maintenance work throughout both Cities, including in the ASBS drainage areas. An assessment of road maintenance activities in the watershed will occur through the Phase II General Permit provision E.11.h, which requires assessment of various municipal operations and maintenance activities including roads.

Facility Maintenance and Repair. Maintenance of both Cities' facilities includes regular inspections and identification and implementation of necessary repairs. Non-emergency repair of any park facilities will occur during dry weather and all maintenance and facility repair activities will utilize appropriate stormwater pollution prevention practices. All field and maintenance staff at both

[22] At http://www.cityofpacificgrove.org/streetsweeping
[23] At http://www.montereydisposal.com/our-services/street-sweeping/.

Cities receives stormwater pollution prevention and good housekeeping training through existing training requirements of the Phase II General Permit.

The existing Dry-Weather Diversion system is inspected and maintained biannually. Maintenance includes using a vactor truck to remove debris, and checking that all parts are in good condition and working properly.

The City of Monterey's storm and sewer infrastructure systems are operated and maintained by Streets and Utilities teams. If a system issue arises, these teams respond, assess the system, and perform the needed maintenance or repair to do their best to protect water quality, as well as public health and safety. They may also utilize City CCTV capability to identify issues. These teams are knowledgale about the infrastructure and respond quickly. In the instance of an emergency defect, these teams may perform the repair immediately, or if not feasible, emergency work is prioritized for contractor repair. The City performs on-going inspections of both infrastructure systems to understand existing conditions throughout every year. These on-going efforts inform prioritization of structures for rehabilitation.

Soil Erosion BMPs. The Coastal Recreation Trail is composed of both pavement and decomposed granite and there are two decomposed granite parking areas accessed from Ocean View Blvd. The decomposed granite is subject to limited erosion. Due to its permeability, there is rarely any water runoff from the trail. The trail and associated drainage features are maintained by City of Pacific Grove staff that inspect conditions and implement soil erosion BMPs as necessary to eliminate the discharge of sediment where such a discharge is contributing to an alteration of "natural water quality" in the ASBS.

8.2 STRUCTURAL BMPS

Structural BMPs involve the installation of engineering solutions to physically treat or infiltrate runoff. The following structural BMPs exist or are proposed.

8.2.1 EXISTING STRUCTURAL BMPS

Storm Drain Replacement. The City of Pacific Grove has been awarded a Proposition 84 Clean Beaches Initiative (CBI) Grant that is providing funding to:

- Replace approximately 6,700 linear feet of storm drains, 21 manholes, and 33 catch basins from the Lovers Point outfall to Pine Avenue to reduce bacterial contamination (from cross connections with the sewer system), sediment, trash and debris entering the storm drain system.
- Replace approximately 2,100 linear feet of sanitary sewers to reduce bacterial contamination from degraded infrastructure within the Lovers Point drainage area.

The purpose of this project is to restore and protect the water quality in the Lovers Point Beach watershed. The work associated with this grant is scheduled to be completed by October 2017.

CDS Units. CDS units are considered a type of stormwater treatment vault that use "a combination of swirl concentration and indirect screening to screen, separate and trap debris, sediment, and hydrocarbons from stormwater runoff."[24] According to the manufacturer, Contech, the indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material debris 2.4mm or larger, without binding. CDS retains all captured pollutants, even at high flow rates, and provides easy access for maintenance.[25] The Pacific Grove CDS units are maintained a minimum of twice per year, and more frequently if necessary.

The existing structural BMPs include five (5) CDS units which are shown in Figure 5 within their respective drainage areas.

BMP #1: Eardley CDS Unit - Stormwater Treatment Vault

The Eardley Avenue CDS unit is a model CDS3035 installed on a 30 inch RCP storm drain. The unit is estimated to treat runoff originating from 26.8 acres, with a treatment capacity of 3.8 cfs.

BMP #2: Ocean View CDS Unit - Stormwater Treatment Vault

The Ocean View CDS unit is a model CDS2025 installed on a 20 inch RCP storm drain. The unit is estimated to treat runoff originating from 13.6 acres, with a treatment capacity of 1.6 cfs.

BMP #3: Greenwood Park CDS Unit - Stormwater Treatment Vault

The CDS unit currently being installed in the Greenwood Park watershed is CDS 5678. The unit is estimated to treat runoff originating from 155.5 acres, with a treatment capacity of 25 cfs.

BMP #4: Ocean View Boulevard and 17th St CDS Unit - Stormwater Treatment Vault

The Ocean View and 17th Street CDS unit is a model CDS4040 installed on a 48 inch RCP storm drain. The unit is estimated to treat runoff originating from 220 acres, with a treatment capacity of 6 cfs. With installation of the proposed Urban Diversion Phase 4 Lovers Point project, the drainage area to the CDS unit will decrease to approximately 1.1 acres.

BMP #5: Lovers Point Park CDS Unit - Stormwater Treatment Vault

The Lovers Point Park CDS unit is a model CDS3020 installed on a 24 inch RCP storm drain. The unit is estimated to treat runoff originating from 7.4 acres, with a treatment capacity of 2 cfs.

Sanitary Sewer Collection Systems Repair and Replacement. Sanitary sewer system control measures are a priority for both Cities to better protect water quality of receiving waters,

[24] http://www.conteches.com/products/stormwater-management/treatment/cds, accessed July 2016
[25] http://www.conteches.com/products/stormwater-management/treatment/cds, accessed July 2016

including the ASBS. One potential water quality impact to ASBS areas are temporary sanitary sewer overflows (SSOs) caused by collection system defects or failures that may, in some instances, cause wastewater to reach the ocean through the storm drainage system. Both Cities have an underground sanitary sewer collection system within their jurisdictional boundary, and both are tributary to a regional interceptor pipeline that flows via pump station assistance to the Regional Treatment Plant (RTP) in Marina. Neither collection system is a traditionally "combined sewer" system with the storm drainage system; though, a dry-weather diversion system has been constructed in recent years to connect portions of the Pacific Grove ASBS storm drainage system to the regional sanitary sewer collection system so that dry weather flows from the stormwater system can be diverted to the regional sewer system during dry months.

Both Cities implement a Sanitary Sewer Management Plan (SSMP) that includes a Sanitary Sewer Overflow Reduction Program, including regulatory and public reporting of SSOs and coordination with local agencies, such as, the Monterey County Health Department and Monterey Bay National Marine Sanctuary (MBNMS), as applicable. Additionally, the regulations require that each City perform regular system maintenance, condition assessment, and rehabilitation where necessary.

Rehabilitating sewer infrastructure that is many decades beyond its anticipated life expectancy is a critical step both Cities are taking toward better protection of the Pacific Grove ASBS. Each City has also planned for, proposed, and/or partially constructed sanitary sewer collection system rehabilitation projects that support long-term water quality improvements for the Pacific Grove ASBS, and the Monterey Bay National Marine Sanctuary overall.

City of Pacific Grove

The City of Pacific Grove's wastewater collection system consist of approximately 58 miles of gravity sewer pipes, ranging in size from 4-inch to 18-inch in diameter. A majority of the system was constructed in the early 1900's and the pipe material consists mostly of vitrified clay pipe. The City has been replacing pipe with Polyvinyl Chloride or PVC pipes when new construction occurs. Additionally, the City of Pacific Grove requires a conditions assessment, repair, and/or replacement of private sanitary sewer laterals as a condition of property sale or as laterals are discovered to be defective. Pacific Grove also maintains an innovative sewer lateral loan program available to residents who apply to voluntarily rehabilitate their private sanitary sewer laterals.

The City of Pacific Grove updated and adopted the SSMP in 2013. The City's updated plan includes the City's operation and maintenance program. In 2014 the City Council approved the Sewer Collection Master Plan that identifies 9 projects that need to be completed within the next 10 years[26]. This document will be the basis for mapping and implementing these projects that have an estimated construction cost of $13.9 million. Along with these projects, the City will

[26] The Sewer Collection System Master Plan can be viewed online at the following web address: http://www.cityofpacificgrove.org/sites/default/files/general-documents/public-works/compressed-final-sewer-master-plan-may-2014-final-document.pdf

continue to operate and maintain the system, and conduct long term pipe replacement. Since 2010 the City of Pacific Grove has replaced over 23,000 linear feet of sanitary sewer pipelines. The City of Pacific Grove will also be designing and constructing Near Term Sewer Projects #3 (Asilomar Sewer Line Upgrade) and #4 (Crocker and Asilomar Manhole Replacement) by 2020, both identified in the Master Plan. Portions of these projects are within the Pacific Grove ASBS and contribute to the rehabilitation of the City's aging infrastructure.

The SSMP identifies the necessary steps to take if a Sanitary Sewer Overflow is to occur. In conjunction with emergency responders, Pacific Grove Public Works Department takes all necessary steps to prevent SSO's from entering the storm drain system. If SSO's do occur due to pipe failures then closed-circuit television (CCTV) inspections will occur to identify the deficiencies. If a SSO does enter the storm drain system in an area managed by the Dry-Weather Diversion system (currently east of Lovers Point), the flow is captured and sent to the RTP.

The City of Pacific Grove is in the process of extending the Dry-Weather Diversion system west of Lovers Point as described in Section 7.2 and is implementing the Sewer Collection Master Plan that identifies nine (9) projects, five (5) in the ASBS watershed, to be completed by 2025.

City of Monterey

The City of Monterey's wastewater collection system consists of approximately 100 miles of gravity sewer pipes ranging in size from 6-inch to 36-inch in diameter, seven (7) lift stations, and over 2,000 sewer structures including manholes, cleanouts, and lamp holes. The City is mostly built-out so significant growth is not anticipated in future years. The majority of the system was constructed in the early 1900's and the pipe material mostly consists of vitrified clay pipe. The City performs 100s of miles of sewer system cleaning each year.

This system provides wastewater collection services for roughly 27,000 residential and commercial customers within the City's boundaries and to 140 customers in the County that are connected to the City's system. Upper and lower laterals are privately owned in the City of Monterey. If found defective, the City requires property owners to perform investigations and repairs of laterals as directed by the Building Official and County Health Department.

Between 1998 and 2010, the City performed extensive condition assessments of its sanitary sewer collection system - pipes, manholes, and pump stations - and utilized industry standards to rate all infrastructure on an A to F scale. In 2010, the City developed a long-range comprehensive wastewater financing plan and rate study. In 2011, after public workshops, hearings, and a Proposition 218 community process, the City implemented a sanitary sewer utility fee phased increase to support rehabilitation of the sanitary sewer system.

With this community support, the City developed a $16.8 million citywide sanitary sewer rehabilitation project to focus repair efforts on those structures in the greatest need of repair. In 2014, the City was awarded a Clean Water State Revolving Fund (CWSRF) loan from the SWRCB to commence this critical collection system rehabilitation project. Some sanitary sewer pipes and manholes in Monterey's ASBS drainages are included in the construction effort, and are

part of the first segment of within the City to receive field rehabilitation. As of mid-2016, the City is actively performing the field rehabilitation in the ASBS drainage with construction planned for completion in 2016. Improving the condition of the City's aged sanitary sewer collection system is a critically important structural action the City is taking toward better protecting local Monterey Bay receiving waters including the PG ASBS in the long-term.

The City of Monterey updated its SSMP in 2013 and is again in the process of updating its SSMP. The City implements a SSO response program as outlined in the SSMP, with response from Fire Department and/or Public Works (Streets/Utilities) to protect the storm drainage system, identify and correct defects or failures, and restore sanitary system flows as soon as possible. To support City sanitary sewer system needs, the City maintains a mobile CCTV vehicle and trained operation staff to better assist rehabilitation project efforts and SSO response. In the event of a SSO that may result in a discharge to the Pacific Grove storm drainage system, the City of Monterey contacts Pacific Grove Public Works to coordinate responses (Monterey also provides Fire emergency services throughout Pacific Grove if a sewage emergency were to occur).

Through the Clean Water State Revolving Fund (CWSRF) loan program, the City of Monterey is funding and proactively rehabilitating pipelines and manholes in its Pacific Grove ASBS watershed area, as well as citywide. As of June 2016, the City of Monterey has rehabilitated ten sewer pipelines and is planning to complete 44 manhole repairs in the Pacific Grove ASBS watershed by 2017.

Dry Weather Diversion System. Dry weather non-authorized stormwater discharges are effectively prohibited in the ASBS area per the Ocean Plan and associated regulations in Phase II General Permit Attachment C. The City of Pacific Grove has been actively working towards eliminating these discharges and has implemented a number of capital improvement projects to achieve this end funded primarily by grants.

In 2001, the City of Pacific Grove was awarded a Proposition 13 Clean Beach Initiatives grant to plan, design, and construct a Dry Weather Diversion Project to enable compliance with the Special Protections requirement that there be no dry weather flows discharged from its storm drainage system and into the Pacific Grove ASBS. The first phase of the diversion system was completed in 2004 and diverts the outlets located along the Pacific Grove Shoreline between Lovers Point Park and 12th Street.

The City of Pacific Grove was awarded a Proposition 40 Grant for Phase II of the Dry Weather Diversion Project that expanded the area on either side of the Phase I diversion to incorporate an additional 99 acres of land that is diverted during dry months. Phase II of the Dry Weather Diversion System was completed in 2007 along Ocean View Boulevard and a portion of 17th Street between First Street and Lorelei Street.

In 2011, the City of Pacific Grove received funding from a SWRCB Proposition 84 ASBS grant (Prop 84 ASBS grant) to complete Phase III of the Dry Weather Diversion Project. The third phase of construction was completed in June 2014 and incorporates an additional 66 acres of the watershed. Phase III is located along Ocean View Blvd, First Street, and Eardley Avenue.

As a result of these Dry-Weather Diversion projects, runoff that flows into catch basins and would normally be discharged from the Pacific Grove ocean outfalls during non-rainfall periods will instead be captured and transferred via sewer pump stations to Marina, and processed at the regional wastewater treatment system. The MRWPCA monitors these outfalls bi-weekly and notifies Pacific Grove Public Works Department if any dry weather discharges occur.

This Dry-Weather diversion system covers the largest drainage areas in the City from Lovers Point east to the Hopkins Marine Station (Figure 5). Combined, the three phases of the project direct dry weather flows from the storm drain system to the sanitary sewer from a 652-acre watershed area.

8.2.2 PROPOSED STRUCTURAL BMPS

Joint Pacific Grove/Monterey Capital Improvement Studies for the Pacific Grove ASBS. In recent years, the Cities of Monterey and Pacific Grove have been evaluating alternative stormwater management projects to address regulatory requirements imposed by the State Water Resources Control Board (SWRCB) for stormwater discharges to the ASBS, and to build upon past ASBS studies undertaken by both agencies.

In 2006, the City of Monterey with the assistance of MACTEC produced a Final Alternatives Analysis and Data Acquisition for Pacific Grove ASBS and Carmel Bay ASBS. This 2006 MACTEC report presented a three-phase study that presented results of alternatives analyses and data for stormwater and non-stormwater discharges to both ASBS areas. This study performed the feasibility analyses necessary for diverting, storing, treating, and/or reusing stormwater from the Del Monte Forest, New Monterey, and City of Pacific Grove areas, and preventing such discharges from entering either ASBS. Its assumptions, analyses, alternatives, and results assisted in forming future 2013-2014 study efforts by the Cities of Monterey and Pacific Grove for structural BMP controls related to the Pacific Grove ASBS, including two grant efforts that supported the 2014 Final Environmental Impact Report (FEIR) adopted by both Cities, and as further described below.

In 2012-2014, the City of Monterey managed a $270,000 Integrated Water Resources Management Planning (IRWMP) grant process and provided a 36 percent match to that grant ($151,875) to fund a Monterey-Pacific Grove ASBS alternatives study (total project funds ($421,875) that built off the City of Monterey 2006 MACTEC ASBS Report. These efforts were a part of a larger $1 million grant managed by the Monterey Peninsula Water Management District. The joint project addressed stormwater discharges into the ASBS including the evaluation of stormwater management projects to address stormwater discharges into the ASBS.

In January 2013, Fall Creek Engineering, Inc. was retained by the City of Monterey to complete the *City of Monterey and Pacific Grove ASBS Refined 2006 Feasibility Study of Alternatives Management Plan*. The scope of work in this study was to: (1) refine and select a preferred and alternate project from the broad list of projects identified by MACTEC, (2) select a preferred project alternative, (3) develop conceptual and preliminary plans for the preferred project, (4)

prepare the CEQA environmental impact report (EIR) for the preferred project; and (5) prepare a project implementation work plan for the preferred project.

After review and screening of the twenty two (22) alternatives identified in the 2006 MACTEC Study, six (6) project alternatives were identified and refined with input from the Cities of Monterey and Pacific Grove. These alternatives were then screened by numerical ranking and weighting to select a preferred and alternative project. The preferred ASBS stormwater management project was identified prior to completion of the CCRMP, and outlined implementation steps for structural measures to effectively manage stormwater discharges to comply with the SWRCB's water quality requirements and to protect the ASBS. The cities completed a 40% Design Engineering Report (Fall Creek Engineering) and adopted a subsequent Monterey-Pacific Grove ASBS Stormwater Management Project Final Environmental Impact Report (FEIR) in August 2014. Certification of the FEIR increases eligibility for additional grant funds and demonstrates the Cities' efforts in compliance with the Special Protections.

The FEIR preferred project would divert both wet and dry weather flows from both Pacific Grove and Upper New Monterey watershed areas into an upgraded stormwater collection and treatment system. As proposed, flows would be directed either to a new stormwater treatment facility adjacent to Pacific Grove Golf Links at the retired Point Pinos Wastewater Treatment Plant site and/or to the MRWPCA regional wastewater treatment plant in Marina. The objective of the complete project as proposed is to achieve up to a 90% reduction in pollutant loading during storm events to comply with the SWRCB's ASBS Special Protections, and is comprised of five associated subprojects located primarily in the City of Pacific Grove, with a portion of two projects located in the City of Monterey. The five projects include (1) David Avenue Reservoir Improvements, (2) Pine Avenue Conveyance, (3) Ocean View Boulevard Conveyance, (4) Point Pinos Stormwater Treatment Facility, and (5) Diversions to the MRWPCA. Together each of these projects would divert and provide treatment for runoff up to the 85th percentile design storm; flows exceeding this design storm would continue to the existing outfall locations and flow to the Pacific Grove ASBS.

The current preliminary engineering design is at the approximate 40% completion level. Several special studies, geotechnical and surveying analysis, and further engineering are all required for implementation of the project components in the future. More detailed information can be found in the Monterey-Pacific Grove ASBS Stormwater Management Project certified Final Environmental Impact Report, and the Final Engineering Report 40% Submittal by Fall Creek Engineering, which includes further description of the proposed project, estimated costs, recommendations for phasing and implementation, and additional next steps.[27] The preferred ASBS stormwater management project was developed to determine the full extent of structural controls that may be needed to comply with the Special Protections. Based on the CCRMP monitoring results, the Ocean View Boulevard Conveyance component of the preferred project is being further refined and is described below as BMP#6 and BMP#7. Full project implementation

[27] These documents are available on this City of Pacific Grove webpage at http://www.cityofpacificgrove.org/asbs.

is not planned or anticipated.

On August 5, 2015, a Design- Build contract was awarded for the Pacific Grove Local Water Project. Phase I of this project consists of the construction of a new satellite recycled water treatment plant at the retired Point Pinos Wastewater Treatment Plant to recycle a portion of Pacific Grove's municipal wastewater. Subsequent phases of this project will incorporate stormwater flows (Project 4 of the preferred project).

Phased Structural BMP Implementation Strategy. The Cities have prioritized structural BMP implementation based on priority subwatersheds with the highest risk for pollutant load generation. The structural BMPs in this Plan proposed for near term implementation have been located and sized to maximize their water quality treatment potential for priority outfalls discharging to the ASBS, while taking into consideration the interests and priorities of the Pacific Grove community. A combination of Urban Diversion and LID site design, bioretention/bioswales, and permeable pavement facilities have been identified for implementation in the ASBS watershed, and are shown in Figure 6 within their respective drainage areas.

In August 2015, Pacific Grove was awarded a grant from the Monterey Peninsula Water Management District's in the amount of $100,000. Funds from the grant are being used to evaluate expanding the dry-weather diversion system west of Lovers Point. The first two proposed structural BMPs (#6 and #7) comprise the Pacific Grove-Monterey ASBS Wet-Dry Weather Storm Water Capture and Diversion Project, which were identified through this evaluation.

BMP #6: Lovers Point Urban Diversion Improvements - Stormwater Diversion for Non-Potable Reuse. The Wet-Dry Weather Stormwater Capture and Diversion Project proposes to capture runoff from the 85th percentile storm as well as dry weather flows in the Lovers Point Watershed, to divert these flows from reaching the Pacific Grove ASBS. The wet and dry weather flows are proposed for diversion into an underground storage tank and then would be metered to the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Treatment Plant (RTP) where the water would be treated and then either beneficially re-used by the local farming community or discharged to the Bay.

BMP #7: Sea Palm Urban Diversion Improvements - Stormwater Diversion for Non-Potable Reuse. The Wet-Dry Weather Stormwater Capture and Diversion Project proposes to capture runoff from the 85th percentile storm as well as dry weather flows in the Sea Palm Watershed, to divert these flows from reaching the Pacific Grove ASBS. The wet and dry weather flows are proposed for diversion into an underground storage tank and then would be metered to the MRWPAC RTP where the water would be treated and then either beneficially re-used by the local farming community or discharged to the Bay. A component of the proposed Sea Palm Diversion Project is to upgrade 1,930 LF of sewer main that was identified in the City of Pacific Grove's Sewer Collection System Master Plan, dated May 2014. This stretch of sewer main is required to be upgraded due to

sewer capacity and age deficiencies as well as for conveyance of stormwater under the proposed Lovers Point and Sea Palm Diversion Project.

BMP #8: Pacific Grove City Parking Lot Retrofit at Lovers Point (Ocean View Boulevard and 17th Street) – LID. A Recreation Trail Accessibility Improvements[28] site plan for the Lovers Point Parking Lot was reviewed and evaluated for incorporation of additional LID measures to provide water quality treatment of runoff from the parking lot and adjacent portions of Ocean View Boulevard. The current plan already includes the use of pervious pavers for the pedestrian trail access point at Forest Avenue and in all the crosswalks. Potential measures for incorporation include using landscape bulbs as bioretention features with curb cuts, installing pervious pavers along the parking stalls, and converting the landscape area at the intersection of 17th and Ocean View to a bioretention facility to treat runoff from this busy intersection.

BMP #9: Monterey City Parking Lot 7 (David Avenue and Foam Street) – LID. The proposed project includes the installation of a tree-box filter to manage stormwater in conjunction with proposed accessibility, driveway, striping and landscape improvements at this City Parking Lot located in a high priority subwatershed of the ASBS. The LID feature will provide stormwater quality treatment consistent with the Post Construction Regulations.

Stormwater Resource Plan Development. In January 2016, the City of Monterey was awarded an $85,000 grant from the Monterey Peninsula Water Management District to further support the Monterey Regional Water Recovery Study, a City-funded Neighborhood Improvement Project. This project's goal is to examine the feasibility of Peninsula-wide water recovery and reclamation possibilities in partnership with the Cities of Pacific Grove, Seaside, County of Monterey, Monterey Peninsula Regional Parks District, Monterey Regional Water Pollution Control Agency, U.S. Army Presidio of Monterey, and Naval Support Activity Monterey. This study is a first step that would lead to eventual capital improvements to provide a reliable local water source through regional stormwater management as a part of the Monterey Peninsula Stormwater Resource Plan. When complete the final Stormwater Resource Plan could contain project recommendations that benefit the ASBS.

Greenwood, Eardley, David Avenue and Pine Street Diversion Analysis. The Wet-Dry Weather Stormwater Capture and Diversion project also proposes to analyze options and identify viable project(s) to expand the facilities already constructed to divert dry weather flows and/or evaluate additional opportunities to utilize new infrastructure such as the David Avenue Reservoir to capture and divert runoff from the 85th percentile storm in addition to dry weather flow. Once constructed, this project could divert runoff from an additional 434 acres or approximately 36% of the ASBS watershed to MRWPCA. The proposed analysis will include a Preliminary Survey and Geotechnical Investigation, Preliminary Design Report, and Environmental evaluation in compliance with CEQA.

[28] Oona Johnson Landscape Architecture, April 20, 2016, Rec Trail Accessibility Improvements, Permit Set-Review

8.2.3 PROJECTS IDENTIFIED FOR LATER PHASE IMPLEMENTATION

Upon implementation of the near term structural and non-structural BMPs identified in this Plan (BMPs #6-#9), the Cities plan to conduct water quality monitoring in accordance with the Special Protections to evaluate if natural ocean water quality conditions continue to be exceeded, or if the pollutants in exceedance have dropped below the 90% pollutant removal target. If exceedances are identified, additional structural BMPs have been identified for further evaluation for implementation in later phases and are described below and shown in Figure 6, starting with Phase 2:

BMP #10: Dewey Avenue to Eardley Avenue Dry Swale – LID. This project proposes to convert a landscape strip between Ocean View and the Recreation Trail extending from Dewey Avenue to City of Monterey, into a dry swale to treat runoff diverted to the swale from the trail and the right-of-way. Runoff would be diverted into the dry swale via new curb cuts along Ocean View that would direct runoff into the dry swale along numerous points along the length of the feature.

BMP #11: 7th Avenue Bioretention – LID. Numerous opportunities are available along the Recreational Trail alignment to provide water quality treatment of runoff from the trail and Ocean View Boulevard. Proposed methods involve retrofit of existing drain inlets to allow for conversion of existing landscape areas to bioretention facilities. One such landscape area is located between Ocean View Boulevard and the Recreation Trail at the outlet of a storm drain from 7th Street. This landscape strip could be retrofitted to receive runoff diverted from the 7th Street drain and the drain located between 7th and 8th Streets.

BMP #12: Berwick Park Bioretention – LID. Extending from 9th Avenue to Carmel Avenue, Berwick Park represents an opportunity to provide water quality treatment of runoff from Ocean View Boulevard and a portion of the residential neighborhood in the vicinity. A portion of the turf area at Andy Jacobson Park would be retrofitted to incorporate bioretention features to treat the diverted runoff. It is assumed that a portion of the runoff from storm drains extending beneath the Park from Carmel Avenue and Monterey Avenue could be redirected into the into the new bioretention features along with roadway runoff, via new curb cuts along Ocean View Boulevard.

BMP #13: 12th & 13th Bioretention – LID. Numerous opportunities are available along the Recreational Trail alignment to provide water quality treatment of runoff from the trail and Ocean View Boulevard. Proposed methods involve retrofit of existing drain inlets to allow for conversion of existing landscape areas to bioretention facilities. One such landscape areas is located downslope of the mural parallel to the Recreation Trail between 12th and 13th streets. This area could be modified to treat roadway and trail runoff while preserving the character and historical significance of the mural.

BMP #14: Jewell Park Bioretention – LID. Underutilized portions of the Jewell Park turf area, though few, represent opportunities for conversion into stormwater LID treatment features with an educational emphasis in this well used community park. It appears one such area is near the intersection of Forest Avenue and Park Place, where runoff from

Forest Avenue could be strategically diverted to a new bioretention feature with an overflow onto Park Place.

BMP #15: Lighthouse Avenue Pilot Green Street – LID. The center and side parking aisles and crosswalks in this downtown corridor could be converted into permeable pavement strips. Many of the existing and newly installed landscape bulbs could be converted to LID features by using curb cuts to divert and treat roadway runoff. A preliminary concept plan for the portion of Lighthouse Avenue between 16th Street and Forest Avenue[29] could be modified to locate the proposed planters to become LID stormwater/bioretention planters to provide water quality treatment of the roadway and parking area stormwater runoff.

The following Structural BMPs have been identified for further evaluation and implementation in Phase 3 if natural water quality exceedances continue to occur within the Pacific Grove ASBS. These BMPs are also shown in Figure 6:

BMP #16: Pine Avenue Right-of-Way Green Street – LID. The existing width and drainage patterns on Pine Avenue are suitable for implementation of new LID landscape bulbs on both the north and south sides of the roadway corridor by reducing the number of traffic lanes from four to two. Adequate space for east and west bound bike lanes would likely be available while maintaining residential street parking. The combined width of the remaining two driving lanes and bike lanes would continue to be available for special events and parades that occur along the ROW. Additional benefits of this project concept is that it can provide water quality treatment of runoff from this well used roadway in a high priority ASBS watershed and it can slow traffic to support safe routes to the Robert Down Elementary School.

BMP #17: Robert Down Elementary School Field – Rainwater Collection for Non-Potable Reuse. The Robert Down Elementary School Field (Field) includes approximately 61,000 square feet of irrigated turf area and represents an annual irrigation demand that can potentially be offset with non-potable supply. An EPIC (Environmental Passive Irrigation Chamber) system installed beneath the turf area, is one option for diverting stormwater runoff from approximately 98 acres in the upper Greenwood Park subbasin and 102 acres in the New Monterey area to reduce runoff rates to the Pacific Grove ASBS, while providing non-potable irrigation to the Field. EPIC systems typically include a sand and gravel layer beneath the turf with integrated storage chambers below that capture and release stormwater, to supply the needs of the grass through capillary action (ACOE, 2013).

BMP #18: City Hall Courtyard Retrofit – LID. This project would retrofit the City Hall courtyard to highlight LID concepts and practices. Building downspouts for the portion of City Hall on the southern edge of the courtyard would be disconnected via stormwater art into the existing landscape planters, slightly modified to accommodate the diverted flows. The Courtyard pavement would be replaced with permeable pavers with a stormwater

[29] WR&D, 1/11/16, Lighthouse Avenue Streetscape Improvements

art element with an educational and/or playful focus. New stormwater landscape tree wells would be installed along Laurel to treat roadway runoff.

BMP #19: City Parking Lot Retrofit at Fandango Restaurant (Between 16th and 17th Streets, South of Laruel) – LID. The proposed treatment approach would convert the center parking aisles to bioretention planters with curb cuts to receive runoff from the parking lot surface. The current dumpster and grease collection barrel location and condition should be evaluated for consistency with best practices to manage runoff into the ASBS. Exhibit 15 provides an overview of the proposed BMP.

BMP #20: Ocean View Curb Cuts to Rain Gardens – LID. Curb cuts from Ocean View Boulevard could be used to direct runoff into the landscape area between the roadway and coastline. The landscape area could be converted into rain gardens with the potential to maintain the current ice plant that are highly valued by the community. It is assumed that a portion of the runoff from storm drains extending beneath the roadway from Naiad Street to Clyte Street could be redirected into the into the new bioretention features. Existing curb cuts in this area should be maintained to allow the continued diversion of roadway runoff into the landscape area to provide flow attenuation and water quality treatment prior to entering the ASBS.

9 COMPLIANCE AND IMPLEMENTATION SCHEDULE

The Cities of Pacific Grove and Monterey have been implementing non-structural and structural BMPs consistently since adoption of the ASBS General Exception in March 2012, as summarized in Table 10.

The Cities propose a three phased implementation approach to achieve compliance with the Special Protections as outlined in Table 11 and Table 12. The BMPs proposed for implementation in Phase 1 have been identified strategically to improve water quality to the ASBS within high priority subwatersheds. Water quality monitoring would be conducted after the end of Phase 1 to evaluate compliance with the Special Protections. If pollutant exceedances are identified through the water quality monitoring, the Cities will evaluate the additional structural BMPs included in this Plan and prioritize for implementation in Phase 2 as needed. As needed, water quality sampling would again be conducted at the conclusion of Phase 2 and additional structural BMPs evaluated for implementation to maintain natural water quality objectives in Phase 3. If a deadline cannot be met as noted in Table 11, the Cities shall submit information required to support a request for extension to the SWRCB for consideration. It is understood that submitting a request does not guarantee an extension.

Two of the BMPs described in the Existing BMPs section (Section 8.2.1), the Greenwood Park CDS unit (BMP #3) and the storm drain replacement efforts, were constructed during the summer of 2016 and are on-going until October 2017, respectively. As a result the stormwater quality benefits of these BMPs are expected to begin winter 2016/17, and these projects are included in the Compliance and Implementation Schedule shown in Table 11.

The compliance analysis identified 203PAC080 (Forest/Lovers Point) as the only outfall not currently in compliance with the ASBS requirements (Table 9), therefore the currently proposed wet/dry-weather diversion at Lovers Point (BMP #6) and the LID Retrofit at the Lovers Point Parking Lot (BMP#8) may be the only structural BMP necessary to come into compliance.

10 REFERENCES

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11 FIGURES

FIGURE 1 - Pacific Grove ASBS Vicinity Map
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 8/6/2016

FIGURE 2 - Pacific Grove ASBS Land Use Map
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 9/11/2016

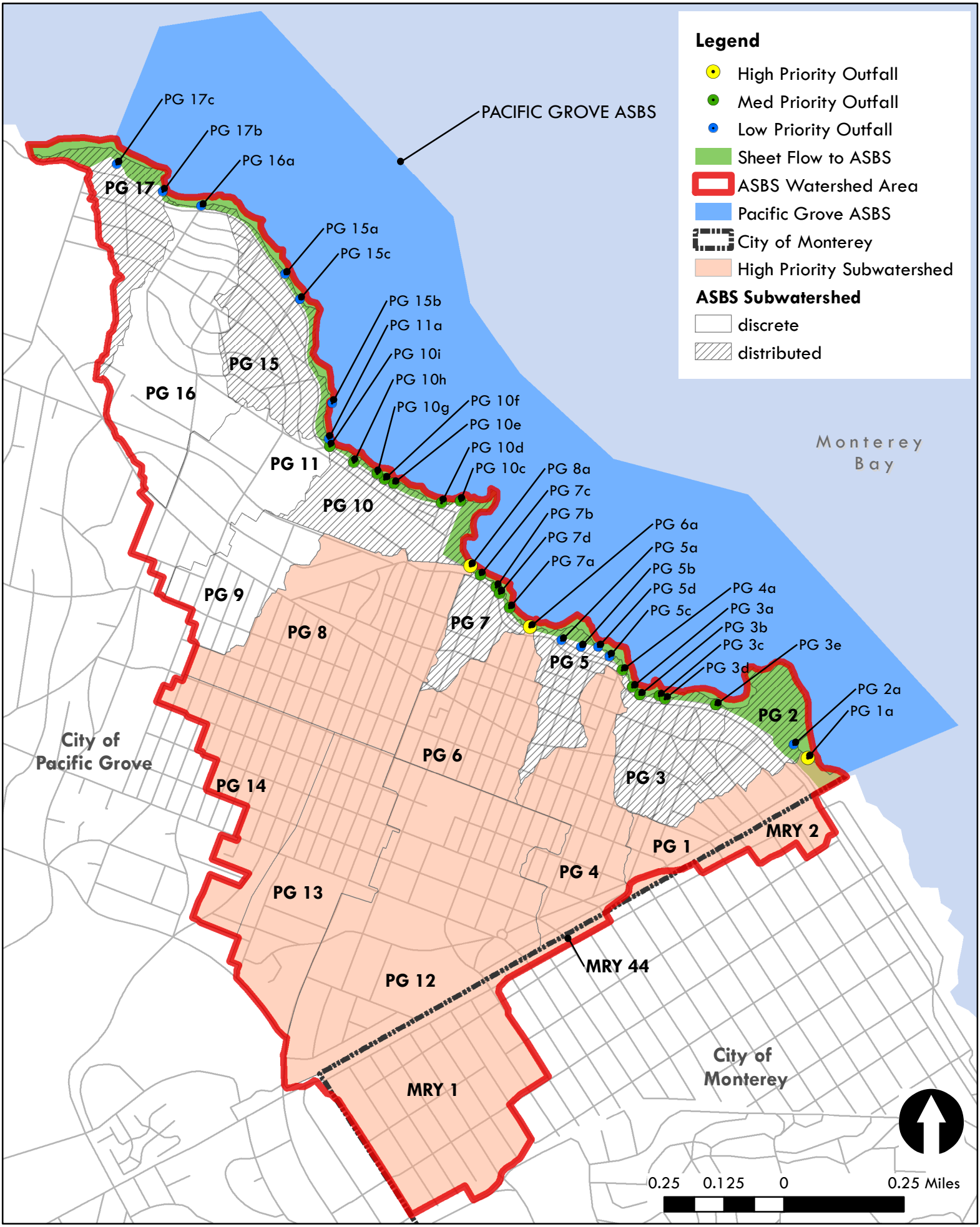


FIGURE 3 - Pacific Grove ASBS Subwatershed and Outfall Priority Map
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 9/17/2016

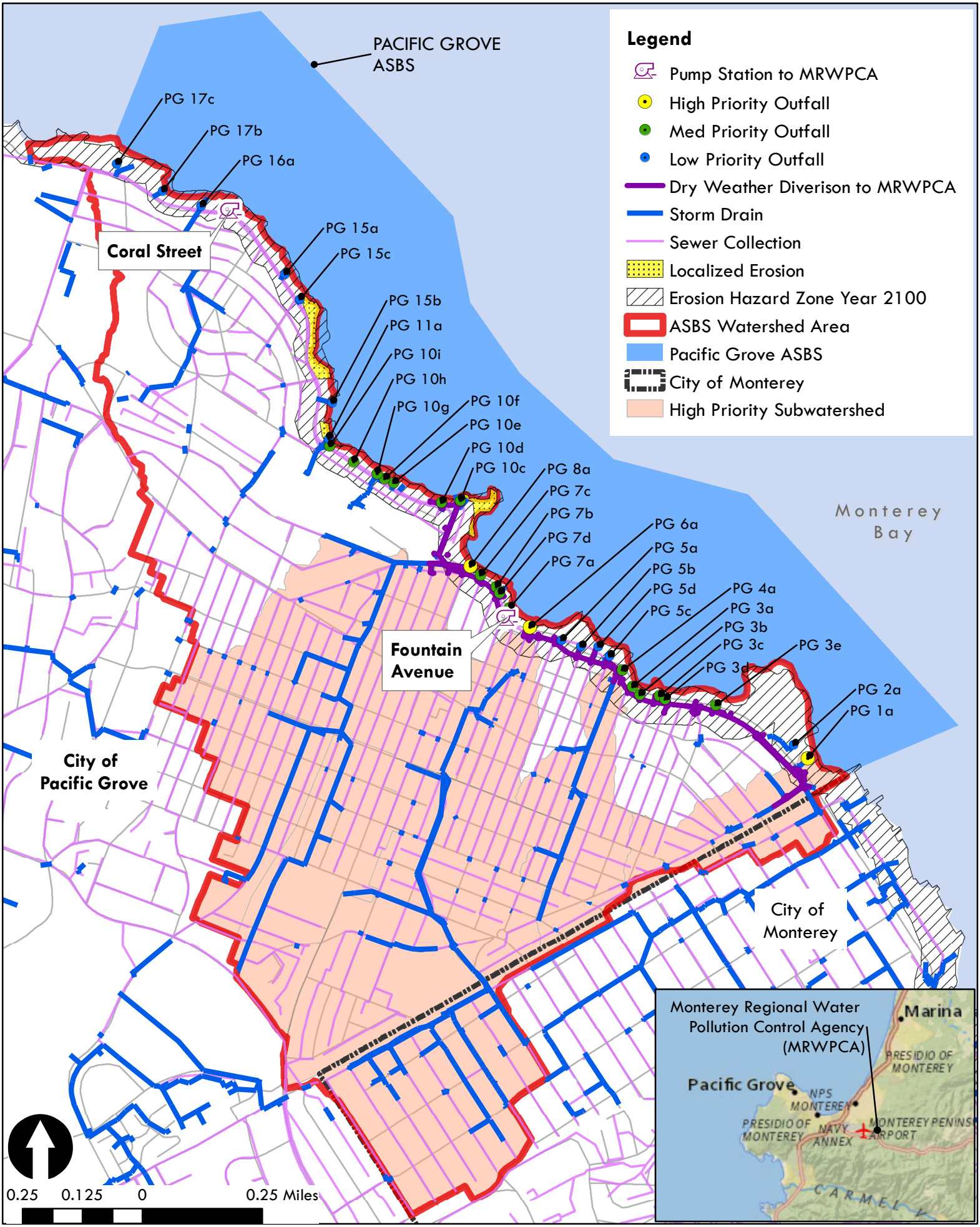


FIGURE 4 - Pacific Grove ASBS Infrastructure & Erosion Map
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 9/18/2016

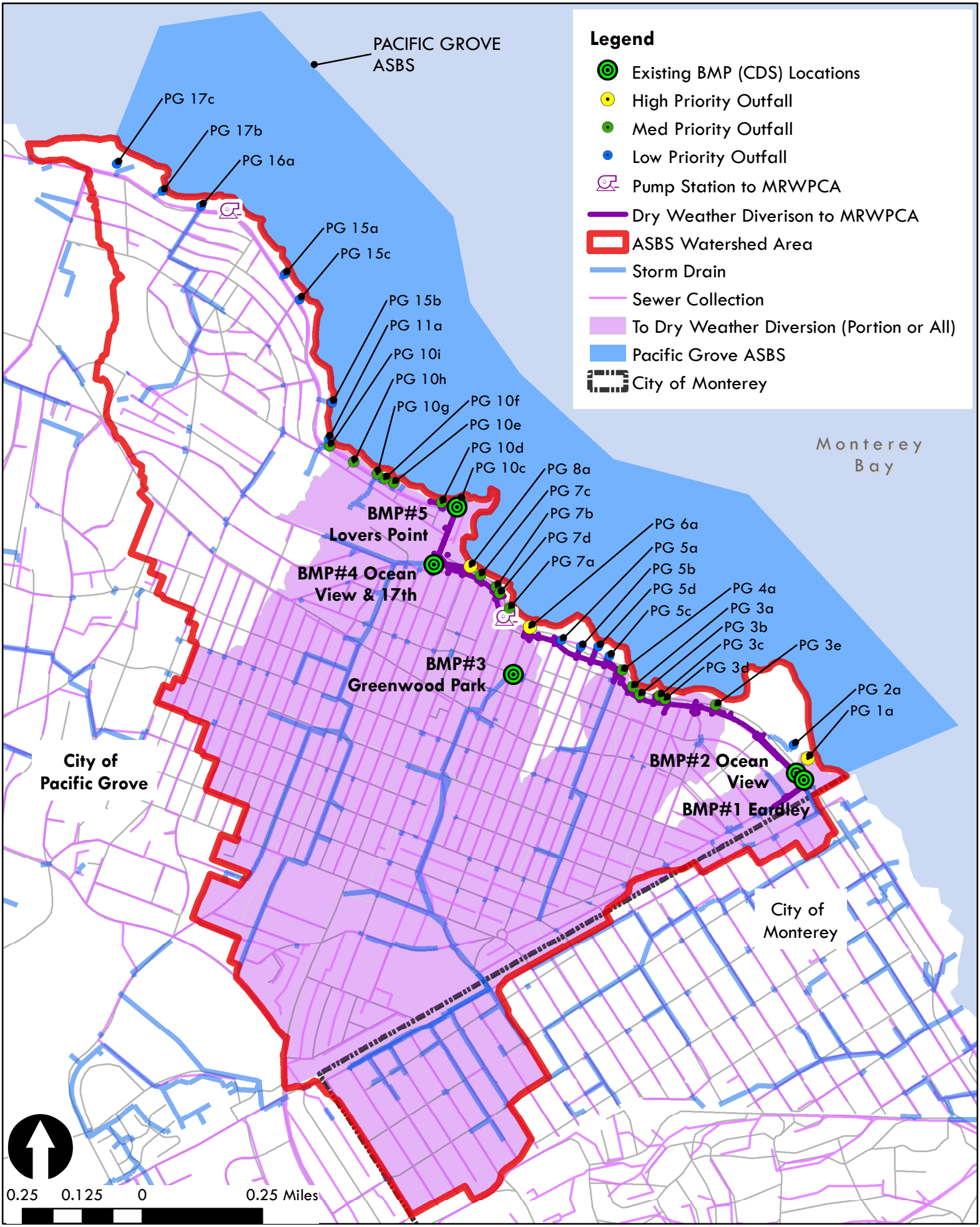


FIGURE 5 - Pacific Grove ASBS Existing Strucutural BMPs
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 9/13/2016

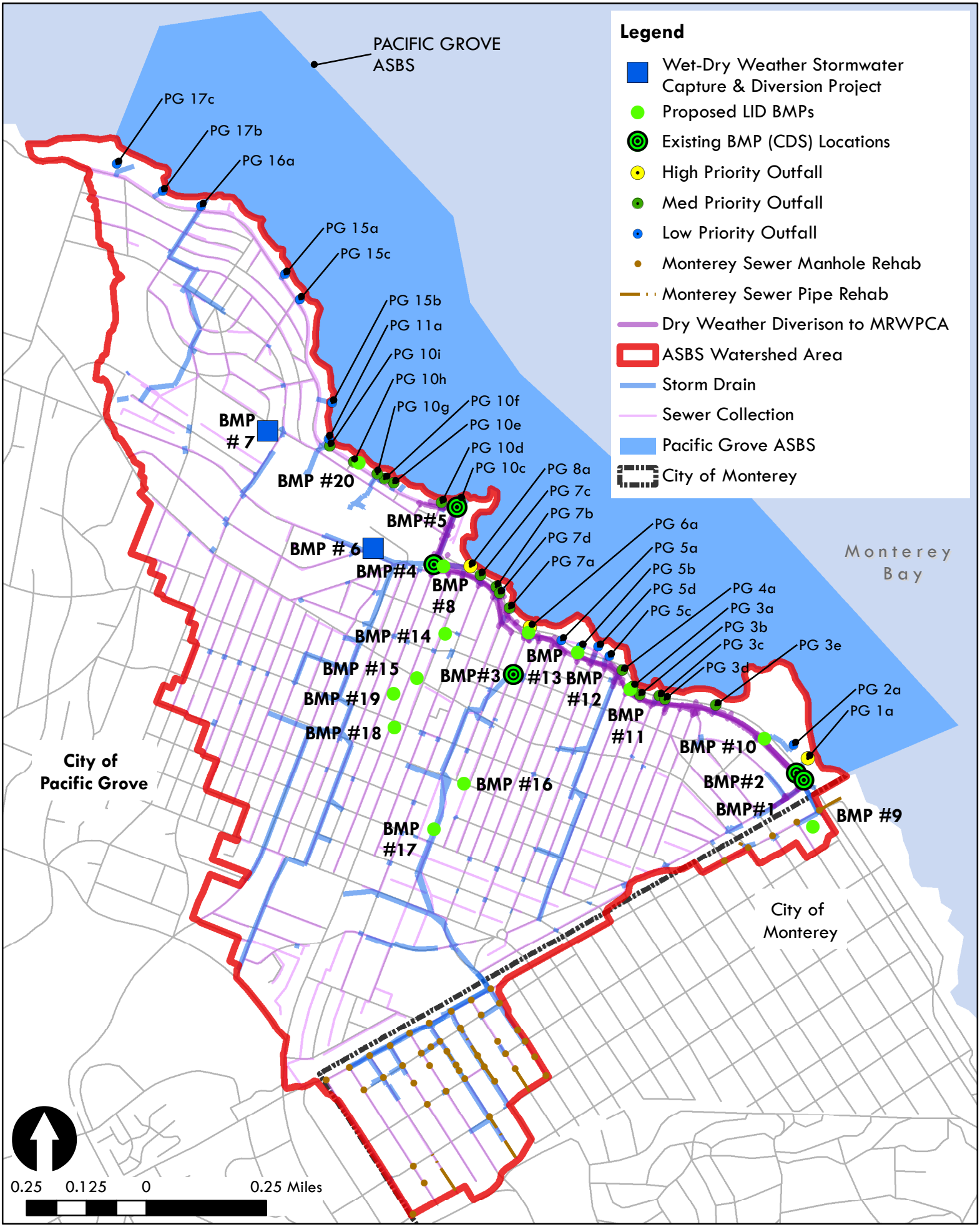


FIGURE 6 - Pacific Grove ASBS Proposed Strucutural BMPs
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 9/20/2016

12 TABLES

Table 1. Climate Data for the Monterey/Pacific Grove

Climate Data for Monterey/Pacific Grove													
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Record High °F	90	86	85	93	95	101	98	96	101	104	95	89	104
Average High °F	60	61	62	63	64	67	68	69	72	70	65	60	65
Average Low °F	43	44	45	46	48	50	52	53	53	51	47	44	48
Record Low °F	22	26	32	35	35	41	43	45	41	35	30	20	20
Precipitation inches	4.5	3.3	3.2	1.5	0.5	0.2	0.1	0.1	0.2	0.9	2.1	3.3	19.7
Average Precipitation Days (≥0.1 in)	11	10	10	6	4	3	2	2	2	4	7	10	70

source: http://www.ncdc.noaa.gov/cdo-web/

Table 2. MS4 Land Use Categories Summary

MS4 Land Use Category (Simple)	In Monterey Drainage to ASBS	In Pacific Grove Drainage to ASBS	Total Area (ac)	As Percentage of ASBS Area
Commercial/Institutional	7.4	72.0	79.4	8.6%
Single-family residential	45.8	267.5	313.3	34.0%
Multi-family residential	14.9	137.6	152.5	16.6%
Other/Open Space	2.8	112.8	115.6	12.5%
Roads	28.9	231.1	260.0	28.2%
Total	**99.8**	**821.0**	**920.8**	

Table 3. Summary of Pacific Grove ASBS Outfalls and Priority Designations

Map Label	Site Name	Pipe Dia (in)	MRSWMP Label	CCRMP Label	Data Sources	Priority	TSS Load (lbs/ac/yr)[1]
6a*	Greenwood	36	309-CENTR-31	203PAC040	MRSWMP & CCRMP	High	**588**
8a	Forest	54	309-PGSD-13	203PAC080	MRSWMP & CCRMP	High	564
1a*	Hopkins PG	36	309-PGSD-08	203PAC010	MRSWMP & CCRMP	High	**424**
4a*	8th st	24	309-PGSD-01	NA	MRSWMP	High	**419**
3a	7th Street	10	NA			Med	229
3b	between 5th and 7th street	18				Med	
3c	5th street	12				Med	
3d	Martine Inn (east of 5th st)	12				Med	
3e	1st Street	11				Med	
10c	17th Avenue	24	309-PGSD-14	NA	MRSWMP	Med	190
10d	Borgs Motel	16	NA			Med	
10e	Ocean View/Clyte	14				Med	
10f	Ocean View/Clyte	12				Med	
10g	Ocean View/Clyte	18				Med	
10h	Ocean View/Clyte	12				Med	
10i	Ocean View/Sea Palm	12				Med	
7a	Fountain & 15th	24	309-PGSD-11	NA	MRSWMP	Med	162
7b	Fountain	16	309-PGSD-10	NA	MRSWMP	Med	
7c	Grand	18	309-PGSD-12	NA	MRSWMP	Med	
7d	Fountain (north)[2]	31	NA			Med	
5a	Carmel Ave	10	NA			Med	146
5b	Monterey Avenue	12				Med	
5c	9th Street	10				Med	
5d	10th street	18				Med	
15a	North of Beach Street	8	NA			Low	116
15b	North of Sea Palm Ave	--				Low	
15c	Ocean View/ Beach	12				Low	
2a	On Hopkins Property	--				Low	107
16a	Ocean View/Coral	18				Low	86
11a	Ocean View/Sea Palm	16				Low	85
17c	Pt Pinos Lower	12				Low	67
17b	North of Coral Street	8				Low	

*** = Includes drainage area from City of Monterey**

NA = No Data Available

1. TELR pollutant load generation for City of Pacific Grove and City of Monterey Contributions.

2. Assumes MRSWMP data collected from 7b (16").

-- size not determined

TSS = Total Suspended Sediment

Table 3a. Reference Key to Outfall Labels by Stormwater Program

Outfall Label		
NPDES & ASBS Compliance Plan	**MRSWMP**	**CCRMP**
8a	309-PGSD-13	203PAC080
6a*	309-CENTR-31	203PAC040
1a*	309-PGSD-08	203PAC010
4a*	309-PGSD-01	NA
10c	309-PGSD-14	NA
7a	309-PGSD-11	NA
7b	309-PGSD-10	NA
7c	309-PGSD-12	NA
*** = Includes drainage area from City of Monterey**		
NPDES = National Pollutant Discharge Elimination System		
NA = Not Applicable		

Table 4. Parks and Recreation Facilities in ASBS Watersheds

Park	Size (in acres)	Description
Shoreline Park Network	**23.4**	
Berwick Park	**1**	Located on the coastal side of Ocean View Boulevard between 9th Street and Carmel Avenue, south of the Recreation Trail. It offers spectacular views of Monterey Bay and the surrounding coastline. Part of the park has a large, well-manicured lawn area with gentle topography. The remainder has a natural landscape with rocky outcrops and native vegetation
Lovers Point Park	**4.4**	Located at the foot of 17th Street, is a landscaped community park. It is used for picnicking, fishing, sunning, swimming, water sports, and surfing. Lovers Point's amenities include a large lawn area, a sand volleyball court, a children's swimming pool, sandy beaches, rocky outcrops, a concrete pier structure, and a restaurant and snack bar.
Perkins Park	Acreage is included in Shoreline Park	The section of shoreline between Lovers Point and the Esplanade. It was named for local resident Hayes Perkins, who planted the first pink ice plant along this section of the water front. The park is well maintained and is landscaped with "magic carpet" ice plant and stone terrace walls. Walking trails in Perkins Park are heavily used.
Shoreline Park	**18**	The designation applied to those portions of the publicly-owned waterfront not otherwise named from Hopkins Marine Station at its eastern boundary, around the shoreline along Monterey Bay to the foot of Asilomar Avenue on the west.
Neighborhood Parks–Recreational	**2.6**	
Caledonia Park	**1.7**	An open space free-play area, tots' play area, playground and climbing equipment for older children, a baseball backstop, basketball court, picnic tables, and rest rooms.
Jewell Park	**0.6**	A small block bounded by Park Place and Central, Grand, and Forest Avenues in the City's civic district. The park's urban character is established by a well-maintained lawn area, specimen trees, gentle topography, a small meeting building with a kitchen, a gazebo suitable for outdoor performances, and several benches.
Platt Park	**0.3**	An unimproved park which has a gentle topography and many trees

Table 4, continued. Parks and Recreation Facilities in ASBS Watersheds

Park	Size (in acres)	Description
Neighborhood Parks–Natural Areas and Open Space	**3.9**	
Andy Jacobson Park	**0.57**	Located at the corner of Ocean View Boulevard and 7th Street. Planted primarily with native plants, it resembles a lush backyard garden, is rugged and natural in appearance, and is well maintained.
Chase Park	**0.5**	Located at Ocean View Boulevard and Briggs Avenue and is divided by Ocean View Boulevard into two parcels. The western parcel is rugged and unimproved. The eastern parcel is contiguous to a parking area, and consists of a very small landscaped area with a bench and a path.
Esplanade Park	**1.2**	Located on Esplanade between Ocean View and Del Monte Boulevards. It is unimproved, with gently rolling topography and many Monterey cypress trees.
Greenwood Park	**1.1**	A full block bounded by Ocean View Boulevard, Central Avenue, 12th Street, and 13th Street. Like Esplanade Park, it has a natural landscape character and large trees (predominantly eucalyptus). The park follows a moderately steep ravine with a seasonal creek at its bottom. Except for a footbridge across the ravine, there are no improvements.
Higgins Park	**0.5**	Located at the intersection of Forest and David Avenues. This rugged park with steep terrain contains many Monterey pine and coast live oak trees. Improvements are limited to several park benches.
Community Parks–Recreational	**99.7**	
The Pacific Grove Municipal Golf Course	**90**	The Peninsula's only municipal golf course, and has an 18-hole course, a clubhouse, golf equipment, electric carts, and a driving range.
Community Center and Tennis Courts	**1.7**	A community center facility, including restrooms, five tennis courts and a play structure.
Hilltop Park and Center (City of Monterey)	**8**	Neighborhood park in the upper most portion of New Monterey with play equipment, turf area, picnic area, tennis and basketball courts, and a multi-purpose community center.

Table 4, continued. Parks and Recreation Facilities in ASBS Watersheds

Park	Size (in acres)	Description
Regional and State Park	**6**	
The Monterey Peninsula Recreation Trail	**6**	Extends for about a mile between the Monterey Bay Aquarium and Lovers Point. The trail, located on the former Southern Pacific Railroad right-of-way, has separate walking and cycling paths. It serves as a major walking, jogging, and bicycling route along the northeastern coastline of the city.
Other Parks, Recreation Facilities, and Open Space Areas	**13.6**	
The Pacific Grove Rec Club	**0.32**	Across from City Hall replaced the original youth center at the corner of Laurel Avenue and 16th Street
Chautauqua Hall	**0.29**	Located at the corner of 17th Street and Central Avenue, is a California Registered Historical Landmark built in 1881 by the Pacific Grove Retreat Association for concerts and entertainment. It is now used for Boy Scout meetings, judo classes, gymnastics, jazzercise, square dancing, fitness classes, the Chautauqua Hall Dance Club, and for special art and craft exhibits.
Elmarie Dyke Open Space	**0.1**	Located adjacent to Chautauqua Hall, was purchased by the City in 1990 to enhance Chautauqua Hall. It has been landscaped as an urban garden with flowering plants, a fountain, benches and tables, and a gazebo.
The Union Pacific Railroad right-of-way	**12.9**	Owned by the Union Pacific Land Company, extends from the Monarch Pines Mobile Home Park on the east to Sinex Avenue on the south. The grassy, tree-lined right-of-way passes through the Pacific Grove Municipal Golf Course. Local residents walk and jog along the portion between Lighthouse Avenue and Hayward Park.

Table 5. Parking Facilities in the Pacific Grove ASBS

Location	No. of Spaces	Description
Lover's Point Park	66	Three paved lots accessed from 17th St.
Ocean View Blvd	50	Various decomposed granite and paved parking areas
Municipal Golf Course	83	Paved parking lot
Lighthouse and Laurel between 17th and 18th	116	Municipal Parking Lots
Lighthouse and Laurel between 16th and Forest	33	
Lighthouse and Laurel between Fountain and 15th	140	
Lighthouse and Central between 16th and Forest	40	
Central and Rickets between Fountain and 15th	38	
Parking Lot #7 at David Ave and Foam Ave (City of Monterey)	94	

Table 6. CCRMP Sampling Locations and Sample Collection Dates in the Pacific Grove ASBS

Water Quality Sample Collection Date	CCRMP Sample Location		
	203PAC080	203PAC040	203PAC010
	Site Name[1]		
	Forest	Greenwood	Hopkins PG
	Map Label		
	8a	6a	1a
2/5/2014	X	X	X
2/25/2014	X	X	X
12/9/2014	X	X	X
2/5/2015		X	X
1/5/2016	X	X	X
2/18/2016	X	X	X
3/6/2016	X		

1. Consistent with Monterey Bay National Marine Sanctuary (MBNMS) citizen science program Monetery Regional Stormwater Management Program (MRSWMP) monitoring effort.

Table 7. Summary of 85th Percentile Benchmark Threshold and Ocean Plan Water Quality Objectives (where available)

Constituent	Unit	NORTHERN 85th Percentile Benchmark Threshold	SOUTHERN 85th Percentile Benchmark Threshold	COMBINED 85th Percentile Benchmark Threshold	Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan
Trace Metals					
Arsenic (As)	ug/L	4.95	1.60	1.64	80
Cadmium (Cd)	ug/L	0.24	0.04	0.06	10
Chromium (Cr)	ug/L	13.28	0.97	1.74	20
Copper (Cu)	ug/L	11.81	1.00	1.11	30
Lead (Pb)	ug/L	3.02	0.18	0.22	20
Nickel (Ni)	ug/L	26.89	0.75	1.67	50
Selinium (Se)	ug/L	0.34	0.08	0.11	150
Silver (Ag)	ug/L	0.37	0.62	0.60	7
Zinc (Zn)	ug/L	31.76	1.75	2.66	200
Mercury (Hg)	ng/L	25.90	3.16	4.23	400
Nutrients and Conventional Constituents					
Total Suspended Solids (TSS)	mg/L	560.3	19.8	24	NA
Ammonia as N	mg/L	0	0	0	6
Nitrate as N	mg/L	1.145	0.6	0.675	NA
Urea	mg/L	0.01045	0.0045	0.01	NA
Orthophosphate	mg/L	0.1635	0.05	0.08	NA
Oil and Grease	mg/L	0	0	0	NA
Polynuclear Aromatic Hydrocarbons (PAHs)					
PAHs	ug/L	0.00375	0	0	0.0088 (30-day average)
Fecal Indicator Bacteria (FIB)					
Fecal Coliforms[1]	MPN/100ml	1024	84	143	400
E. coli	MPN/100ml	671	84	125.5	NA
Enterococcus[1]	MPN/100ml	477	189	229	100
Chronic Toxicity					
Urchin Fertilization	PASS/FAIL	NA			
Mussel Embryo	PASS/FAIL	NA			
Kelp Germination	PASS/FAIL	NA			
Kelp Growth	PASS/FAIL	NA			
Pyrethroid and Organophosphate Pesticides					
Bifenthrin	ug/L	0	0	0	NA
Chlorpyrifos	ug/L	0	0	0	NA
Cyfluthrin	ug/L	0	0	0	NA
Cyhalothrin	ug/L	0	0	0	NA
Delta/Tralomethrin	ug/L	0	0	0	NA
Diazinon	ug/L	0	0	0	NA
Esfen/Fenvalerate	ug/L	0	0	0	NA
Fenpropathrin	ug/L	0	0	0	NA
Fonofos	ug/L	0	0	0	NA
Malathion	ug/L	0	0	0	NA
Permethrin, cis	ug/L	0	0	0	NA
Permethrin, trans	ug/L	0	0	0	NA

1. FIB Ocean Plan objectives also were developed to protect human health from diseases transmitted via contact with water (AMS, 2016).

NA = No Ocean Plan Maximum Water Quality Objectives available

Greater 85th Percentile Benchmark Threshold between Northern and Southern

Table 8. Summary of Exceedances and Proposed Compliance Approach

Constituents with Exceedances	Compliance Approach		Exceedance Summary by Outfall		
			PAC080	PAC040	PAC010
	Water Quality Objectives	90% Reduction in Pollutant Loading	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]		
Trace Metals			Forest	Greenwood	Hopkins PG
Mercury	In Compliance		4	3	0
Arsenic			2	1	4
Copper			5	5	3
Lead			5	6	5
Silver			2	1	1
Zinc			5	4	4
Nutrients and Conventional Constituents					
Urea	NA	In Compliance	2	4	2
Polynuclear Armatic Hydrocarbons					
PAHs	NA	X	4	3	2
Organophosphate Insecticide					
Malathion	NA	In Compliance	0	2	0
Toxicity					
Urchin Fertilization	NA	In Compliance	0	0	1
Fecal Indicator Bacteria (FIB)					
Fecal Coliforms	In Compliance		6	6	3
E.coli	NA	X	5	6	3
Enterococcus[1]	In Compliance	X	6	6	3
		Total	**46**	**47**	**31**

1. Compliance approach varies by site: PAC010 (Hopkins PG) in compliance via Water Quality Objectives, PAC040 (Greenwood) in compliance via 90% Reduction in Pollutant Loading, PAC080 (Forest) not in compliance.

X = One or more sites not in compliance

NA = No Ocean Plan Maximum Water Quality Objectives available

Table 9. Summary of BMP Target Location and Constituents

Constituents Exceeding 85% Threshold	Sample Location		
	203PAC080	203PAC040	203PAC010
	Site Name[1]		
	Forest	Greenwood	Hopkins PG
	Map Label		
	8a	6a	1a
Urea[2]	C	C	C
PAH	X	C	C
Fecal Coliform	C	C	C
Ecoli	X	C	C
Enterococcus	X	C	C

1. Consistent with Monterey Bay National Marine Sanctuary (MBNMS) citizen science program Monetery Regional Stormwater Management Program (MRSWMP)

2. All sites measured 0 mg/L on last sample collected, indicating compliance with 90% pollutant load reduction

C = In Compliance through 90% Pollutant Reduction

X = BMP Target Location & Constitutent

Table 10. Compliance Actions Taken Since March 2012

Element	Implementation Schedule	Remarks
Prohibit all non-authorized non-stormwater discharges and trash	Mar. 20, 2012	Completed through implementation of Phase II General Permit. Illicit discharge prevention and response BMPs are described in Section 5.1.5. Trash elimination BMPs are described in Sections 5.1.4 and 5.3.5.
Implement non-structural BMPs including inspection program.	Sept. 20, 2013	Ongoing consistent with the Phase II General Permit and this Draft Compliance Plan. • The construction, industrial, commercial, and storm drain outfall inspection program. • Other non-structural BMPs include ASBS-targeted public outreach, and permit tracking. MRSWMP documents describing procedures (e.g. IDDE Program) and Ordinances were updated by mid-2015 as necessary.
Submit Draft Compliance Plan to State and Regional Water Boards (Per letter to RMP received July 29, 2015; see Appendix D.)	Sept. 20, 2014	Completed with submittal of Draft Compliance Plan to SWRCB in Sept. 2014.
Submit Final Compliance Plan to State and Regional Water Boards (Per July 29, 2015 Letter to RMP; see Appendix D.)	Sept. 20, 2015	Completed with submittal of revised Compliance Plan to SWRCB in Sept. 2015.
Submit Revised Final Compliance Plan to State and Regional Water Boards (See Appendix D.)	Sept. 20, 2016	Completed with submittal of revised Compliance Plan to SWRCB in Sept. 2016.

Table 11. Phased Implementation Schedule and Compliance Plan

Phase 1: Sep 2016-Sep 2018	Implementation Date	Remarks
Storm Drain Replacement	Jun 2016 - Oct 2017	Existing Structural BMPs (Section 8.2.1)
BMP #3: Greenwood Park CDS	Sept. 2016	
City of Pacific Grove Sewer Collection Master Plan	2014 - 2025	
City of Monterey Sewer System Rehabilitation	2016	
BMP #6 & BMP #7: Pacific Grove-Monterey ASBS Wet-Dry Weather Storm Water Capture and Diversion Project	Sept. 2018	Proposed BMPs Phase 1
BMP #8: Pacific Grove City Parking Lot Retrofit at Lovers Point LID	Sept. 2018	
BMP #9: Monterey City Parking Lot 7 LID	Sept. 2018	
Greenwood, Eardley, David Avenue and Pine Street Diversion Analysis	Jan. 2018	
Non-Structural BMPs	Summarized in Table 12	
Water Quality Monitoring - Pre/Post Storm	Winter 2018/2019	As applicable, subsequent to implementation of Phase 2 BMPs, monitoring will be completed to evaluate function of Phase 1 BMPs.
Phase 2: March 2019 - Sep 2020	As Needed	
BMP #10: Dewey Ave to Eardly Ave Dry Swale	Sept. 2020	Proposed Phase 2 BMPs would be re-evaluated and implemented as needed based on Water Quality Monitoring Results completed at the end of Phase 1
BMP #11: 7th Avenue Bioretention	Sept. 2020	
BMP #12: Berwick Park Bioretention	Sept. 2020	
BMP #13: 12th & 13th Bioretention	Sept. 2020	
BMP #14: Jewell Park Bioretention	Sept. 2020	
BMP #15: Lighthouse Avenue Pilot Green Street	Sept. 2020	
Proposed Actions from the MST Study	Sept. 2020	
Water Quality Monitoring - Pre/Post Storm	Winter 2020/2021	As applicable, subsequent to implementation of Phase 3 BMPs, monitoring will be completed to evaluate function of Phase 1 and 2 BMPs.
Phase 3: March 2021 - 2025	As Needed	
BMP #16: Pine Avenue Right-of-Way Green Street	2025	Proposed Phase 3 BMPs would be re-evaluated and implemented as needed based on Water Quality Monitoring Results completed at the end of Phase 2
BMP #17: Robert Down Elementary School Field	2025	
BMP #18: City Hall Courtyard LID Retrofit	2025	
BMP #19: City Parking Lot Retrofit	2025	
BMP #20: Ocean View Curb Cuts to Rain Gardens	2025	

Table 12. Proposed Non-Structural BMPs Implementation Schedule

	Non-Structural BMPs		
	Monterey	Pacific Grove	Schedule
	Recommendations		
1. Inspection Programs		Increase the frequency of commercial inspections to twice during the rainy season for all commercial facilities	1-Oct-16
	Particpate in MRWPCA MOU to provide the minimum required ASBS commercial facility inspections for both Cities		1-Oct-16
2. Microbial Source Tracking		Implement the Sewer Collection Master Plan	2024
	Repair the sanitary sewer pipes and manholes in Monterey's ASBS drainages identified in the greatest need of rehabilitation	Continue evaluation and extension of the Dry-Weather Diversion system west of Lovers Point	20-Mar-18
	Include include information in community articles and bulletins to remind pet owners to clean-up the pet waste in their yard, especially prior to rain events, and to generally ensure no pollutants reside outside that may come into contact with rainfall		20-Mar-18
	As public works projects or trail/park improvements occur, identify opportunities to provide additional signage about pet-waste pick-up along with pet waste collection bags throughout the ASBS watershed.		20-Mar-18
	Microbial Source Tracking (MST) can provide information about the primary sources of fecal contamination within the ASBS watershed. If after implementing the proceeding recommendations and planned repairs FIB exceedances continue to occur, a MST study can identify the primary sources of fecal contamination in the ASBS watershed and recommend non-structural BMPs to address the specific contamination sources.		TBD
3. Public Education and Outreach (PE/PO)	Update ASBS website to provide additional PE/PO materials and to serve as a portal to on-going activities and programs		20-Sep-16
	Coordinate with MRSWMP to (1) ensure Annual Coastal Cleanup Day always includes a beach within the ASBS, and (2) incorporate ASBS specific information into the existing PE/PO programs to school groups.		1-Aug-18
	Establish an Integrated Pest Management Policy and Program with the goal of eliminating or reducing pesticide application on City property to the maximum extent feasible.		20-Mar-18
	Target OWOW PE/PO efforts in the ASBS watershed		20-Sep-16
	Identify opportunities to incorporate educational signage while keeping with the Cities' character and aesthetic considerations		1-Aug-18
	Construct two signs along the Coastal Recreation Trail designating entry/exit into the ASBS Watershed		1-Aug-18
	Launch a Mobile App/Tour for visitors and residents to download, and learn about the Pacific Grove ASBS		1-Sep-20
4. Illicit Discharge Detection and Elimination (IDDE)		Continue evaluation and extension of the Dry-Weather Diversion system west of Lovers Point.	20-Mar-18
	Provide design review specific to managing illicit discharges from trash enclosures for new or redevelopment projects (excluding single-family residential projects)		20-Mar-18
5. Development Review	ASBS specific handout to provide to all project applicants proposing the use of architectural copper in new or redevelopment permits about the potential harm to aquatic environments		20-Mar-18

13 APPENDICES

Appendix A: Memorandum of Agreement (MOA) Amendment, Central Coast ASBS Dischargers Monitoring Program

MEMORANDUM OF AGREEMENT AMENDMENT

CENTRAL COAST REGIONAL AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE DISCHARGERS MONITORING PROGRAM

This Memorandum of Agreement Amendment (AMENDMENT), dated, for reference purposes only, February 11, 2015, is made by and between the MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY, hereinafter referred to as "AGENCY," a Joint Powers Authority (JPA) organized under the laws of the State of California, and the following entities, each of which is hereinafter referred to as "DISCHARGER" or collectively as "DISCHARGERS":

CITY OF PACIFIC GROVE, a municipal corporation of the State of California;
CITY OF MONTEREY, a municipal corporation of the State of California;
CITY OF CARMEL-BY-THE-SEA, a municipal corporation of the State of California;
COUNTY OF MONTEREY, a political subdivision of the State of California;
COUNTY OF SAN MATEO, a political subdivision of the State of California;
COUNTY OF MARIN, a political subdivision of the State of California;
PEBBLE BEACH COMPANY, a California general partnership;
THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY, THROUGH ITS HOPKINS MARINE STATION, a trust with corporate powers under the laws of the State of California;
MONTEREY BAY AQUARIUM, a 501(c)(3) a nonprofit incorporated in the State of California
CALIFORNIA DEPARTMENT OF TRANSPORTATION (Caltrans), an executive department of the State of California

The AGENCY and the above-mentioned entities may also hereinafter be collectively referred to as "PARTIES" or individually as "PARTY."

Whereas, the PARTIES have previously executed a Memorandum of Agreement (AGREEMENT), dated December 1, 2012 (Exhibit "A").

NOW, THEREFORE, THE PARTIES HERETO AGREE AS FOLLOWS:

Section 1. Extension of Effective Date and Term

1.1 Per Sections 3.2 and 9.1 of the AGREEMENT, the effective termination date of the AGREEMENT shall be extended to December 31, 2016.

1.2 All terms and conditions of the AGREEMENT remain in effect and the same.

1.3 This AMENDMENT does not approve additional budget expenditures above and beyond the adopted Program Budget of the AGREEMENT.

IN WITNESS WHEREOF, the PARTIES hereto have executed this AMENDMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF PACIFIC GROVE

Date: 6-22-15

Thomas Fritcher
Signature

Thomas Fritcher, City Manager
Printed Name and Title

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: 3/23/15

Signature

DAVID L STOVES EVP, CAO

Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

IN WITNESS WHEREOF, the PARTIES hereto have executed this AMENDMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: 4/30/15

Signature

Paul A. Sciuto, Deputy General Manager
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: 2 Mar 2015

_____
Signature

Stephen Palumbi, Director
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: June 16, 2015

Carole Groom
Signature

Carole Groom, President, Board of Supervisors
Printed Name and Title

Resolution #073886

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

IN WITNESS WHEREOF, the PARTIES hereto have executed this AMENDMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: JUNE 23, 2015

_____
Signature

CARL P. HOLM ACTING RMA DIRECTOR
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: 4/28/15

Katie Rice
Signature

KATIE RICE, PRESIDENT
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

IN WITNESS WHEREOF, the PARTIES hereto have executed this AMENDMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: 4/30/15

Signature

Paul A. Sciuto, Deputy General Manager
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

Signature

Printed Name and Title

CITY OF MONTEREY

Date: 5/5/2015

Signature

Michael McCarthy City Manager
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

Signature

Printed Name and Title

COUNTY OF MONTEREY

Date: _____

Signature

Printed Name and Title

CAO RISK

IN WITNESS WHEREOF, the PARTIES hereto have executed this AMENDMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: 7 April '15

_____
Signature

Douglas Schmitz
Printed Name and Title
CITY ADMINISTRATOR

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Date: 4/1/15

Signature

SCOTT MCGOWEN

Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: 3-5-15

Ed Prohaska
Signature

Ed Prohaska CFO
Printed Name and Title

MEMORANDUM OF AGREEMENT

CENTRAL COAST REGIONALAREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE DISCHARGERS MONITORING PROGRAM

This Memorandum of Agreement (AGREEMENT), dated, for reference purposes only, December 1, 2012, is made by and between the MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY, hereinafter referred to as "AGENCY," a Joint Powers Authority (JPA) organized under the laws of the State of California, and the following entities, each of which is hereinafter referred to as "DISCHARGER" or collectively as "DISCHARGERS":

CITY OF PACIFIC GROVE, a municipal corporation of the State of California;
CITY OF MONTEREY, a municipal corporation of the State of California;
CITY OF CARMEL-BY-THE-SEA, a municipal corporation of the State of California;
COUNTY OF MONTEREY, a political subdivision of the State of California;
COUNTY OF SAN MATEO, a political subdivision of the State of California;
COUNTY OF MARIN, a political subdivision of the State of California;
PEBBLE BEACH COMPANY, a California general partnership;
THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY, THROUGH ITS HOPKINS MARINE STATION, a trust with corporate powers under the laws of the State of California;
MONTEREY BAY AQUARIUM, a 501(c)(3) a nonprofit incorporated in the State of California
CALIFORNIA DEPARTMENT OF TRANSPORTATION (Caltrans), an executive department of the State of California

The AGENCY and the above-mentioned entities may also hereinafter be collectively referred to as "PARTIES" or individually as "PARTY."

RECITALS:

A. The California Ocean Plan ("Ocean Plan") prohibits the discharge of both point and nonpoint source waste into Areas of Special Biological Significance ("ASBS"), unless the State Water Resources Control Board ("SWRCB") grants an exception.

B. The DISCHARGERS have been determined to have direct or indirect storm water discharges into the Carmel Bay ASBS, the Pacific Grove ASBS, the Año Nuevo ASBS, the James V. Fitzgerald ASBS, and the Duxbury Reef ASBS.

C. The SWRCB has adopted "Special Protections for Selected Storm Water and Nonpoint Source Discharges into Areas of Special Biological Significance," dated March 20, 2012, and adopted Resolutions No. 2011-0050/0051, on October 18, 2011.These documents are hereinafter referred to simply as the "Special Protections," and the "Mitigated Negative

Declarations"(MNDs). These Special Protections and MNDs contain monitoring requirements with which each of the DISCHARGERS are required to comply commencing in the winter of 2012-2013.

D. In and for the mutual interest of the DISCHARGERS, the DISCHARGERS wish to develop and implement a Regional Monitoring Program by entering into this AGREEMENT for the purpose of cooperating to efficiently and economically comply with the Special Protections and MNDs monitoring requirements.

NOW, THEREFORE, THE PARTIES HERETO AGREE AS FOLLOWS:

Section 1. Incorporation of Recitals

1.1 The foregoing Recitals are incorporated into this AGREEMENT.

Section 2. Central Coast Regional ASBS Dischargers Monitoring Program

2.1 There is hereby established the Central Coast Regional ASBS Dischargers Monitoring Program ("Program") that is intended to fulfill the DISCHARGERS' respective discharge monitoring and obligations set forth in Section IV of the Special Protections and the MND's.

Section 3. Effective Date and Term

3.1 The effective date of this AGREEMENT shall be the date it is duly executed by all of the DISCHARGERS.

3.2 This AGREEMENT shall terminate on June 30, 2015 unless extended, or terminated earlier, pursuant to Section 8.3 or 8.4, by the DISCHARGERS.

Section 4. Management Committee

4.1 A Management Committee consisting of one representative of each of the DISCHARGERS is hereby created to provide for overall coordination, review, and budget oversight with respect to the Program.

4.2 The Management Committee shall: provide technical oversight, direct and guide the Program, review and approve the Program Budget, select consultant(s) or outside contractor(s), and establish timelines and budgets for completion of Program tasks. The Management Committee shall consider Special Protections monitoring and MND monitoring compliance issues as its primary objective in approving Program tasks and corresponding budgets compliance with Section IV of the Special Protections and Monitoring requirements of the MNDs.

4.3 The Management Committee Bylaws (Exhibit A) shall govern the Management Committee and its meetings.

4.4 Meetings of the Management Committee shall be subject to the California Brown Act (Government Code section 54950 et seq.).

Section 5. Administrator

5.1 There is hereby created the position of Administrator to administer and implement this AGREEMENT and to carry out the responsibilities assigned to the Administrator herein and as outlined in Responsibilities of Administrator (Exhibit B).

5.2 AGENCY shall serve as the initial Administrator for the Program.

5.3 AGENCY may withdraw as the Administrator upon the provision of ninety days' (90) days written notice to the Management Committee. Such notice of withdrawal shall be effective to terminate AGENCY's rights and obligations under this AGREEMENT. The Management Committee may replace the AGENCY and select a new Administrator upon the provision of ninety days (90) written notice to AGENCY. Any new entity that may become the Administrator must assent to the terms of this AGREEMENT. In either event, any outstanding compensation due Administrator shall be paid. Work assignments shall be made to the Administrator by the Management Committee and not by individual DISCHARGERS.

5.4 Other than as provided for in the Program, the Administrator shall not be responsible for providing program management services related to individual DISCHARGER permit programs.

5.5 The Administrator shall be paid from Program Funds in accordance with the adopted Program Budget for providing the services described herein.

5.6 The Administrator shall be the treasurer of the Program Funds. The Administrator, in accordance with generally-accepted accounting principles, shall keep the Program Funds segregated from any other funds administered by the Administrator, shall credit the Program with appropriate interest income earned on Program Funds in each fiscal year, and shall not expend any funds except in accordance with the annual budget approved by the Management Committee, or as otherwise directed by the Management Committee.

Any unauthorized expenditures, including, but not limited to, expenditures in excess of the annual projected budget, made by Administrator shall be payable by the Administrator or AGENCY.

5.7 In conjunction with preparing the proposed Program Budget each year, the Administrator will include a proposed Administration component of the Program Budget and present it to the Management Committee for its approval. The Administration component that is approved by the Management Committee shall be the maximum amount of funds the Administrator may expend without receiving additional funding approval from the Management Committee.

5.8 Within 30 days from the close of the Fiscal Year (July 1 to June 30), the Administrator shall cause an independent annual audit of the accounts and records by a Certified Public Accountant in Compliance with California Government Code section 6505 and Generally Accepted Accounting Principles.

5.9 The Administrator shall be reimbursed by the Program Fund, at actual cost, for any direct cost incurred to administer this AGREEMENT and carry out the Program. Direct costs are defined in the Program Budget Guidelines and Cost Share (Exhibit C).

5.10 In the event that the Administrator withdraws as Administrator, or in the event that the Management Committee wishes to select a new Administrator, a DISCHARGER may serve as a successor Administrator. Any DISCHARGER willing to serve as successor Administrator may be nominated by another DISCHARGER. Selection of an Administrator shall be by majority vote of the Management Committee.

Section 6. Program Budget, Program Fund, and Annual Assessments

6.1 The Management Committee shall adopt a budget for each winter storm season (the "Program Budget"). The Program Budget shall be prepared and administered as described in the attached Program Budget Guidelines and Cost Share (Exhibit C).

6.2 Not later than sixty (60) days after the receipt of an invoice by the Administrator, the DISCHARGERS shall each pay an annual assessment("Annual Assessment") into a fund ("Program Fund") maintained by the Administrator for the purpose of paying Program expenses. The Annual Assessment for each DISCHARGER shall be detailed and reflected in the Program Budget. The Annual Assessment for each DISCHARGER shall be determined as set forth in the Program Budget Guidelines and Cost Share (Exhibit C). Should any DISCHARGER fail to pay the Annual Assessment within sixty (60) days after being invoiced by the Administrator, the DISCHARGER's participation in this AGREEMENT shall be terminated, and the terminated DISCHARGER will bear the full responsibility for its compliance with the monitoring requirements of the Special Protections commencing on the date its participation is terminated. In such event the DISCHARGER shall forfeit its contributed share of Program Funds, if any.

6.3 The Program Fund shall be maintained and managed in trust by the Administrator solely for purposes of the Program. The Management Committee shall determine the type of account in which the Program Fund shall be deposited. All Program expenditures required to implement the approved Special Protections Scope of Work shall be paid out of the Program Fund. The Administrator shall be authorized to make expenditures for the purchase of services or materials allocated in the Program Budget. Where a purchase for a necessary, but unapproved, expenditure for services or materials is required, the Program Administrator may make such a purchase, in an amount not-to-exceed $5,000, where the purchase must be made before a meeting of the Management Committee can be convened. Such purchases may not be made more than twice per fiscal year. Expenditures greater than $5,000 shall require prior approval of the Management Committee.

6.4 Except as provided in Section 8.3 and 8.4 (regarding termination of DISCHARGER status and termination of this AGREEMENT), any ending balance in the Program Fund at the close of each fiscal year shall, at the election of each DISCHARGER and based upon that DISCHARGER'S Percentage Participation, be disbursed to that DISCHARGER, or credited to that DISCHARGER'S Annual Assessment for the subsequent winter storm season.

6.5 Upon approval of a new member as set forth in Section 8.1, the Management Committee shall revise the Annual Assessment for each DISCHARGER consistent with the method set forth in Program Budget Guidelines and Cost Share (Exhibit C) taking into account the new member.

Section 7. Additional Rights and Duties of the DISCHARGERS

7.1 In addition to participation in the Management Committee, each of the DISCHARGERS agrees to perform the following duties:

7.1.1 Participate in Management Committee meetings and activities, and other meetings required of the DISCHARGERS;

7.1.2 Provide the requisite reports to the Administrator for purposes of complying with the joint reporting and compliance mandates applicable to the Special Protections and MNDs and the status Program implementation.

7.2 DISCHARGERS agree they are individually responsible for compliance matters not covered by this AGREEMENT.

7.3 This AGREEMENT does not restrict the DISCHARGERS from the ability to individually (or collectively) request modifications of or to otherwise challenge, administratively, through litigation, or otherwise, Special Protections or MNDs or other requirements to the extent that a requirement affects an individual DISCHARGER (or group of DISCHARGERS).

Section 8. Additional Parties, Early Termination of Dischargers, and Third Party Data Sharing

8.1 Subject to a majority vote of the DISCHARGERS, any agency, corporation or individual responsible for discharges to the State of California's Areas of Special Biological Significance within Regional Water Quality Control Boards (RWQCB) Regions 2 or 3 may become a member of the Program and a party to this AGREEMENT (a "New Party"). New Parties shall execute a copy of this AGREEMENT through their appropriate officials pursuant to the authority conferred by the governing body of the New Party. The Representative of the New Party shall file with the Administrator a duly executed copy of the AGREEMENT. Upon approval, each New Party shall pay an Annual Assessment as determined by the Management Committee. In addition to paying the Annual Assessment, each New Party shall also pay an appropriate buy-in fee as established by the Management Committee, intended to reimburse the Program Fund for the New Party's share of costs that the DISCHARGERS have expended up to the date of the New Party's membership.

8.2 Upon approval of the Management Committee Members, the DISCHARGERS may enter into agreements with third-party state or federal agencies for the purpose of sharing data. These agencies shall not become a party to this AGREEMENT, shall not have representation on the Management Committee, and shall not be part of the cost-sharing described in the Program Budget Guidelines and Cost Share (Exhibit C). Such agreements shall be for the sole objective of data sharing.

8.3 Any DISCHARGER may terminate its participation in this AGREEMENT by giving the Management Committee at least thirty (30) days written notice. If a DISCHARGER terminates its participation, the terminating DISCHARGER will bear the full responsibility for its compliance with the monitoring requirements of the Special Protections commencing on the date it terminates its participation. Unless the termination is scheduled to be effective at the close of the fiscal year in which the notice is given, termination shall constitute forfeiture of all of the terminating DISCHARGER's contributed share of the

Program Budget for the fiscal year in which the termination occurs. The cost allocations for the remaining DISCHARGERS shall be recalculated for the following fiscal year by the DISCHARGERS without the withdrawing DISCHARGER'S participation.

8.4 This AGREEMENT shall terminate immediately and without further notice should sufficient DISCHARGERS terminate their participation pursuant to Section 8.3 such that only a single DISCHARGER has not terminated its participation (Remaining DISCHARGER). Unless the AGREEMENT terminates pursuant to this section at the close of a fiscal year, any funds remaining in the Program Budget shall be forfeited to the Remaining DISCHARGERS to be used solely and exclusively in furtherance of the Remaining DISCHARGER's monitoring requirements pursuant to the Special Protections.

Section 9. General Provisions

9.1 Amendment. This AGREEMENT may be amended only by written agreement of all PARTIES. All PARTIES agree to bring any proposed amendment to this Agreement to their respective Executive Management, as applicable, within two (2) months following acceptance of the proposed amendment by the Management Committee.

9.2 Execution. This AGREEMENT may be executed by facsimile and delivered in any number of copies (counterparts) by the DISCHARGERS. When each DISCHARGER has signed and delivered at least one (1) counterpart to the Administrator, each counterpart shall be deemed an original and, taken together, shall constitute one and the same AGREEMENT, which shall be binding and effective as to the PARTIES hereto.

9.3 Liability. No PARTY shall, by entering into this AGREEMENT, participating in the Management Committee, or serving as the Administrator, assume or be deemed to assume responsibility for any other PARTY in complying with the requirements of the Special Protections. This AGREEMENT is intended solely for the convenience and benefit of the PARTIES and shall not be deemed to be for the benefit of any third party and may not be enforced by any third party, including, but not limited to, the Environmental Protection Agency, the SWRCB, the RWQCB, or any other person.

In lieu of and notwithstanding the pro rata risk allocation which might otherwise be imposed between the DISCHARGERS pursuant to Government Code Section 895.6, the DISCHARGERS agree that all losses or liabilities incurred by a DISCHARGER shall not be shared pro rata, but instead, the DISCHARGERS agree that pursuant to Government Code Section 895.4, each of the DISCHARGERS shall fully defend, indemnify, and hold harmless each of the other DISCHARGERS from any claim, expense, or cost, damage, or liability imposed for injury, including, but not limited to, as defined by Government Code Section 810.8,occurring by reason of the negligent acts or omissions or willful misconduct of the indemnifying DISCHARGER, its officers, agents, or employees, under or in connection with or arising from any work, authority, or action taken under this AGREEMENT, including but not limited to any non-compliance by a DISCHARGER with its obligations under the Special Protections or MNDs. No DISCHARGER, nor any officer, Councilmember, Board member, employee, or agent thereof, shall be responsible for any damage or liability incurred by reason of the negligent acts or omissions or willful misconduct of any other DISCHARGERS, their officers, Council members, Board members, employees, or agents, under or in connection with or arising from any work,

authority, or actions taken under this AGREEMENT, including but not limited to any non-compliance by a DISCHARGERS with its obligations under the Special Protections or MNDs.

Notwithstanding the above, if the Administrator is negligent or intentionally wrongful in the performance of its duties under this AGREEMENT, it will be liable to the DISCHARGERS for any consequences of such negligent or intentionally wrongful performance.

9.4 Venue. Venue for any actions brought under this Agreement shall be as prescribed by California or Federal law.

9.5 Notices: Unless otherwise specified herein, all notices or demands required under this Agreement shall be in writing and shall either be hand-delivered or mailed by first class registered or certified mail, postage prepaid, addressed to the PARTIES to the addresses and to the attention of the person named in Exhibit D.

9.6 Governing Law: The terms of this Agreement are governed by, and shall be construed in accordance with, the laws of the State of California.

9.7 Severability: If any provision of this Agreement is held to be invalid, for any reason, by a court of law, the remaining provisions of this Agreement shall not be affected thereby and shall continue in full force and effect.

9.8 Authorization: Each individual signing this Agreement warrants that he/she is authorized to do so on behalf of the entity on whose behalf he/she is signing and that they have the authority to bind that entity/individual to all the terms of this AGREEMENT, unless the individual's signature block indicates a different purpose for their signature.

9.9 Waiver: No waiver by the PARTIES of any breach of any provision of this Agreement shall constitute a waiver of any other breach or of such provision of this Agreement.

9.10 Entire Agreement: This Agreement, including Exhibits A, B, C, D, and E constitutes the complete and exclusive understanding between the PARTIES which supersedes all previous agreements, written or oral, regarding the subject matter of this Agreement. No changes, modifications or amendments to this Agreement (including Exhibit A, B, C, D and/or E) shall be valid unless they are in writing and duly executed by authorized representatives of all the PARTIES.

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: Apr 23, 2013

Signature

Keith Israel, General Manager
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Date: 2/5/13

By: _____
Scott McGowen, Asst. Division Chief
Division of Environmental Analysis

APPROVED AS TO FORM:

_____
Attorney for the California Department of Transportation

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT as of the dates shown below:

CITY OF CARMEL-BY-THE-SEA

Date: 1/23/13

Signature

Jason Stilwell, City Administrator
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: 17 December, 2012

Signature

Lawrence M. Gibbs, CIH
Associate Vice Provost for EH&S
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: 1/29/13

Judy Arnold
_____
Signature

JUDY ARNOLD, PRESIDENT
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM FOUNDATION

Date: 12-17-12

Ed Prohaska
Signature

Ed Prohaska CFO
Printed Name and Title

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF PACIFIC GROVE

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF MONTEREY

Date: _____

APPROVED BY:
Kurt
City Attorney's Office

Fred Meurer
Signature

Fred Meurer, City Manager
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT as of the dates shown below:

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF PACIFIC GROVE

Date: 2-20-13

THOMAS FRUTCHEY
Signature

THOMAS FRUTCHEY
Printed Name and Title
City Manager

Sarah Hardgrove
Environmental Programs Manager

CITY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

CITY OF CARMEL-BY-THE-SEA

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MONTEREY

Date: _____

_____
Signature

_____
Printed Name and Title

Printed Name and Title

COUNTY OF SAN MATEO

Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: 12/18/12

Mark Stilwell
Signature

Mark Stilwell, Executive VP
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

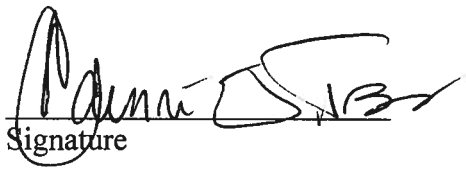
Date: _____

_____
Signature

_____
Printed Name and Title

COUNTY OF SAN MATEO

Date: January 8, 2013



(Resolution #072327)

Signature

Adrienne J. Tissier, President, Board of Supervisors, San Mateo County
Printed Name and Title

COUNTY OF MARIN

Date: _____

_____
Signature

_____
Printed Name and Title

PEBBLE BEACH COMPANY

Date: _____

_____
Signature

_____
Printed Name and Title

HOPKINS MARINE STATION

Date: _____

_____
Signature

_____
Printed Name and Title

MONTEREY BAY AQUARIUM

Date: _____

_____
Signature

_____
Printed Name and Title

EXHIBIT "A"

CENTRAL COAST REGIONAL AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE DISCHARGERS MONITORING PROGRAM

MANAGEMENT COMMITTEE BYLAWS

The Central Coast Regional Areas of Special Biological Significance Dischargers Monitoring Program Management Committee shall be governed by the following Bylaws.

1. Representation. Each DISCHARGER shall designate a representative to attend meetings in person, by telephone or via a web-based meeting of the Management Committee, and may designate alternates as set forth in this AGREEMENT. If a DISCHARGER'S representative is unable to attend a meeting, the DISCHARGER'S alternates shall attend.

2. Voting. Each DISCHARGER shall have one vote and the Management Committee representative or their alternate shall vote on behalf of the DISCHARGER unless stated otherwise in this AGREEMENT. Voting on all matters shall be on a voice vote unless a roll call vote is requested by any member in attendance or is required pursuant to the Brown Act.

   All actions taken by the Management Committee require the affirmative vote of a majority of the Management Committee members entitled to vote. However, the Program Budget, or any other matter having a financial impact on a DISCHARGER not contemplated in the Program Budget, shall be approved by a two-thirds majority vote of a quorum present at the Management Committee meeting where the action is taken.

3. Quorum. A majority of the Management Committee entitled to vote constitutes a quorum for the transaction of business.

4. Officers. The officers of the Management Committee shall consist of a Chair and Vice Chair. The Chair shall preside over all meetings of the Management Committee, and may call special meetings as necessary upon one week of notice to all DISCHARGERS. The Chair may vote on, and second any motion, but may not make a motion. The Vice Chair shall perform the duties of the Chair in the Chair's absence.

   In the first Fiscal Year the Administrator shall preside over the initial meeting of the Management Committee, and the first order of business for the initial meeting of the Management Committee shall be the election of the Chair and Vice Chair. The Chair and Vice Chair shall take up their duties immediately upon election.

   In subsequent Fiscal Years the positions of Chair and Vice Chair shall be filled by election annually at the Management Committee's meeting in January. If either position becomes vacant for any reason, an election shall be held to fill the position(s) at the next meeting of

the Management Committee. Should both positions be vacant at the same time, the Administrator shall serve as Chair until a Chair is elected by the Management Committee.

5. Meeting Schedule. Regular meetings will be held at a frequency commensurate with the workload of the Management Committee at pre-arranged dates.

6. Starting Time. Meetings will start promptly at the times designated in the meeting notices. Representatives shall endeavor to notify the Administrator whether they will be late or unable to attend.

7. Limitation of Discussion. Discussion on any particular matter by either Management Committee members or by any member of the general public may be limited at the discretion of the chair to such length of time as the chair may deem reasonable under the circumstances.

8. Administrator. The Administrator shall serve as Secretary. The Secretary shall, upon consultation with the Chair, prepare an agenda for each meeting, keep and publish minutes for each meeting (which shall be approved by the Management Committee at the subsequent meeting), prepare and post any notices as may be required by law, and have custody of all documents relating to the Management Committee.

   The Administrator shall also serve as Treasurer. The Treasurer shall manage the Program Fund as set forth in the AGREEMENT.

9. New Members. New members may be added to the Management Committee as set forth in Section 8.1 of this AGREEMENT.

10. Bylaws. The information set forth in these Bylaws shall be deemed sufficient to serve as the Bylaws for the Management Committee, subject to approval by the DISCHARGERS.

11. Conduct of Meetings. The meetings are to be guided by the principles of Robert's Rules of Order. The Chair shall decide all questions of order.

12. Program Attorney. The Management Committee may select an attorney or law firm ("Program Attorney") to provide legal advice to the Management Committee on matters involving the Program. The Program Attorney may be the attorney of record for one of the DISCHARGERS, so long as such representation is disclosed and any conflicts of interest are resolved. The Program Attorney may provide such services under separate contract with any DISCHARGER or DISCHARGERS, but shall provide advance notification to all DISCHARGERS before providing such services to identify and resolve possible issues of conflict of interest. The Administrator may assist in coordination of activities with the Program Attorney, and shall provide such assistance as the Program Attorney may require, but shall not give direction to the Program Attorney without prior authorization from the Management Committee.

13. Amendment. These Bylaws may be amended only by a majority vote of all DISCHARGERS.

EXHIBIT "B"

CENTRAL COAST REGIONAL
AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE
DISCHARGERS MONITORING PROGRAM

RESPONSIBILITIES OF ADMINISTRATOR

The Administrator shall have the following responsibilities:

1. The Administrator shall administer the AGREEMENT, and maintain an appropriate book of accounts, which, among other things, shall specifically identify the costs incurred in implementing the AGREEMENT. These records shall be subject to inspection by any of the DISCHARGERS at all reasonable times.

2. Subject to the prior approval of the Management Committee, the Administrator may enter into such agreements as necessary with public agencies or outside contractors and consultants to carry out the Program objectives.

3. The Administrator shall serve as the Secretary and Treasurer to the Management Committee.

4. Arranging for and conducting meetings of the Management Committee, including preparation of agenda materials and meeting minutes.

5. The Administrator shall perform such other duties as may be required and agreed to by the Management Committee, including, but not limited to, contracting with and managing the work of outside consultants and contractors to perform related work if deemed necessary and appropriate by the Management Committee. The Administrator shall act in a reasonable amount of time to execute contracts with consultants and/or contractors, which have been requested and approved by the Management Committee. The Administrator shall provide a copy of any contract executed on behalf of the Program to any DISCHARGER or person designated by any DISCHARGER or the Management Committee upon request. The contract template shall require consultants to indemnify and name all DISCHARGERS as additional insured and shall meet minimum coverage amounts for insurance policies. The Management Committee shall approve by a majority vote the contract template to be used by the Administrator.

EXHIBIT "C"

CENTRAL COAST REGIONAL
AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE
DISCHARGERS MONITORING PROGRAM

PROGRAM BUDGET GUIDELINES AND COST SHARE

Program Budget Guidelines

The Year 1 Program budget shall be based upon 1) the State Water Board's approved scope of work, a request for professional services, and the selected contractor's cost proposal, and 2) Program Administrator actual time and materials costs, but not to exceed $50,000, based on the billing rate schedule included below. The Administrator costs in Year 1 shall include, but not be limited to, the following activities:

- Establishment of program fund and accounting
- Invoices to DISCHARGERS
- Solicitation for professional services to implement Scope of Work
- Procurement and management of professional services agreement
- Coordination with Management Committee

For subsequent Fiscal Years, the Administrator will prepare a Draft Program Budget no later than April 1 for the succeeding Fiscal Year. The Draft Program Budget shall include a breakdown of the costs allocated to each DISCHARGER, in accordance with the Cost Sharing table below. The Administrator will revise the Draft Program Budget, as appropriate, to address concerns and comments from the Management Committee and the Management Committee will then approve and adopt a final Program Budget by June 15 prior to the wet season in which monitoring will occur.

The Administrator and the DISCHARGERS recognize that the Program Budget will be based on estimated costs, and that actual costs may differ from the budgeted amounts. If it appears that costs will exceed the budgeted amounts, the Administrator will notify the Management Committee as soon as the Administrator becomes aware of this and before incurring costs in excess of the budgeted amounts. If the Management Committee determines it is appropriate to have the Administrator incur additional costs above the budgeted amounts, the Administrator will prepare and submit a budget revision request for approval by the Management Committee. Time shall be allotted for Management Committee representatives to request their respective governing Boards or Councils to approve a budget increase request prior to approving a Program Budget revision. Only after the Management Committee approves an increase in the Program Budget will the Administrator incur costs in excess of the budgeted amounts. If there are unspent funds left at the end of the fiscal year, the Administrator will return to each DISCHARGER the unspent portion of that DISCHARGER'S payment, or credit that amount to

the DISCHARGERS annual assessment for the subsequent fiscal year, at DISCHARGER's discretion.

The Administrator will establish a separate job-cost code in its accounting system, to track the hours spent and out-of-pocket expenses directly related to performing work as the Administrator, which will be charged to the Program Fund. The Administrator will include in the Management Committee's meeting agenda reports a summary of the work the Administrator has performed during the intervening time period, the total costs of that work, and the portion of the cost allocated to each DISCHARGER. The portion of the cost allocated to the DISCHARGER will be calculated in accordance with the cost-sharing approach outlined in the Cost-Sharing chart below.

The costs for the Program Administrator will consist of direct costs, as described below.

Cost-Sharing

The Cost Sharing table below shows how the annual Program Budget will be shared amongst the DISCHARGERS based on the Scope of Work ("Exhibit E"). Each DISCHARGER's Percentage Participation in the Program Budget components shall be as set forth in the table below:

Agency	Outfalls 18" to 36"	Percentage of outfalls 18" - 36" (Budget A)	Outfalls = to or >36" w/ receiving water	Percentage of outfalls = to or >36" (Budget B)	Outfalls = to or >36" w/out receiving water	Percentage of outfalls = or >36" (Budget C)	Percentage Participation in Budget Component D
Pacific Grove	7	30.4%	1.83	22.9%	1	50%	11.6%
City of Monterey	0	0 %	.5	6.3%	0	0%	11.6%
Carmel	9	39.1%	1	12.5%	0	0%	11.6%
PBC	3	13%	1	12.5%	1	50%	11.6%
MBA	0	0%	.33	4.2%	0	0%	7.1%
Hopkins	0	0%	.33	4.2%	0	0%	7.1%
Marin County	0	0%	1	12.5%	0	0%	11.6%
Monterey County	0	0 %	1	12.5%	0	0%	11.6%
San Mateo County	4	17.4%	1	12.5%	0	0%	11.6%
Caltrans	0	0%	0	0%	0	0%	4.9%
Total	23	100%	8	100%	2	100%	100%

Program Budget Components

The Program Budget shall be allocated into the following components:

- Component "A" shall consist of all costs associated with Program Core Monitoring for Runoff and Outfalls from 18" to <36" diameter.
- Component "B" shall consist of all costs associated with Program Core Monitoring for Outfalls from >36" diameter, with a receiving water site.
- Component "C" shall consist of all costs associated with Program Core Monitoring for Outfalls from >36" diameter, without a receiving water site.

- Component "D" shall consist of the Program Regional Monitoring, including large discharge receiving water, reference site receiving water, rocky intertidal and bioaccumulation monitoring, technical management and reporting, and Program Administrator costs (not to exceed $50,000 in Year 1). Caltrans shall participate only in the bioaccumulation and rocky intertidal Program Regional Monitoring.

Annual Assessment

Each DISCHARGER's Annual Assessment shall be the sum of the amounts calculated by multiplying each component of the Program Budget by the DISCHARGER's Percentage Participation in that component.

Administrator Costs

Administrator costs will be compensated for actual direct costs on a time and materials basis. In Year 1, time and materials costs shall not exceed $50,000 and shall be charged at the following rates (salary plus benefits):

Admin Assistant	$55/hr
Executive Assistant	$65/hr
Accountant	$80/hr
Associate Engineer	$110/hr
Director of Finance	$135/hr
Director of Admin Services	$150/hr
Assistant General Manager	$165/hr
General Manager	$190/hr

Direct Costs are defined as costs incurred for necessary services and/or materials in the course of managing the Program. Direct costs shall be charged at actual cost. All direct costs shall be tracked and accounted for each fiscal year and provided in an independent annual audit in accordance with Section 5.8. Direct costs are those which can be and are tracked through time cards, invoices, record keeping systems, and other records that specifically allocate a cost to the Central Coast Regional Areas of Special Biological Significance Dischargers Monitoring Program.

EXHIBIT "D"

NOTICES

Pursuant to Section 9.5, unless otherwise specified, all notices or demands required under this Agreement shall be in writing and shall either be hand-delivered or mailed by first class registered or certified mail, postage prepaid, addressed to the PARTIES to the addresses and to the attention of the person named below:

CITY OF PACIFIC GROVE:

Sarah Hardgrave
Environmental Programs Manager
Public Works Department
2100 Sunset Drive
Pacific Grove, CA 93950

CITY OF MONTEREY:

Tom Reeves
City Engineer
Plans and Public Works
580 Pacific St.
Monterey, CA 93940

CITY OF CARMEL-BY-THE-SEA:

Jason Stilwell
City Administrator
Carmel-by-the-Sea City Hall
P.O. Box CC
Carmel-by-the-Sea, CA 93921

COUNTY OF MONTEREY:

Tom Harty
Stormwater Program Manager
Department of Public Works
168 West Alisal Street, 2nd Floor
Salinas, CA 93901

COUNTY OF SAN MATEO:

James C. Porter
Director

Department of Public Works and Parks
555 County Center, 5th Floor
Redwood City, CA 94063-1665

COUNTY OF MARIN:

Terri Fashing
Stormwater Program Administrator
Marin County Department of Public Works
3501 Civic Center Drive, Room 304
San Rafael, CA 94903

PEBBLE BEACH COMPANY:

Thomas Quattlebaum
Environmental Manager
4005 Sunridge Road
Pebble Beach, CA 93953

THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY, THROUGH ITS HOPKINS MARINE STATION:

Chris Patton
Hopkins Marine Station
Stanford University
Pacific Grove CA 93950-3094

MONTEREY BAY AQUARIUM:

Roger Phillips
Director of Applied Research
Monterey Bay Aquarium
886 Cannery Row
Monterey, CA 93940

CALIFORNIA DEPARTMENT OF TRANSPORTATION (Caltrans):

EXHIBIT "E"

SCOPE OF WORK

Central California Areas of Special Biological Significance
Storm Water Monitoring to Satisfy Special Protections
November 26, 2012

I. Introduction

The Central Coast ASBS Regional Monitoring Program will be implemented during the 2012–2013 and 2013-2014 storm seasons and includes all ASBS responsible parties[1] on the Central Coast, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This Scope of Work for the Central Coast ASBS Regional Monitoring Program has been developed through discussions with staff from State and Regional Water Boards, as well as the responsible parties discharging storm water into Areas of Special Biological Significance (ASBS).

II. Technical Program

In all specifications for storm water and receiving water monitoring that follow, the minimum requirement for a storm shall satisfy the criteria specified in the Special Protections (i.e., >0.10 inches of rainfall resulting in runoff, >72 hours from the previous storm). Moreover, every attempt shall be made to satisfy the criteria for storm runoff monitoring conducted by the Monterey Bay National Marine Sanctuary (i.e., sheeting water on roadways, heavy flow through the storm drain system and conductivity levels less than 1000 micro Siemens (μS) and declining) and ensure sufficient time after the initiation of rainfall to allow for time of concentration to include flow runoff from all parts of the catchment or watershed.

This Scope of Work covers monitoring requirements specified in the Special Protections for 12 participants[1] designated as Responsible Parties, as follows:

- National Park Service, Point Reyes National Seashore
- Marin County
- San Mateo County
- Monterey Bay Aquarium
- Hopkins Marine Station
- City of Monterey
- City of Pacific Grove
- Carmel by the Sea
- Pebble Beach Company

[1] It should be noted that three participants, Caltrans, National Park Service and California Department of Parks and Recreation, have not yet committed to full participation in the Central Coast regional program. These State and Federal Agencies may contract separately to implement their monitoring requirements, but with a commitment that they use the same monitoring design, laboratories for sample analysis and provide their data for analysis with the other participants.

- Monterey County
- California Department of Parks and Recreation
- Caltrans

While the City of Monterey is a Responsible Party, it does not operate any storm runoff outfalls of its own that drain into an ASBS. It does, however, contribute runoff to an ASBS outfall operated by the City of Pacific Grove. Storm water, sediment, receiving water and reference site monitoring will be performed under this Scope of Work for Monterey Bay Aquarium and Hopkins Marine Station in compliance with the individual Draft Mitigated Negative Declaration documents issued to each. These two participants have other monitoring requirements for seawater discharges that are being performed outside this Scope of Work.

A. Core Monitoring

1. Runoff Flow Measurements
   Total annual storm runoff from each participant shall be estimated (modeled) by using measured rainfall and the amount of impervious area (to be provided by each participant) in each catchment. Targeted ground-truth measurements will be made to calibrate the model. This runoff modeling will permit estimates of total annual and event-specific loads for each participant.

2. Discharge Monitoring
   All outfalls ≥18 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria;
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin using salted-up water.

   All samples from outfalls ≥36 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms each year that are sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (ammonia, nitrate, urea and phosphate);
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin test using salted-up discharge water.

B. Receiving Water and Reference Monitoring

1. Receiving Water Monitoring
   Receiving water (receiving water = in the surf zone at the point of contact between runoff and the ocean) at 11 large storm water outfalls selected to represent worst-case conditions shall be sampled as follows:
   a. Samples shall be collected before and during 3 storms in each of 2 years;
   b. Each sample shall be analyzed for oil and grease, total suspended solids, fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic

hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (i.e., nitrate, ammonia, urea, orthophosphate);

c. Samples collected during storms shall be analyzed for critical life stage chronic toxicity with 3 marine species (sea urchin, mussel and giant kelp).

Specific locations of outfalls to be monitored are as follows:

>18"	>36"	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
	X[a]	Marin County	Trailhead at Agate Beach	-122.71059	37.89749	DUX009	-122.71058	37.89757
X		San Mateo County	Maritime Walk	-122.517537	37.531153	FIT012	-122.51756	37.53115
X		San Mateo County	Juliana	-122.516679	37.529092	FIT015	-122.51667	37.52915
X		San Mateo County	Distillery	-122.513269	37.517706	FIT028	-122.51355	37.51789
X		San Mateo County	Madrone	-122.511592	37.514237	FIT029	-122.51067	37.51246
	X[a]	San Mateo County	Weinke Way	-122.516958	37.528645	FIT016	-122.5173	37.5282
X		California State Parks	Año Nuevo	-122.32181	37.11666	ANO012	-122.32181	37.11666
	X	California State Parks	Point Lobos	-121.93812	36.5187	PTL004	-121.93812	36.5187
	X[a]	California State Parks	Año Nuevo	-122.33662	37.13245	ANO027	-122.33662	37.13245
	X	California State Parks	Point Lobos	-121.94775	36.51524	PTL034	-121.94775	36.51524
	X	California State Parks	Julia Pfeiffer Burns	-121.68885	36.17192	PFE008	-121.68885	36.17192
	X	California State Parks	Julia Pfeiffer Burns	-121.68629	36.17072	PFE011	-121.68629	36.17072
	X	California State Parks	Julia Pfeiffer Burns	-121.68281	36.16924	PFE012	-121.68281	36.16924
	X	California State Parks	Julia Pfeiffer Burns	-121.6773	36.16634	PFE015	-121.6773	36.16634
	X	California State Parks	Julia Pfeiffer Burns	-121.6764	36.16569	PFE016	-121.6764	36.16569
	X	California State Parks	Julia Pfeiffer Burns	-121.66883	36.1553	PFE026	-121.66883	36.1553
	X	California State Parks	Julia Pfeiffer Burns	-121.66781	36.15469	PFE027	-121.66781	36.15469
	X[a]	Pacific Grove	Lover's at Ocean View	-121.91614	36.6246	PCG120	-121.91613	36.6246
X		Pacific Grove	Ocean View between Fountain Avenue and 15th Street	-121.914835	36.62381	PCG215	-121.91484	36.62378
	X[ab]	Pacific Grove	Ocean View between 12th Street and 13th Street	-121.913831	36.622873	PCG219	-121.91381	36.62281
	X	Pacific Grove	Ocean View at 15th Street	-121.91472	36.62339	PCG217	-121.91472	36.62339
X		Pacific Grove	Ocean View between Clyte Street and Naiad Street	-121.919561	36.627369	PCG069	-121.91955	36.62735
X		Pacific Grove	Northwest corner of Lover's Point Park at Ocean View Boulevard	-121.916596	36.626648	PCG098	-121.91657	36.6266
X		Pacific Grove	Grand Avenue at Ocean View	-121.914835	36.62381	PCG215	-121.91484	36.62378
X		Pacific Grove	8th Street at Ocean View	-121.910348	36.621624	PCG229	-121.91036	36.62162
X	X[ac]	Pacific Grove	Ocean View at the Hopkins Marine Laboratory Stanford University	-121.90305	36.61897	PCG257 PCG258	-121.90305	36.61897
X		Pacific Grove	At Ocean View between 7th Street and 5th Street	-121.909634	36.621125	PCG230	-121.90995	36.62115

>18"	>36"	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
	X[a]	County of Monterey	Scenic Road (12")	-121.93286	36.54439	CAR029	-121.93286	36.54439
	X[a]	Carmel	4th Avenue	-121.93075	36.55610	CAR062	-121.93075	36.55605
X		Carmel	Ocean Avenue	-121.93030	36.55502	CAR061	-121.93033	36.55501
X		Carmel	8th Avenue	-121.92940	36.55250	CAR059	-121.92933	36.55275
X		Carmel	10h Avenue	-121.92898	36.55007	CAR050	-121.92904	36.55003
X		Carmel	11th Avenue	-121.92877	36.54883	CAR046	-121.92877	36.54881
X		Carmel	13th Avenue	-121.92903	36.54641	CAR037	-121.9291	36.5464
X		Carmel	parking lot at Del Mar near Ocean Avenue	-121.93003	36.55442	CAR060	-121.93006	36.55439
X		Carmel	9th Avenue	-121.92890	36.55117	CAR055	-121.92891	36.55117
X		Carmel	Scenic Road & Santa Lucia Avenue	-121.92962	36.54552	CAR093	-121.92968	36.54547
X		Carmel	12th Avenue	-121.92857	36.54765	CAR044	-121.92854	36.54767
X		Pebble Beach Company	Stillwater Pier	-121.942739	36.566625	CAR279	-121.94274	36.56655
X		Pebble Beach Company	18th Fairway PBGL	-121.948014	36.567247	CAR299	-121.94803	36.5672
X		Pebble Beach Company	18th Green PBGL / Lodge	-121.950131	36.567372	CAR221	-121.9501	36.56738
	X[a]	Pebble Beach Company	18th Green PBGL / Lodge	-121.950097	36.567383	CAR220	-121.95001	36.56741
	X	Pebble Beach Company	9th Green PBGL	-121.933397	36.560394	CAR076	-121.93337	36.5603
X[a]		Caltrans	Fitzgerald	-122.51771	37.53154	FIT011	-122.51771	37.53154
	X	Caltrans	Año Nuevo	-122.29297	37.10714	ANO035	-122.29297	37.10714
	X	Caltrans	Año Nuevo	-122.297	37.11084	ANO034	-122.297	37.11084
	X	Caltrans	Año Nuevo	-122.29764	37.1113	ANO032	-122.29764	37.1113
	X[a]	Caltrans	Año Nuevo	-122.29881	37.11202	ANO033	-122.29881	37.11202
	X	Caltrans	Año Nuevo	-122.30121	37.11334	ANO030	-122.30121	37.11334
	X	Caltrans	Carmel Bay	-121.9247	36.52453	CAR007	-121.9247	36.52453
X		Caltrans	Carmel Bay	-121.92457	36.52469	CAR026	-121.92457	36.52469

[a] = Sites selected for discharge receiving water monitoring

[b] = Monitoring of this site will be shared between the cities of Pacific Grove and Monterey

[c] = Monitoring of this site will be shared among Pacific Grove, Monterey Bay Aquarium and Hopkins Marine Station

2. Reference Site Monitoring

Ocean water at 11 selected reference sites (reference site = in the surf zone at the mouth of a watershed with >90% open space and no listed water quality impairments) shall be sampled as follows:

a. Samples shall be collected during 3 storms in each of 2 years;
b. Each sample shall be analyzed for oil and grease, total suspended solids, fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients;
c. Each sample shall be analyzed for of critical life stage chronic toxicity with 3 marine species (sea urchin, mussel and giant kelp).

The proposed locations for reference sites span the study region. One reference site described below is not part of this Scope of Work, but is included because State Water Board staff requested that the Central Coast regional program determine the location of that reference site. Locations of sites south of Point Lobos were selected based upon a reconnaissance survey made on November 19, 2012. Several of these southern sites involve either substantial hikes, permission from property owners or special permission for vehicle access. Consequently, adjustments to site locations may be necessary. Moreover, access to at least one site will require crossing a creek to reach the beach at the creek mouth and extreme precautions will be necessary during storm events. The proposed reference locations for water quality monitoring are as follows:

Region	Specific Site
North of Point Reyes	Salmon Creek (USAF responsibility, not covered by this Scope of Work))
San Mateo County	Tunitas Creek
	Gazos Creek
South of Año Nuevo	Scott Creek
Non-urban shoreline in Monterey Bay	La Selva Beach
	Marina State Beach
South of Point Lobos	Malpaso Creek[a]
	Doud Creek
	Little Sur River[b]
Big Sur coast[a]	Big Sur River
	Sycamore Creek
	Big Creek
Total covered by the Scope of Work	11

[a] = Beach access to ocean requires crossing the creek.
[b] = Public access to be determined.

3. Biological Monitoring

Recent studies have examined whether rocky intertidal communities vary in response to storm water discharges. Initial results from southern California suggest that 2 out 11 discharge sites exhibited community composition and abundances that could be consistent with storm water discharges (Raimondi *et al*, 2012). Consequently, monitoring of rocky intertidal communities shall be part of this program. The community structure in rocky intertidal habitats shall be measured once at 6 sites near ASBS storm water discharges and at 2 reference sites. Sampling shall involve point-contact estimates of substrate coverage by species along transects from the high intertidal zone to the low intertidal zone. Biological monitoring sites have been selected in consultation among permittees and regulatory agencies with consideration for the locations of sites with existing data.

Rocky intertidal communities will be sampled at the following sites:

ASBS	Sampling Site Name
Año Nuevo Point and Islands ASBS	Año Nuevo
Carmel Bay ASBS	Stillwater
Duxbury Reef ASBS	Bolinas Point
James V. Fitzgerald Marine Reserve ASBS	Fitzgerald Marine Reserve
Pacific Grove ASBS	Hopkins
Point Lobos Ecological Reserve ASBS	Point Lobos
Reference	Santa Maria Creek
Reference	Pigeon Point

4. Bioaccumulation Monitoring

California mussels are known to accumulate concentrations of pollutants in their tissues to concentrations much higher that found in the surrounding water. Consequently, they have been widely applied in studies of water quality status and trends (e.g., CCLEAN, 2012; Davis *et al*, 1999). Consequently, concentrations of contaminants shall be measured in resident mussels from sites near ASBS storm water discharges and from reference sites distant from urbanized ASBS areas utilizing existing programs, wherever possible, as follows:

a. Population composites of mussels of roughly uniform shell length shall be collected from each of 7 sites.

b. Each composite shall be thoroughly homogenized and analyzed for polynuclear aromatic hydrocarbons, polychlorinated biphenyls, polybrominated diphenyl ethers, chlorinated pesticides, pyrethroid pesticides and Lomefloxacin. These analytes are slightly different from those measured in sections A and B and, except for pyrethroids and Lomefloxacin, are consistent with those measured by CCLEAN.

The following sites will be sampled for bioaccumulation:

Sites
Point Reyes
Scott Creek

Sites
Laguna Creek
41st Avenue, Capitola
Lovers Point
Fanshell Overlook, 17-Mile Drive
Carmel River Beach
Total = 7

C. Mooring Field Operations (Pebble Beach Company only)

1. Receiving Water

Ocean receiving water at the mooring facility shall be sampled as follows:

a. Samples shall be collected monthly from May through October on a high use weekend in each month.
b. Samples shall be analyzed for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

2. Sediments

Subtidal sediment shall be sampled, as follows:

a. Samples shall be collected annually from within the mooring field and below the pier.
b. Samples shall be analyzed for Ocean Plan Table 1 metals (for marine aquatic life beneficial use), acute toxicity (using *Eohaustorius estuaries)*, PAHs, and tributyltin.

D. General Requirements

1. Ensure Data Quality

a. All sampling and analysis shall conform to a Sampling and Analysis Plan (SAP) and to a Quality Assurance Program Plan (QAPP) that are consistent with requirements of the State of California Surface Water Ambient Monitoring Program (SWAMP). At a minimum, sampling shall be conducted so as to ensure that samples are representative of the site and matrix being sampled and to minimize the introduction of extraneous contamination into samples. Ultra-clean techniques shall be used for collection samples to be analyzed for organic contaminants and trace metals.
b. Samples of the same type shall all be performed by the same laboratory and shall include appropriate lab blanks, certified reference materials, matrix spikes and matrix spike duplicates and reporting limits shall equal or be lower than those required by SWAMP.
c. An audit will be prepared describing laboratory performance relative to data quality objectives prescribed in the QAPP.

2. Ensure data availability

All chemical data will be uploaded to the California Environmental Data Exchange Network annually.

3. Reporting

Annual reports shall be delivered within 6 months of the completion of laboratory analyses. At a minimum, annual reports shall include a complete description of sampling methods, sites and analytical methods and analysis of data, including comparison of data from discharges and their respective receiving water sites with those from reference sites and the California Ocean Plan and shall be comparable to Schiff *et al* (2011). The annual report for the second year will be cumulative, including analysis of all data from both years to provide a characterization of storm water discharges and their effects on receiving water quality in Areas of Special Biological Significance.

4. Areas of Special Biological Significance Included

Storm runoff from program participants flows into the following ASBS:

- National Park Service, Point Reyes National Seashore
  - Point Reyes Headlands ASBS
  - Double Point ASBS
  - Duxbury Reef ASBS
- County of Marin
  - Duxbury Reef ASBS
- County of San Mateo
  - James V. Fitzgerald ASBS
- California State Department of Parks and Recreation
  - Año Nuevo ASBS
  - Point Lobos ASBS
  - Julia Pfeiffer Burns ASBS
- Monterey Bay Aquarium
  - Pacific Grove ASBS
- Hopkins Marine Station
  - Pacific Grove ASBS
- City of Monterey
  - Pacific Grove ASBS
- City of Pacific Grove
  - Pacific Grove ASBS
- City of Carmel
  - Carmel Bay ASBS
- Pebble Beach Company
  - Carmel Bay ASBS
- County of Monterey
  - Carmel Bay ASBS
- Caltrans
  - James V. Fitzgerald ASBS
  - Año Nuevo ASBS

- Carmel Bay ASBS

D. Literature Cited

CCLEAN. 2012. Central Coast Long-term Environmental Assessment Network Annual Report, 2010–2011.

Davis, JA, Stephenson M, Hardin, D, Gunther AJ, Sericano J, Bell D, Scelfo GH, Gold J, Crick J. 1999. Long term bioaccumulation monitoring with transplanted bivavles in San Francisco Bay. Marine Pollution Bulletin. 38:170–181.

Raimondi, P., K. Schiff and D. Gregorio. 2012. Characterization of the rocky intertidal ecological communities associated with southern California Areas of Special Biological Significance. Southern California Coastal Water Research Project Technical Report 703 – May 2012. Costa Mesa, CA.

Schiff, K.C., B. Luk, D. Gregorio and S. Gruber. 2011. Southern California Bight 2008 Regional Monitoring Program: II. Areas of Special Biological Significance. Southern California Coastal Water Research Project. Costa Mesa, CA.

Appendix C:

Applied Marine Sciences (AMS) RMP Scope of Work

PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT TO PROVIDE PROFESSIONAL SERVICES is made and entered into on 3/22/13 by and between MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY, hereinafter referred to as "AGENCY," and APPLIED MARINE SCIENCES, Inc. a Corporation, hereinafter referred to as "PROFESSIONAL," as follows:

SECTION I: ADHERENCE TO TERMS OF AGREEMENT

AGENCY intends to literally interpret and strictly apply all terms and conditions of this Agreement. All approvals that are required to be in writing must be in writing to be valid and binding. PROFESSIONAL is encouraged to raise to AGENCY any questions with regard to interpretation or applicability of any provision of this Agreement before undertaking the work and to do so in an timely manner in order to avoid any delays in performing work assignments.

The AGENCY is the Program Administrator for the Central Coast Areas of Special Biological Significance Regional Monitoring Program (CC ASBS RMP). In accordance with the Memorandum of Agreement establishing the CC ASBS RMP, the Management Committee shall provide technical oversight and establish timelines and budgets for completion of Program tasks by Budget Component as specified in the MOA. The AGENCY shall follow the provisions of the Memorandum of Agreement in addition to this agreement.

SECTION II: EMPLOYMENT

AGENCY hereby employs PROFESSIONAL, as an independent contractor to furnish the professional services covered by this Agreement, and the Requests for Service issued under it, in accordance with the terms and conditions set forth below, and PROFESSIONAL hereby accepts such employment.

SECTION III: WORK ASSIGNMENTS

It is the intent of AGENCY and PROFESSIONAL to authorize the performance of work under this Agreement by executing a series of written work assignments setting forth the specific description, scope, and costs of the work to be performed. Such assignments shall be called "Requests For Service" (RFS) and shall be numbered consecutively. Each RFS, upon execution by PROFESSIONAL and by AGENCY, shall become and be considered as a part of this Agreement, and all provisions herein shall apply to said RFSs. The RFS form to be used is contained in Attachment A to this Agreement.

SECTION IV: TIME OF PERFORMANCE

A. General - Time is of the essence on the work of the RFSs issued under this Agreement. Therefore, PROFESSIONAL shall perform its services in a timely manner. Specific performance times shall be specified for each individual RFS under this Agreement. PROFESSIONAL shall make every reasonable effort, including assigning of additional personnel to the work and/or working overtime, to complete the authorized work within these stipulated time periods. The taking of such additional measures to complete the work within the stipulated time periods will not entitle PROFESSIONAL to additional compensation, if the work is being performed under the Lump Sum Payment Method, except as provided for in Section V, Paragraph B. It is understood that PROFESSIONAL began work towards the implementation of said Agreement upon notice of contract award on or about February 14, 2013 from AGENCY.

B. Subcontracted Services - For subcontracted services PROFESSIONAL shall contract for and schedule such services in a timely fashion in accordance with the requirements of the work, and shall be fully responsible for the cost, performance and quality of all work performed by its subcontractors.

C. Extensions of Time - The time of performance established for a particular RFS may be extended at any time prior to completion of the work by mutual agreement in writing between AGENCY and PROFESSIONAL.

SECTION V: COMPENSATION

A. General - AGENCY and PROFESSIONAL shall negotiate the costs and fees for each specific RFS. The method of payment of said costs and fees for this RFS is a Not-to-Exceed fee. The method of payment will depend on the specific conditions, the scope of work, and the services to be performed for each specific RFS. Any tasks beyond the scope of work attached to this RFS shall require approval by the ASBS RMP Management Committee and a separate RFS.

B. Not-to-Exceed - The fee for the "Project" is a not-to-exceed fee broken out for each separate task item identified within the RFS provided in March 2013 by Agency to Professional.

C. Terms of Payment - PROFESSIONAL shall invoice AGENCY monthly for work

completed during the previous month. Upon receipt, Agency shall forward all invoices to the Members of the Central Coast ASBS Regional Monitoring Program Member Entities for review and consideration. All invoices shall be due and payable within thirty (30) days of the date of receipt by Agency, provided all costs included in the invoice are adequately supported by documentation accompanying the invoice for each task within the scope of work by Budget Component in the ASBS RMP MOA. If payment is not made within sixty (60) days of the date of receipt by Agency, interest on the unpaid balance will accrue beginning with the sixty-first day at the rate of 1.0 percent per month, or the maximum interest rate permitted by law, whichever is the lesser. Such interest shall become due and payable at the time said overdue payment is made.

D. Penalty for Late Performance - The PROFESSIONAL is not responsible for delays in the schedule caused by events outside PROFESSIONAL's reasonable control. However, in the event PROFESSIONAL fails to properly complete work within thirty (30) days of the date such work is due (pursuant to schedules developed in accordance with Section IV of this Agreement), because of events within PROFESSIONAL's reasonable control, AGENCY SHALL reduce the total compensation established for the work of that RFS by ten percent (10%). Said reduction shall be deemed liquidated damages for the untimely performance of work required by this Agreement. PROFESSIONAL shall be deemed to have waived any claim for such amount by reason of his failure to perform in a timely fashion.

SECTION VI: TERMINATION

Notwithstanding the above, AGENCY reserves the right to terminate any RFS to this Agreement at any time prior to the completion of the services to be furnished by PROFESSIONAL under said RFS by giving a written Notice of Termination to PROFESSIONAL, in which event AGENCY shall pay PROFESSIONAL only for work done and direct costs incurred by PROFESSIONAL under said RFS prior to receipt of such notice of termination. Such costs will include reasonable costs to bring the work to a halt, and costs to deliver to AGENCY the documentation described in the following paragraph. Termination of a particular RFS will not affect any other operative RFS.

Upon receipt of a Notice of Termination, PROFESSIONAL shall (1) promptly discontinue all services affected (unless the notice directs otherwise), and (2) deliver to AGENCY all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by PROFESSIONAL in performing work under this Agreement,

whether completed or in process.

Upon termination AGENCY may take over the work and prosecute the same to completion by agreement with another party or otherwise. Any work taken over by AGENCY for completion will be completed at AGENCY's risk, and AGENCY will hold harmless PROFESSIONAL from all claims and damages arising out of improper use of PROFESSIONAL's work.

SECTION VII: AGENCY LIABILITY

PROFESSIONAL understands that this Agreement is with AGENCY alone, and that none of the members of AGENCY are liable for any sums which may be payable hereunder, or for any debts of AGENCY.

SECTION VIII: CHANGES

AGENCY may, at its discretion and from time to time, revise, correct, or modify the work to be performed under an RFS. All such changes shall be made formally and in writing to PROFESSIONAL. PROFESSIONAL shall comply with such changes. Should PROFESSIONAL determine that said changes will result in an increase or decrease in costs to PROFESSIONAL, these costs shall be evaluated by AGENCY and PROFESSIONAL for negotiation as to adjustment in the compensation due to PROFESSIONAL, and written agreement as to said adjustment shall be reached between the parties prior to commencement of any work that will cause an increase or decrease in PROFESSIONAL's costs. Any increased costs in excess of the Total Price incurred by PROFESSIONAL prior to execution of a written agreement covering said increased costs shall not be compensable.

SECTION IX: DUTIES OF AGENCY

AGENCY agrees to perform duties in connection with this Agreement and RFS issued under it as follows:

A. To assist PROFESSIONAL in obtaining any available information concerning location and details of facilities under control of AGENCY that may affect the work of an RFS, and to render reasonable assistance to PROFESSIONAL;

B. To examine within a reasonable time so as not to delay the work of PROFESSIONAL, all studies, reports, sketches, drawings, specifications, cost estimates, proposals and other documents presented by PROFESSIONAL to AGENCY for such purpose;

C. To give prompt written notice to PROFESSIONAL whenever AGENCY observes

or otherwise becomes aware of any defect in the work of PROFESSIONAL;

SECTION X: DATA FURNISHED BY AGENCY

For the purpose of aiding PROFESSIONAL in the performance of its obligations under this Agreement and RFS issued under it, AGENCY shall furnish PROFESSIONAL all relevant data in its possession and shall render all reasonable assistance to PROFESSIONAL in connection with its performance hereunder. AGENCY is responsible for the reasonable correctness of data so furnished, but it shall likewise be the responsibility of PROFESSIONAL to apply reasonable caution in its use and interpretation of the data and to promptly advise AGENCY of any incorrectness or suspected incorrectness in the data furnished.

AGENCY shall provide to PROFESSIONAL in a timely manner all materials, decisions, and direction which are necessary to the progress of the work and which are basically the prerogative of AGENCY, but which PROFESSIONAL is not required to determine or provide under the terms of this Agreement.

SECTION XI: RESPONSIBILITIES OF PROFESSIONAL

PROFESSIONAL is employed to render a professional service only, and any payments made to him are compensation solely for such services as he may render and recommendations he may make in carrying out the work. PROFESSIONAL shall follow professional practices to make findings, opinions, factual presentations, and professional advice and recommendations.

PROFESSIONAL's review or supervision of work prepared or performed by other individuals or firms employed directly by AGENCY shall not relieve those individuals or firms of complete responsibility for the adequacy of their work.

PROFESSIONAL shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all designs, drawings, specifications, reports and other services furnished by PROFESSIONAL under this Agreement. PROFESSIONAL shall, without additional compensation, correct or revise any errors, omissions or other deficiencies in his designs, drawings, specifications, reports and other services.

PROFESSIONAL shall perform such professional services as may be necessary to accomplish the work required to be performed under this Agreement and in accordance with this Agreement.

PROFESSIONAL will not publish, release and/or divulge any information, data and/or findings from services related to the scope of this Agreement to any third party without the prior written consent of AGENCY, or as required by the Scope of Work concerning uploading of data to required State of California water quality databases such as CEDEN or SWAMP. This restriction does not apply to popular publication of previously published technical matter. Publication pursuant to this Agreement may be produced independently or in collaboration with others; however, in all cases proper credit will be given to the efforts of those parties contributing to the publication. In the event no agreement is reached concerning the manner of publication or interpretation of results, any party may publish data after due notice and submission of the proposed manuscripts to the other parties. In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.

All data produced and/or compiled by PROFESSIONAL shall be considered confidential unless it can be obtained as public record and shall not be shared with a third party without the prior written consent of AGENCY. All financial, statistical, personal, technical, and other data and information relating to the AGENCY'S operations which is made available to the PROFESSIONAL in order to carry out this Agreement shall be presumed to be confidential. PROFESSIONAL shall protect said data and information from unauthorized use and disclosure by the observance of the same or more effective procedures, as the AGENCY requires of its own personnel. The PROFESSIONAL shall not, however, be required by this paragraph to keep confidential any data or information which is or becomes publicly available, is already rightfully in the PROFESSIONAL'S possession, is independently developed by the PROFESSIONAL outside the scope of the Agreement or is rightfully obtained from third parties.

Approval by AGENCY of drawings, designs, specifications, reports, and incidental engineering work or materials furnished hereunder shall not in any way relieve PROFESSIONAL of responsibility for the technical adequacy of his work. Neither AGENCY's review, approval or acceptance of, nor payment for, any of the services rendered under this Agreement shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement.

PROFESSIONAL shall be and remain liable in accordance with applicable law for all damages to AGENCY caused by PROFESSIONAL's negligent performance of any of the services furnished under this Agreement. The only exception in this regard will be for errors, omissions or other deficiencies to the extent attributable to AGENCY, AGENCY-furnished data or any third party not under the control of PROFESSIONAL. PROFESSIONAL shall not be responsible for any time delays in the project caused by circumstances beyond PROFESSIONAL's control.

SECTION XII: SUBCONTRACT

AGENCY has entered into this Agreement in order to receive the professional services of PROFESSIONAL. PROFESSIONAL will therefore not make an assignment to a third party of all or any portion of the services required of PROFESSIONAL under this Agreement and RFSs thereto without first obtaining the written consent of AGENCY or as identified in Professional's proposal, included in any heretofore RFS, or as identified in any cost proposal submitted and accepted by AGENCY. PROFESSIONAL may, however, make use of the part-time assistance of other experts possessing unique skills, the utilization of which will, in the opinion of PROFESSIONAL, enhance the quality of its service to AGENCY under this Agreement provided, however, that any such additional assistants, part-time or otherwise, shall be considered employees of PROFESSIONAL or of PROFESSIONAL's subcontractor(s), and the responsibility for same shall rest with PROFESSIONAL.

SECTION XIII: INDEPENDENT PROFESSIONAL

PROFESSIONAL shall perform the services hereunder as an independent contractor, and nothing herein contained shall be construed to be inconsistent with this relationship or status. The employees of PROFESSIONAL shall not be deemed to be the employees of AGENCY, and AGENCY shall have no right to control the physical conduct of PROFESSIONAL's employees.

SECTION XIV: USE OF DOCUMENTS

For all work performed under this Agreement and all RFSs thereto, PROFESSIONAL shall provide to AGENCY copies of all plans, drawings, specifications, studies, reports, analyses, calculations, and all other work products and supporting documentation developed in the course of performing the work authorized by these agreements. The costs for reproducing, assembling, and delivering said copies of these documents to AGENCY shall be considered to have been included in the price for performing each RFS, whether or not specifically stated therein. Unless stated otherwise in the RFS, one paper copy, and the electronic file on disc or on CD (e.g. in MS Word, MS Excel, etc.), of each document shall be provided by PROFESSIONAL to AGENCY. AGENCY shall have the right, and permission of PROFESSIONAL, to use any such document for any purpose which AGENCY deems appropriate. Use of documents for other than their intended purpose shall be at AGENCY's risk. AGENCY shall hold PROFESSIONAL harmless from all claims and damages arising out of improper use of said documents.

SECTION XV: AMENDMENTS AND SCOPE OF AGREEMENT

AGENCY hereby reserves the right to amend the provisions of this Agreement from time to time as may be in the best interest of AGENCY. Such amendments, upon acceptance by PROFESSIONAL and by AGENCY, shall become and be considered as part of this Agreement, and all provisions herein shall apply to such amendments.

This Agreement constitutes the entire agreement between the parties relative to the subject matters hereof, and no modifications thereof shall be effective unless and until such modifications are evidenced by written amendments, signed by both parties, to this Agreement. There are no understandings, agreements, conditions, representations, warranties, or promises with respect to the subject matter of this Agreement which are not actually contained in the Agreement, except those expressly contained in such written amendments.

SECTION XVI: SUCCESSORS AND ASSIGNS

This Agreement and all amendments thereto shall be binding upon and inure to the benefit of any successors and assigns of the respective parties hereto.

SECTION XVII: ATTORNEYS' FEES

If any legal action is necessary to enforce or interpret the terms or provisions of this Agreement and all amendments thereto, and the respective rights and duties of the parties hereunder, the prevailing party shall be entitled to reasonable attorneys' fees in addition to any other relief to which he may be entitled.

SECTION XVIII: JURISDICTION

This Agreement shall be administered and interpreted under the laws of the State of California. Jurisdiction of litigation arising from this Agreement shall be in this state. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of the Agreement shall be in full force and effect.

SECTION XIX: INSURANCE

PROFESSIONAL shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by PROFESSIONAL, his agents, representatives,

employees or subcontractors.

A. Minimum Scope and Limits of Insurance

PROFESSIONAL shall maintain the types of insurance with limits no less than those set forth below, and having no deductibles, except as noted.

The coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence Form CG 0001).
2. Insurance Services Office Form No. CA 0001 covering Automobile Liability, Code 1 (any auto).
3. Workers Compensation insurance as required by the State of California and Employer's Liability Insurance.
4. Errors and Omissions Liability insurance appropriate to the consultant's profession. For architects and engineers this coverage shall be endorsed to include contractual liability.

Required coverage:

1. General Liability Insurance: Combined single limit of $1,000,000 per occurrence and $2,000,000 annual aggregate for bodily injury, personal injury, and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability Insurance: $1,000,000 per accident for bodily injury and property damage.

3. Employer's Liability Insurance: $1,000,000 per accident for bodily injury or disease. If PROFESSIONAL has no employees, this coverage is not required.

4. Workers' Compensation Insurance: As required by the State of California.

B. Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by AGENCY before any work under this Agreement is performed.

C. Acceptability of Insurers

Insurance is to be placed with insurers with a current A. M. Best's rating of no less than A: VII, unless otherwise acceptable to AGENCY.

D. Verification of Coverage

PROFESSIONAL shall furnish AGENCY with original certificates and amendatory endorsements effecting coverage required by this section. The endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements are to be received and approved by AGENCY before work commences. If this is not possible due to time constraints prior to commencement of work, PROFESSIONAL may initially furnish Certificates of Insurance in lieu of endorsements, as long as the endorsements are provided within forty-five (45) days from the date of execution of this Agreement.

E. Subcontractors

PROFESSIONAL shall include all subcontractors as insureds under its policies or shall furnish separate evidence of coverage and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein, or as approved by AGENCY.

SECTION XX: INDEMNIFICATION

PROFESSIONAL shall indemnify and hold harmless AGENCY and its officers, officials, employees and agents from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgements of every nature and description brought or recoverable against it or them by reason of any negligent act, negligent error, or negligent omission of PROFESSIONAL, his agents, or employees for work performed under this Master Agreement.

SECTION XXI: WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person or by mail to the individuals and at the addresses listed below:

A. AGENCY:
General Manager
Monterey Regional Water
Pollution Control Agency
5 Harris Court, Building D
Monterey, CA 93940

B. PROFESSIONAL:
Dane Hardin
Vice President

Applied Marine Sciences, Inc.
911 Center Street, Suite A
Santa Cruz, CA 95060

IN WITNESS WHEREOF, the parties hereto have executed this Agreement consisting of fourteen (14) pages and one (1) Attachment in duplicate on the date hereinabove written.

AGENCY	PROFESSIONAL
MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY	APPLIED MARINE SCIENCES
By _____	By _____
Keith E. Israel General Manager/Secretary to the Board of Directors	Dane Hardin Vice President

ATTACHMENT A

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY
REQUEST FOR SERVICE

DATE: March 20, 2013 **RFS NO**. 2013- 1
(*To be filled in by AGENCY*)

TO: Dane Hardin, Applied Marine Sciences **FROM**: Douglas Dowden, MRWPCA

Services Needed and Purpose:

Professional shall provide storm water and receiving water monitoring during the 2013 – 2014 and 2014 – 2015 storm seasons, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This Scope of Work shall include a technical program element which shall include: core monitoring and receiving water and reference site monitoring, mooring field operations site monitoring and general requirements as specified within the Scope of Work detailed herein.

Completion Date: June 2015

Method of Compensation: Not-to-Exceed (As defined in Section V of Agreement.)

Total Price Authorized by this RFS: $1,365,253.00 (Cost is authorized only when evidenced by signature below.)

Total Price may not be exceeded without prior written authorization by AGENCY in accordance with Section V. COMPENSATION.

Requested by: Douglas Dowden Date: 5/23/13
Stormwater Program Manager

Authorized by:_____ Date:_____
AGENCY General Manager

Agreed to by: _____ Date:_____
PROFESSIONAL

Detailed Scope of Work for RFS No.2013-1:

The Central Coast ASBS Regional Monitoring Program will be implemented during the 2013–2014 and 2014-2015 storm seasons and includes most ASBS responsible parties[1] on the Central Coast, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This Scope of Work for the Central Coast ASBS Regional Monitoring Program has been approved by staff from State and Regional Water Boards, as well as the responsible parties discharging storm water into Areas of Special Biological Significance (ASBS).

II. Technical Program

In all specifications for storm water and receiving water monitoring that follow, the minimum requirement for a storm shall satisfy the criteria specified in the Special Protections (i.e., >0.10 inches of rainfall resulting in runoff, >72 hours from the previous storm). Moreover, every attempt shall be made to satisfy the criteria for storm runoff monitoring conducted by the Monterey Bay National Marine Sanctuary (i.e., sheeting water on roadways, heavy flow through the storm drain system and conductivity levels less than 1000 micro Siemens (µS) and declining) and ensure sufficient time after the initiation of rainfall to allow for time of concentration to include flow runoff from all parts of the catchment or watershed.

This Scope of Work covers monitoring requirements specified in the Special Protections for 12 participants[1] designated as Responsible Parties, as follows:

- Marin County
- San Mateo County
- Monterey Bay Aquarium
- Hopkins Marine Station
- City of Monterey
- City of Pacific Grove
- Carmel by the Sea
- Pebble Beach Company
- Monterey County
- Caltrans

While the City of Monterey is a Responsible Party, it does not operate any storm runoff outfalls of its own that drain into an ASBS. It does, however, contribute runoff to an ASBS outfall operated by the City of Pacific Grove. Storm water, sediment, receiving water and reference site monitoring will be performed under this Scope of Work for Monterey Bay Aquarium and Hopkins Marine Station in compliance with the individual Draft Mitigated Negative Declaration documents issued to each. These two participants have other monitoring requirements for seawater discharges that are being performed outside this Scope of Work.

A. Core Monitoring

[1] It should be noted that two participants, National Park Service and California Department of Parks and Recreation, did not commit to participation in the Central Coast regional program. These State and Federal Agencies may contract separately to implement their monitoring requirements, but with a commitment that they use the same monitoring design, laboratories for sample analysis and provide their data for analysis with the other participants.

1. Runoff Flow Measurements
   Total annual storm runoff from each participant shall be estimated (modeled) by using measured rainfall and the amount of impervious area (to be provided by each participant) in each catchment. Targeted ground-truth measurements will be made to calibrate the model. This runoff modeling will permit estimates of total annual and event-specific loads for each participant.

2. Discharge Monitoring
   All outfalls ≥18 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria;
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin using salted-up water.

   All samples from outfalls ≥36 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms each year that are sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (ammonia, nitrate, urea and phosphate);
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin test using salted-up discharge water.

. **B. Receiving Water and Reference Monitoring**

1. Receiving Water Monitoring
   Receiving water (receiving water = in the surf zone at the point of contact between runoff and the ocean) at 11 large storm water outfalls selected to represent worst-case conditions shall be sampled as follows:
   a. Samples shall be collected before and during 3 storms in each of 2 years;
   b. Each sample shall be analyzed for oil and grease, total suspended solids, fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (i.e., nitrate, ammonia, urea, orthophosphate);
   c. Samples collected during storms shall be analyzed for critical life stage chronic toxicity with 3 marine species (sea urchin, mussel and giant kelp).

Specific locations of outfalls to be monitored are as follows:

>18”	>36”	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
	X[a]	Marin County	Trailhead at Agate Beach	-122.71059	37.89749	DUX009	-122.71058	37.89757
X		San Mateo County	Maritime Walk	-122.517537	37.531153	FIT012	-122.51756	37.53115
X		San Mateo County	Juliana	-122.516679	37.529092	FIT015	-122.51667	37.52915
X		San Mateo County	Distillery	-122.513269	37.517706	FIT028	-122.51355	37.51789
X		San Mateo County	Madrone	-122.511592	37.514237	FIT029	-122.51067	37.51246
	X[a]	San Mateo County	Weinke Way	-122.516958	37.528645	FIT016	-122.5173	37.5282
	X[a]	Pacific Grove	Lover’s at Ocean View	-121.91614	36.6246	PCG120	-121.91613	36.6246
X		Pacific Grove	Ocean View between Fountain Avenue and 15th Street	-121.914835	36.62381	PCG215	-121.91484	36.62378
	X[a b]	Pacific Grove	Ocean View between 12th Street and 13th Street	-121.913831	36.622873	PCG219	-121.91381	36.62281
	X	Pacific Grove	Ocean View at 15th Street	-121.91472	36.62339	PCG217	-121.91472	36.62339
X		Pacific Grove	Ocean View between Clyte Street and Naiad Street	-121.919561	36.627369	PCG069	-121.91955	36.62735
X		Pacific Grove	Northwest corner of Lover’s Point Park at Ocean View Boulevard	-121.916596	36.626648	PCG098	-121.91657	36.6266
X		Pacific Grove	Grand Avenue at Ocean View	-121.914835	36.62381	PCG215	-121.91484	36.62378
X		Pacific Grove	8th Street at Ocean View	-121.910348	36.621624	PCG229	-121.91036	36.62162
X	X[a c]	Pacific Grove	Ocean View at the Hopkins Marine Laboratory Stanford University	-121.90305	36.61897	PCG257 PCG258	-121.90305	36.61897
X		Pacific Grove	At Ocean View between 7th Street and 5th Street	-121.909634	36.621125	PCG230	-121.90995	36.62115
	X[a]	County of Monterey	TBD (12”)	-121.93286	36.54439	CAR029	-121.93286	36.54439
	X[a]	Carmel	4th Avenue	-121.93075	36.55610	CAR062	-121.93075	36.55605
X		Carmel	Ocean Avenue	-121.93030	36.55502	CAR061	-121.93033	36.55501
X		Carmel	8th Avenue	-121.92940	36.55250	CAR059	-121.92933	36.55275
X		Carmel	10h Avenue	-121.92898	36.55007	CAR050	-121.92904	36.55003
X		Carmel	11th Avenue	-121.92877	36.54883	CAR046	-121.92877	36.54881
X		Carmel	13th Avenue	-121.92903	36.54641	CAR037	-121.9291	36.5464
X		Carmel	parking lot at Del Mar near Ocean Avenue	-121.93003	36.55442	CAR060	-121.93006	36.55439
X		Carmel	9th Avenue	-121.92890	36.55117	CAR055	-121.92891	36.55117

>18”	>36”	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
X		Carmel	Scenic Road & Santa Lucia Avenue	-121.92962	36.54552	CAR093	-121.92968	36.54547
X		Carmel	12th Avenue	-121.92857	36.54765	CAR044	-121.92854	36.54767
X		Pebble Beach Company	Stillwater Pier	-121.942739	36.566625	CAR279	-121.94274	36.56655
X		Pebble Beach Company	18th Fairway PBGL	-121.948014	36.567247	CAR299	-121.94803	36.5672
X		Pebble Beach Company	18th Green PBGL / Lodge	-121.950131	36.567372	CAR221	-121.9501	36.56738
	X[a]	Pebble Beach Company	18th Green PBGL / Lodge	-121.950097	36.567383	CAR220	-121.95001	36.56741
	X	Pebble Beach Company	9th Green PBGL	-121.933397	36.560394	CAR076	-121.93337	36.5603
X[a]		Caltrans	Fitzgerald	-122.51771	37.53154	FIT011	-122.51771	37.53154
	X	Caltrans	Año Nuevo	-122.29297	37.10714	ANO035	-122.29297	37.10714
	X	Caltrans	Año Nuevo	-122.297	37.11084	ANO034	-122.297	37.11084
	X	Caltrans	Año Nuevo	-122.29764	37.1113	ANO032	-122.29764	37.1113
	X[a]	Caltrans	Año Nuevo	-122.29881	37.11202	ANO033	-122.29881	37.11202
	X	Caltrans	Año Nuevo	-122.30121	37.11334	ANO030	-122.30121	37.11334
	X	Caltrans	Carmel Bay	-121.9247	36.52453	CAR007	-121.9247	36.52453
X		Caltrans	Carmel Bay	-121.92457	36.52469	CAR026	-121.92457	36.52469

[a] = Sites selected for discharge receiving water monitoring

[b] = Monitoring of this site will be shared between the cities of Pacific Grove and Monterey

[c] = Monitoring of this site will be shared among Pacific Grove, Monterey Bay Aquarium and Hopkins Marine Station

2. Reference Site Monitoring – This component was eliminated from the original Scope of Work per Addendum 2 of the Request for Proposals dated 1/29/13.

3. Biological Monitoring

Recent studies have examined whether rocky intertidal communities vary in response to storm water discharges. Initial results from southern California suggest that 2 out 11 discharge sites exhibited community composition and abundances that could be consistent with storm water discharges (Raimondi *et al*, 2012). Consequently, monitoring of rocky intertidal communities shall be part of this program. The community structure in rocky intertidal habitats shall be measured once at 6 sites near ASBS storm water discharges and at 2 reference sites. Sampling shall involve point-contact estimates of substrate coverage by species along transects from the high intertidal zone to the low intertidal zone. Biological monitoring sites have been selected in consultation among permittees and regulatory agencies with consideration for the locations of sites with existing data.

Rocky intertidal communities will be sampled at the following sites:

ASBS	Sampling Site Name
Año Nuevo Point and Islands ASBS	Año Nuevo
Carmel Bay ASBS	Stillwater
Duxbury Reef ASBS	Bolinas Point
James V. Fitzgerald Marine Reserve ASBS	Fitzgerald Marine Reserve
Pacific Grove ASBS	Hopkins
Point Lobos Ecological Reserve ASBS	Point Lobos
Reference	Santa Maria Creek
Reference	Pigeon Point

4. Bioaccumulation Monitoring

California mussels are known to accumulate concentrations of pollutants in their tissues to concentrations much higher than found in the surrounding water. Consequently, they have been widely applied in studies of water quality status and trends (e.g., CCLEAN, 2012; Davis *et al*, 1999). Consequently, concentrations of contaminants shall be measured in resident mussels from sites near ASBS storm water discharges and from reference sites distant from urbanized ASBS areas utilizing existing programs, wherever possible, as follows:

a. Population composites of mussels of roughly uniform shell length shall be collected from each of 7 sites.

b. Each composite shall be thoroughly homogenized and analyzed for polynuclear aromatic hydrocarbons, polychlorinated biphenyls, polybrominated diphenyl ethers, chlorinated pesticides, pyrethroid pesticides and Lomefloxacin. These analytes are slightly different from those measured in sections A and B and, except for pyrethroids and Lomefloxacin, are consistent with those measured by CCLEAN.

The following sites will be sampled for bioaccumulation:

Sites
Point Reyes
Scott Creek
Laguna Creek

Sites
41st Avenue, Capitola
Lovers Point
Fanshell Overlook, 17-Mile Drive
Carmel River Beach
Total = 7

. **C. Mooring Field Operations (Pebble Beach Company only)**

1. Receiving Water

Ocean receiving water at the mooring facility shall be sampled as follows:

a. Samples shall be collected monthly from May through October on a high use weekend in each month.

b. Samples shall be analyzed for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

2. Sediments

Subtidal sediment shall be sampled, as follows:

a. Samples shall be collected annually from within the mooring field and below the pier.

b. Samples shall be analyzed for Ocean Plan Table 1 metals (for marine aquatic life beneficial use), acute toxicity (using *Eohaustorius estuarius)*, PAHs, and tributyltin.

. **D. General Requirements**

1. Ensure Data Quality

a. All sampling and analysis shall conform to a Sampling and Analysis Plan (SAP) and to a Quality Assurance Program Plan (QAPP) that are consistent with requirements of the State of California Surface Water Ambient Monitoring Program (SWAMP). At a minimum, sampling shall be conducted so as to ensure that samples are representative of the site and matrix being sampled and to minimize the introduction of extraneous contamination into samples. Ultra-clean techniques shall be used for collection samples to be analyzed for organic contaminants and trace metals.

b. Samples of the same type shall all be performed by the same laboratory and shall include appropriate lab blanks, certified reference materials, matrix spikes and matrix spike duplicates and reporting limits shall equal or be lower than those required by SWAMP.

c. An audit will be prepared describing laboratory performance relative to data quality objectives prescribed in the QAPP.

2. Ensure data availability

All chemical data will be uploaded to the California Environmental Data Exchange Network annually.

3. Reporting

Annual reports shall be delivered within 6 months of the completion of laboratory analyses. At a minimum, annual reports shall include a complete description of sampling methods, sites and analytical methods and analysis of data, including comparison of data from discharges and their respective receiving water sites with those from reference sites and the California Ocean Plan and shall be comparable to Schiff *et al* (2011). The annual report for the second year will be cumulative, including analysis of all data from both years to provide a characterization of storm water discharges and their effects on receiving water quality in Areas of Special Biological Significance.

4. Areas of Special Biological Significance Included

Storm runoff from program participants flows into the following ASBS:

- County of Marin
  - Duxbury Reef ASBS
- County of San Mateo
  - James V. Fitzgerald ASBS
- Monterey Bay Aquarium
  - Pacific Grove ASBS
- Hopkins Marine Station
  - Pacific Grove ASBS
- City of Monterey
  - Pacific Grove ASBS
- City of Pacific Grove
  - Pacific Grove ASBS
- City of Carmel
  - Carmel Bay ASBS
- Pebble Beach Company
  - Carmel Bay ASBS
- County of Monterey
  - Carmel Bay ASBS
- Caltrans
  - James V. Fitzgerald ASBS
  - Año Nuevo ASBS
  - Carmel Bay ASBS

Appendix B: Applied Marine Sciences (AMS) CCRMP Scope of Work

PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT TO PROVIDE PROFESSIONAL SERVICES is made and entered into on 3/22/13 by and between MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY, hereinafter referred to as "AGENCY," and APPLIED MARINE SCIENCES, Inc. a Corporation, hereinafter referred to as "PROFESSIONAL," as follows:

SECTION I: ADHERENCE TO TERMS OF AGREEMENT

AGENCY intends to literally interpret and strictly apply all terms and conditions of this Agreement. All approvals that are required to be in writing must be in writing to be valid and binding. PROFESSIONAL is encouraged to raise to AGENCY any questions with regard to interpretation or applicability of any provision of this Agreement before undertaking the work and to do so in an timely manner in order to avoid any delays in performing work assignments.

The AGENCY is the Program Administrator for the Central Coast Areas of Special Biological Significance Regional Monitoring Program (CC ASBS RMP). In accordance with the Memorandum of Agreement establishing the CC ASBS RMP, the Management Committee shall provide technical oversight and establish timelines and budgets for completion of Program tasks by Budget Component as specified in the MOA. The AGENCY shall follow the provisions of the Memorandum of Agreement in addition to this agreement.

SECTION II: EMPLOYMENT

AGENCY hereby employs PROFESSIONAL, as an independent contractor to furnish the professional services covered by this Agreement, and the Requests for Service issued under it, in accordance with the terms and conditions set forth below, and PROFESSIONAL hereby accepts such employment.

SECTION III: WORK ASSIGNMENTS

It is the intent of AGENCY and PROFESSIONAL to authorize the performance of work under this Agreement by executing a series of written work assignments setting forth the specific description, scope, and costs of the work to be performed. Such assignments shall be called "Requests For Service" (RFS) and shall be numbered consecutively. Each RFS, upon execution by PROFESSIONAL and by AGENCY, shall become and be considered as a part of this Agreement, and all provisions herein shall apply to said RFSs. The RFS form to be used is contained in Attachment A to this Agreement.

SECTION IV: TIME OF PERFORMANCE

A. General - Time is of the essence on the work of the RFSs issued under this Agreement. Therefore, PROFESSIONAL shall perform its services in a timely manner. Specific performance times shall be specified for each individual RFS under this Agreement. PROFESSIONAL shall make every reasonable effort, including assigning of additional personnel to the work and/or working overtime, to complete the authorized work within these stipulated time periods. The taking of such additional measures to complete the work within the stipulated time periods will not entitle PROFESSIONAL to additional compensation, if the work is being performed under the Lump Sum Payment Method, except as provided for in Section V, Paragraph B. It is understood that PROFESSIONAL began work towards the implementation of said Agreement upon notice of contract award on or about February 14, 2013 from AGENCY.

B. Subcontracted Services - For subcontracted services PROFESSIONAL shall contract for and schedule such services in a timely fashion in accordance with the requirements of the work, and shall be fully responsible for the cost, performance and quality of all work performed by its subcontractors.

C. Extensions of Time - The time of performance established for a particular RFS may be extended at any time prior to completion of the work by mutual agreement in writing between AGENCY and PROFESSIONAL.

SECTION V: COMPENSATION

A. General - AGENCY and PROFESSIONAL shall negotiate the costs and fees for each specific RFS. The method of payment of said costs and fees for this RFS is a Not-to-Exceed fee. The method of payment will depend on the specific conditions, the scope of work, and the services to be performed for each specific RFS. Any tasks beyond the scope of work attached to this RFS shall require approval by the ASBS RMP Management Committee and a separate RFS.

B. Not-to-Exceed - The fee for the "Project" is a not-to-exceed fee broken out for each separate task item identified within the RFS provided in March 2013 by Agency to Professional.

C. Terms of Payment - PROFESSIONAL shall invoice AGENCY monthly for work

completed during the previous month. Upon receipt, Agency shall forward all invoices to the Members of the Central Coast ASBS Regional Monitoring Program Member Entities for review and consideration. All invoices shall be due and payable within thirty (30) days of the date of receipt by Agency, provided all costs included in the invoice are adequately supported by documentation accompanying the invoice for each task within the scope of work by Budget Component in the ASBS RMP MOA. If payment is not made within sixty (60) days of the date of receipt by Agency, interest on the unpaid balance will accrue beginning with the sixty-first day at the rate of 1.0 percent per month, or the maximum interest rate permitted by law, whichever is the lesser. Such interest shall become due and payable at the time said overdue payment is made.

D. Penalty for Late Performance - The PROFESSIONAL is not responsible for delays in the schedule caused by events outside PROFESSIONAL's reasonable control. However, in the event PROFESSIONAL fails to properly complete work within thirty (30) days of the date such work is due (pursuant to schedules developed in accordance with Section IV of this Agreement), because of events within PROFESSIONAL's reasonable control, AGENCY SHALL reduce the total compensation established for the work of that RFS by ten percent (10%). Said reduction shall be deemed liquidated damages for the untimely performance of work required by this Agreement. PROFESSIONAL shall be deemed to have waived any claim for such amount by reason of his failure to perform in a timely fashion.

SECTION VI: TERMINATION

Notwithstanding the above, AGENCY reserves the right to terminate any RFS to this Agreement at any time prior to the completion of the services to be furnished by PROFESSIONAL under said RFS by giving a written Notice of Termination to PROFESSIONAL, in which event AGENCY shall pay PROFESSIONAL only for work done and direct costs incurred by PROFESSIONAL under said RFS prior to receipt of such notice of termination. Such costs will include reasonable costs to bring the work to a halt, and costs to deliver to AGENCY the documentation described in the following paragraph. Termination of a particular RFS will not affect any other operative RFS.

Upon receipt of a Notice of Termination, PROFESSIONAL shall (1) promptly discontinue all services affected (unless the notice directs otherwise), and (2) deliver to AGENCY all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by PROFESSIONAL in performing work under this Agreement,

whether completed or in process.

Upon termination AGENCY may take over the work and prosecute the same to completion by agreement with another party or otherwise. Any work taken over by AGENCY for completion will be completed at AGENCY's risk, and AGENCY will hold harmless PROFESSIONAL from all claims and damages arising out of improper use of PROFESSIONAL's work.

SECTION VII: AGENCY LIABILITY

PROFESSIONAL understands that this Agreement is with AGENCY alone, and that none of the members of AGENCY are liable for any sums which may be payable hereunder, or for any debts of AGENCY.

SECTION VIII: CHANGES

AGENCY may, at its discretion and from time to time, revise, correct, or modify the work to be performed under an RFS. All such changes shall be made formally and in writing to PROFESSIONAL. PROFESSIONAL shall comply with such changes. Should PROFESSIONAL determine that said changes will result in an increase or decrease in costs to PROFESSIONAL, these costs shall be evaluated by AGENCY and PROFESSIONAL for negotiation as to adjustment in the compensation due to PROFESSIONAL, and written agreement as to said adjustment shall be reached between the parties prior to commencement of any work that will cause an increase or decrease in PROFESSIONAL's costs. Any increased costs in excess of the Total Price incurred by PROFESSIONAL prior to execution of a written agreement covering said increased costs shall not be compensable.

SECTION IX: DUTIES OF AGENCY

AGENCY agrees to perform duties in connection with this Agreement and RFS issued under it as follows:

A. To assist PROFESSIONAL in obtaining any available information concerning location and details of facilities under control of AGENCY that may affect the work of an RFS, and to render reasonable assistance to PROFESSIONAL;

B. To examine within a reasonable time so as not to delay the work of PROFESSIONAL, all studies, reports, sketches, drawings, specifications, cost estimates, proposals and other documents presented by PROFESSIONAL to AGENCY for such purpose;

C. To give prompt written notice to PROFESSIONAL whenever AGENCY observes

or otherwise becomes aware of any defect in the work of PROFESSIONAL;

SECTION X: DATA FURNISHED BY AGENCY

For the purpose of aiding PROFESSIONAL in the performance of its obligations under this Agreement and RFS issued under it, AGENCY shall furnish PROFESSIONAL all relevant data in its possession and shall render all reasonable assistance to PROFESSIONAL in connection with its performance hereunder. AGENCY is responsible for the reasonable correctness of data so furnished, but it shall likewise be the responsibility of PROFESSIONAL to apply reasonable caution in its use and interpretation of the data and to promptly advise AGENCY of any incorrectness or suspected incorrectness in the data furnished.

AGENCY shall provide to PROFESSIONAL in a timely manner all materials, decisions, and direction which are necessary to the progress of the work and which are basically the prerogative of AGENCY, but which PROFESSIONAL is not required to determine or provide under the terms of this Agreement.

SECTION XI: RESPONSIBILITIES OF PROFESSIONAL

PROFESSIONAL is employed to render a professional service only, and any payments made to him are compensation solely for such services as he may render and recommendations he may make in carrying out the work. PROFESSIONAL shall follow professional practices to make findings, opinions, factual presentations, and professional advice and recommendations.

PROFESSIONAL's review or supervision of work prepared or performed by other individuals or firms employed directly by AGENCY shall not relieve those individuals or firms of complete responsibility for the adequacy of their work.

PROFESSIONAL shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all designs, drawings, specifications, reports and other services furnished by PROFESSIONAL under this Agreement. PROFESSIONAL shall, without additional compensation, correct or revise any errors, omissions or other deficiencies in his designs, drawings, specifications, reports and other services.

PROFESSIONAL shall perform such professional services as may be necessary to accomplish the work required to be performed under this Agreement and in accordance with this Agreement.

PROFESSIONAL will not publish, release and/or divulge any information, data and/or findings from services related to the scope of this Agreement to any third party without the prior written consent of AGENCY, or as required by the Scope of Work concerning uploading of data to required State of California water quality databases such as CEDEN or SWAMP. This restriction does not apply to popular publication of previously published technical matter. Publication pursuant to this Agreement may be produced independently or in collaboration with others; however, in all cases proper credit will be given to the efforts of those parties contributing to the publication. In the event no agreement is reached concerning the manner of publication or interpretation of results, any party may publish data after due notice and submission of the proposed manuscripts to the other parties. In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.

All data produced and/or compiled by PROFESSIONAL shall be considered confidential unless it can be obtained as public record and shall not be shared with a third party without the prior written consent of AGENCY. All financial, statistical, personal, technical, and other data and information relating to the AGENCY'S operations which is made available to the PROFESSIONAL in order to carry out this Agreement shall be presumed to be confidential. PROFESSIONAL shall protect said data and information from unauthorized use and disclosure by the observance of the same or more effective procedures, as the AGENCY requires of its own personnel. The PROFESSIONAL shall not, however, be required by this paragraph to keep confidential any data or information which is or becomes publicly available, is already rightfully in the PROFESSIONAL'S possession, is independently developed by the PROFESSIONAL outside the scope of the Agreement or is rightfully obtained from third parties.

Approval by AGENCY of drawings, designs, specifications, reports, and incidental engineering work or materials furnished hereunder shall not in any way relieve PROFESSIONAL of responsibility for the technical adequacy of his work. Neither AGENCY's review, approval or acceptance of, nor payment for, any of the services rendered under this Agreement shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement.

PROFESSIONAL shall be and remain liable in accordance with applicable law for all damages to AGENCY caused by PROFESSIONAL's negligent performance of any of the services furnished under this Agreement. The only exception in this regard will be for errors, omissions or other deficiencies to the extent attributable to AGENCY, AGENCY-furnished data or any third party not under the control of PROFESSIONAL. PROFESSIONAL shall not be responsible for any time delays in the project caused by circumstances beyond PROFESSIONAL's control.

SECTION XII: SUBCONTRACT

AGENCY has entered into this Agreement in order to receive the professional services of PROFESSIONAL. PROFESSIONAL will therefore not make an assignment to a third party of all or any portion of the services required of PROFESSIONAL under this Agreement and RFSs thereto without first obtaining the written consent of AGENCY or as identified in Professional's proposal, included in any heretofore RFS, or as identified in any cost proposal submitted and accepted by AGENCY. PROFESSIONAL may, however, make use of the part-time assistance of other experts possessing unique skills, the utilization of which will, in the opinion of PROFESSIONAL, enhance the quality of its service to AGENCY under this Agreement provided, however, that any such additional assistants, part-time or otherwise, shall be considered employees of PROFESSIONAL or of PROFESSIONAL's subcontractor(s), and the responsibility for same shall rest with PROFESSIONAL.

SECTION XIII: INDEPENDENT PROFESSIONAL

PROFESSIONAL shall perform the services hereunder as an independent contractor, and nothing herein contained shall be construed to be inconsistent with this relationship or status. The employees of PROFESSIONAL shall not be deemed to be the employees of AGENCY, and AGENCY shall have no right to control the physical conduct of PROFESSIONAL's employees.

SECTION XIV: USE OF DOCUMENTS

For all work performed under this Agreement and all RFSs thereto, PROFESSIONAL shall provide to AGENCY copies of all plans, drawings, specifications, studies, reports, analyses, calculations, and all other work products and supporting documentation developed in the course of performing the work authorized by these agreements. The costs for reproducing, assembling, and delivering said copies of these documents to AGENCY shall be considered to have been included in the price for performing each RFS, whether or not specifically stated therein. Unless stated otherwise in the RFS, one paper copy, and the electronic file on disc or on CD (e.g. in MS Word, MS Excel, etc.), of each document shall be provided by PROFESSIONAL to AGENCY. AGENCY shall have the right, and permission of PROFESSIONAL, to use any such document for any purpose which AGENCY deems appropriate. Use of documents for other than their intended purpose shall be at AGENCY's risk. AGENCY shall hold PROFESSIONAL harmless from all claims and damages arising out of improper use of said documents.

SECTION XV: AMENDMENTS AND SCOPE OF AGREEMENT

AGENCY hereby reserves the right to amend the provisions of this Agreement from time to time as may be in the best interest of AGENCY. Such amendments, upon acceptance by PROFESSIONAL and by AGENCY, shall become and be considered as part of this Agreement, and all provisions herein shall apply to such amendments.

This Agreement constitutes the entire agreement between the parties relative to the subject matters hereof, and no modifications thereof shall be effective unless and until such modifications are evidenced by written amendments, signed by both parties, to this Agreement. There are no understandings, agreements, conditions, representations, warranties, or promises with respect to the subject matter of this Agreement which are not actually contained in the Agreement, except those expressly contained in such written amendments.

SECTION XVI: SUCCESSORS AND ASSIGNS

This Agreement and all amendments thereto shall be binding upon and inure to the benefit of any successors and assigns of the respective parties hereto.

SECTION XVII: ATTORNEYS' FEES

If any legal action is necessary to enforce or interpret the terms or provisions of this Agreement and all amendments thereto, and the respective rights and duties of the parties hereunder, the prevailing party shall be entitled to reasonable attorneys' fees in addition to any other relief to which he may be entitled.

SECTION XVIII: JURISDICTION

This Agreement shall be administered and interpreted under the laws of the State of California. Jurisdiction of litigation arising from this Agreement shall be in this state. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of the Agreement shall be in full force and effect.

SECTION XIX: INSURANCE

PROFESSIONAL shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by PROFESSIONAL, his agents, representatives,

employees or subcontractors.

A. Minimum Scope and Limits of Insurance

PROFESSIONAL shall maintain the types of insurance with limits no less than those set forth below, and having no deductibles, except as noted.

The coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence Form CG 0001).
2. Insurance Services Office Form No. CA 0001 covering Automobile Liability, Code 1 (any auto).
3. Workers Compensation insurance as required by the State of California and Employer's Liability Insurance.
4. Errors and Omissions Liability insurance appropriate to the consultant's profession. For architects and engineers this coverage shall be endorsed to include contractual liability.

Required coverage:

1. General Liability Insurance: Combined single limit of $1,000,000 per occurrence and $2,000,000 annual aggregate for bodily injury, personal injury, and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability Insurance: $1,000,000 per accident for bodily injury and property damage.

3. Employer's Liability Insurance: $1,000,000 per accident for bodily injury or disease. If PROFESSIONAL has no employees, this coverage is not required.

4. Workers' Compensation Insurance: As required by the State of California.

B. Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by AGENCY before any work under this Agreement is performed.

C. Acceptability of Insurers

Insurance is to be placed with insurers with a current A. M. Best's rating of no less than A: VII, unless otherwise acceptable to AGENCY.

D. Verification of Coverage

PROFESSIONAL shall furnish AGENCY with original certificates and amendatory endorsements effecting coverage required by this section. The endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements are to be received and approved by AGENCY before work commences. If this is not possible due to time constraints prior to commencement of work, PROFESSIONAL may initially furnish Certificates of Insurance in lieu of endorsements, as long as the endorsements are provided within forty-five (45) days from the date of execution of this Agreement.

E. Subcontractors

PROFESSIONAL shall include all subcontractors as insureds under its policies or shall furnish separate evidence of coverage and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein, or as approved by AGENCY.

SECTION XX: INDEMNIFICATION

PROFESSIONAL shall indemnify and hold harmless AGENCY and its officers, officials, employees and agents from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgements of every nature and description brought or recoverable against it or them by reason of any negligent act, negligent error, or negligent omission of PROFESSIONAL, his agents, or employees for work performed under this Master Agreement.

SECTION XXI: WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person or by mail to the individuals and at the addresses listed below:

A. AGENCY:
General Manager
Monterey Regional Water
Pollution Control Agency
5 Harris Court, Building D
Monterey, CA 93940

B. PROFESSIONAL:
Dane Hardin
Vice President

Applied Marine Sciences, Inc.
911 Center Street, Suite A
Santa Cruz, CA 95060

IN WITNESS WHEREOF, the parties hereto have executed this Agreement consisting of fourteen (14) pages and one (1) Attachment in duplicate on the date hereinabove written.

AGENCY	PROFESSIONAL
MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY	APPLIED MARINE SCIENCES
By _____	By _____
Keith E. Israel General Manager/Secretary to the Board of Directors	Dane Hardin Vice President

ATTACHMENT A

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY
REQUEST FOR SERVICE

DATE: March 20, 2013 **RFS NO**. 2013- 1
(*To be filled in by AGENCY*)

TO: Dane Hardin, Applied Marine Sciences **FROM**: Douglas Dowden, MRWPCA

Services Needed and Purpose:

Professional shall provide storm water and receiving water monitoring during the 2013 – 2014 and 2014 – 2015 storm seasons, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This Scope of Work shall include a technical program element which shall include: core monitoring and receiving water and reference site monitoring, mooring field operations site monitoring and general requirements as specified within the Scope of Work detailed herein.

Completion Date: June 2015

Method of Compensation: Not-to-Exceed (As defined in Section V of Agreement.)

Total Price Authorized by this RFS: $1,365,253.00 (Cost is authorized only when evidenced by signature below.)

Total Price may not be exceeded without prior written authorization by AGENCY in accordance with Section V. COMPENSATION.

Requested by: Douglas Dowden Date: 5/23/13
Stormwater Program Manager

Authorized by:_____ Date:_____
AGENCY General Manager

Agreed to by: _____ Date:_____
PROFESSIONAL

Detailed Scope of Work for RFS No.2013-1:

The Central Coast ASBS Regional Monitoring Program will be implemented during the 2013–2014 and 2014-2015 storm seasons and includes most ASBS responsible parties[1] on the Central Coast, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. This Scope of Work for the Central Coast ASBS Regional Monitoring Program has been approved by staff from State and Regional Water Boards, as well as the responsible parties discharging storm water into Areas of Special Biological Significance (ASBS).

II. Technical Program

In all specifications for storm water and receiving water monitoring that follow, the minimum requirement for a storm shall satisfy the criteria specified in the Special Protections (i.e., >0.10 inches of rainfall resulting in runoff, >72 hours from the previous storm). Moreover, every attempt shall be made to satisfy the criteria for storm runoff monitoring conducted by the Monterey Bay National Marine Sanctuary (i.e., sheeting water on roadways, heavy flow through the storm drain system and conductivity levels less than 1000 micro Siemens (µS) and declining) and ensure sufficient time after the initiation of rainfall to allow for time of concentration to include flow runoff from all parts of the catchment or watershed.

This Scope of Work covers monitoring requirements specified in the Special Protections for 12 participants[1] designated as Responsible Parties, as follows:

- Marin County
- San Mateo County
- Monterey Bay Aquarium
- Hopkins Marine Station
- City of Monterey
- City of Pacific Grove
- Carmel by the Sea
- Pebble Beach Company
- Monterey County
- Caltrans

While the City of Monterey is a Responsible Party, it does not operate any storm runoff outfalls of its own that drain into an ASBS. It does, however, contribute runoff to an ASBS outfall operated by the City of Pacific Grove. Storm water, sediment, receiving water and reference site monitoring will be performed under this Scope of Work for Monterey Bay Aquarium and Hopkins Marine Station in compliance with the individual Draft Mitigated Negative Declaration documents issued to each. These two participants have other monitoring requirements for seawater discharges that are being performed outside this Scope of Work.

A. Core Monitoring

[1] It should be noted that two participants, National Park Service and California Department of Parks and Recreation, did not commit to participation in the Central Coast regional program. These State and Federal Agencies may contract separately to implement their monitoring requirements, but with a commitment that they use the same monitoring design, laboratories for sample analysis and provide their data for analysis with the other participants.

1. Runoff Flow Measurements
   Total annual storm runoff from each participant shall be estimated (modeled) by using measured rainfall and the amount of impervious area (to be provided by each participant) in each catchment. Targeted ground-truth measurements will be made to calibrate the model. This runoff modeling will permit estimates of total annual and event-specific loads for each participant.

2. Discharge Monitoring
   All outfalls ≥18 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria;
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin using salted-up water.

   All samples from outfalls ≥36 inches shall be sampled, as follows:
   a. 1 storm in each of 2 years, except for discharges at receiving water sites, which shall be sampled in the same 3 storms each year that are sampled for receiving water;
   b. Each sample shall be analyzed for oil and grease, total suspended solids and fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (ammonia, nitrate, urea and phosphate);
   c. Annual samples (1 storm in each year) shall be analyzed for critical life stage chronic toxicity with a sea urchin test using salted-up discharge water.

. **B. Receiving Water and Reference Monitoring**

1. Receiving Water Monitoring
   Receiving water (receiving water = in the surf zone at the point of contact between runoff and the ocean) at 11 large storm water outfalls selected to represent worst-case conditions shall be sampled as follows:
   a. Samples shall be collected before and during 3 storms in each of 2 years;
   b. Each sample shall be analyzed for oil and grease, total suspended solids, fecal indicator bacteria, California Ocean Plan trace metals, polynuclear aromatic hydrocarbons, organophosphorous pesticides, pyrethroid pesticides and nutrients (i.e., nitrate, ammonia, urea, orthophosphate);
   c. Samples collected during storms shall be analyzed for critical life stage chronic toxicity with 3 marine species (sea urchin, mussel and giant kelp).

Specific locations of outfalls to be monitored are as follows:

>18”	>36”	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
	X[a]	Marin County	Trailhead at Agate Beach	-122.71059	37.89749	DUX009	-122.71058	37.89757
X		San Mateo County	Maritime Walk	-122.517537	37.531153	FIT012	-122.51756	37.53115
X		San Mateo County	Juliana	-122.516679	37.529092	FIT015	-122.51667	37.52915
X		San Mateo County	Distillery	-122.513269	37.517706	FIT028	-122.51355	37.51789
X		San Mateo County	Madrone	-122.511592	37.514237	FIT029	-122.51067	37.51246
	X[a]	San Mateo County	Weinke Way	-122.516958	37.528645	FIT016	-122.5173	37.5282
	X[a]	Pacific Grove	Lover’s at Ocean View	-121.91614	36.6246	PCG120	-121.91613	36.6246
X		Pacific Grove	Ocean View between Fountain Avenue and 15th Street	-121.914835	36.62381	PCG215	-121.91484	36.62378
	X[a b]	Pacific Grove	Ocean View between 12th Street and 13th Street	-121.913831	36.622873	PCG219	-121.91381	36.62281
	X	Pacific Grove	Ocean View at 15th Street	-121.91472	36.62339	PCG217	-121.91472	36.62339
X		Pacific Grove	Ocean View between Clyte Street and Naiad Street	-121.919561	36.627369	PCG069	-121.91955	36.62735
X		Pacific Grove	Northwest corner of Lover’s Point Park at Ocean View Boulevard	-121.916596	36.626648	PCG098	-121.91657	36.6266
X		Pacific Grove	Grand Avenue at Ocean View	-121.914835	36.62381	PCG215	-121.91484	36.62378
X		Pacific Grove	8th Street at Ocean View	-121.910348	36.621624	PCG229	-121.91036	36.62162
X	X[a c]	Pacific Grove	Ocean View at the Hopkins Marine Laboratory Stanford University	-121.90305	36.61897	PCG257 PCG258	-121.90305	36.61897
X		Pacific Grove	At Ocean View between 7th Street and 5th Street	-121.909634	36.621125	PCG230	-121.90995	36.62115
	X[a]	County of Monterey	TBD (12”)	-121.93286	36.54439	CAR029	-121.93286	36.54439
	X[a]	Carmel	4th Avenue	-121.93075	36.55610	CAR062	-121.93075	36.55605
X		Carmel	Ocean Avenue	-121.93030	36.55502	CAR061	-121.93033	36.55501
X		Carmel	8th Avenue	-121.92940	36.55250	CAR059	-121.92933	36.55275
X		Carmel	10h Avenue	-121.92898	36.55007	CAR050	-121.92904	36.55003
X		Carmel	11th Avenue	-121.92877	36.54883	CAR046	-121.92877	36.54881
X		Carmel	13th Avenue	-121.92903	36.54641	CAR037	-121.9291	36.5464
X		Carmel	parking lot at Del Mar near Ocean Avenue	-121.93003	36.55442	CAR060	-121.93006	36.55439
X		Carmel	9th Avenue	-121.92890	36.55117	CAR055	-121.92891	36.55117

>18”	>36”	Responsible Party	Location	Longitude	Latitude	Nearest SWRCB Site		
						ID	Longitude	Latitude
X		Carmel	Scenic Road & Santa Lucia Avenue	-121.92962	36.54552	CAR093	-121.92968	36.54547
X		Carmel	12th Avenue	-121.92857	36.54765	CAR044	-121.92854	36.54767
X		Pebble Beach Company	Stillwater Pier	-121.942739	36.566625	CAR279	-121.94274	36.56655
X		Pebble Beach Company	18th Fairway PBGL	-121.948014	36.567247	CAR299	-121.94803	36.5672
X		Pebble Beach Company	18th Green PBGL / Lodge	-121.950131	36.567372	CAR221	-121.9501	36.56738
	X[a]	Pebble Beach Company	18th Green PBGL / Lodge	-121.950097	36.567383	CAR220	-121.95001	36.56741
	X	Pebble Beach Company	9th Green PBGL	-121.933397	36.560394	CAR076	-121.93337	36.5603
X[a]		Caltrans	Fitzgerald	-122.51771	37.53154	FIT011	-122.51771	37.53154
	X	Caltrans	Año Nuevo	-122.29297	37.10714	ANO035	-122.29297	37.10714
	X	Caltrans	Año Nuevo	-122.297	37.11084	ANO034	-122.297	37.11084
	X	Caltrans	Año Nuevo	-122.29764	37.1113	ANO032	-122.29764	37.1113
	X[a]	Caltrans	Año Nuevo	-122.29881	37.11202	ANO033	-122.29881	37.11202
	X	Caltrans	Año Nuevo	-122.30121	37.11334	ANO030	-122.30121	37.11334
	X	Caltrans	Carmel Bay	-121.9247	36.52453	CAR007	-121.9247	36.52453
X		Caltrans	Carmel Bay	-121.92457	36.52469	CAR026	-121.92457	36.52469

[a] = Sites selected for discharge receiving water monitoring

[b] = Monitoring of this site will be shared between the cities of Pacific Grove and Monterey

[c] = Monitoring of this site will be shared among Pacific Grove, Monterey Bay Aquarium and Hopkins Marine Station

2. Reference Site Monitoring – This component was eliminated from the original Scope of Work per Addendum 2 of the Request for Proposals dated 1/29/13.

3. Biological Monitoring

Recent studies have examined whether rocky intertidal communities vary in response to storm water discharges. Initial results from southern California suggest that 2 out 11 discharge sites exhibited community composition and abundances that could be consistent with storm water discharges (Raimondi *et al*, 2012). Consequently, monitoring of rocky intertidal communities shall be part of this program. The community structure in rocky intertidal habitats shall be measured once at 6 sites near ASBS storm water discharges and at 2 reference sites. Sampling shall involve point-contact estimates of substrate coverage by species along transects from the high intertidal zone to the low intertidal zone. Biological monitoring sites have been selected in consultation among permittees and regulatory agencies with consideration for the locations of sites with existing data.

Rocky intertidal communities will be sampled at the following sites:

ASBS	Sampling Site Name
Año Nuevo Point and Islands ASBS	Año Nuevo
Carmel Bay ASBS	Stillwater
Duxbury Reef ASBS	Bolinas Point
James V. Fitzgerald Marine Reserve ASBS	Fitzgerald Marine Reserve
Pacific Grove ASBS	Hopkins
Point Lobos Ecological Reserve ASBS	Point Lobos
Reference	Santa Maria Creek
Reference	Pigeon Point

4. Bioaccumulation Monitoring

California mussels are known to accumulate concentrations of pollutants in their tissues to concentrations much higher than found in the surrounding water. Consequently, they have been widely applied in studies of water quality status and trends (e.g., CCLEAN, 2012; Davis *et al*, 1999). Consequently, concentrations of contaminants shall be measured in resident mussels from sites near ASBS storm water discharges and from reference sites distant from urbanized ASBS areas utilizing existing programs, wherever possible, as follows:

a. Population composites of mussels of roughly uniform shell length shall be collected from each of 7 sites.

b. Each composite shall be thoroughly homogenized and analyzed for polynuclear aromatic hydrocarbons, polychlorinated biphenyls, polybrominated diphenyl ethers, chlorinated pesticides, pyrethroid pesticides and Lomefloxacin. These analytes are slightly different from those measured in sections A and B and, except for pyrethroids and Lomefloxacin, are consistent with those measured by CCLEAN.

The following sites will be sampled for bioaccumulation:

Sites
Point Reyes
Scott Creek
Laguna Creek

Sites
41st Avenue, Capitola
Lovers Point
Fanshell Overlook, 17-Mile Drive
Carmel River Beach
Total = 7

. **C. Mooring Field Operations (Pebble Beach Company only)**

1. Receiving Water

Ocean receiving water at the mooring facility shall be sampled as follows:

a. Samples shall be collected monthly from May through October on a high use weekend in each month.

b. Samples shall be analyzed for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

2. Sediments

Subtidal sediment shall be sampled, as follows:

a. Samples shall be collected annually from within the mooring field and below the pier.

b. Samples shall be analyzed for Ocean Plan Table 1 metals (for marine aquatic life beneficial use), acute toxicity (using *Eohaustorius estuarius)*, PAHs, and tributyltin.

. **D. General Requirements**

1. Ensure Data Quality

a. All sampling and analysis shall conform to a Sampling and Analysis Plan (SAP) and to a Quality Assurance Program Plan (QAPP) that are consistent with requirements of the State of California Surface Water Ambient Monitoring Program (SWAMP). At a minimum, sampling shall be conducted so as to ensure that samples are representative of the site and matrix being sampled and to minimize the introduction of extraneous contamination into samples. Ultra-clean techniques shall be used for collection samples to be analyzed for organic contaminants and trace metals.

b. Samples of the same type shall all be performed by the same laboratory and shall include appropriate lab blanks, certified reference materials, matrix spikes and matrix spike duplicates and reporting limits shall equal or be lower than those required by SWAMP.

c. An audit will be prepared describing laboratory performance relative to data quality objectives prescribed in the QAPP.

2. Ensure data availability

All chemical data will be uploaded to the California Environmental Data Exchange Network annually.

3. Reporting

Annual reports shall be delivered within 6 months of the completion of laboratory analyses. At a minimum, annual reports shall include a complete description of sampling methods, sites and analytical methods and analysis of data, including comparison of data from discharges and their respective receiving water sites with those from reference sites and the California Ocean Plan and shall be comparable to Schiff *et al* (2011). The annual report for the second year will be cumulative, including analysis of all data from both years to provide a characterization of storm water discharges and their effects on receiving water quality in Areas of Special Biological Significance.

4. Areas of Special Biological Significance Included

Storm runoff from program participants flows into the following ASBS:

- County of Marin
  - Duxbury Reef ASBS
- County of San Mateo
  - James V. Fitzgerald ASBS
- Monterey Bay Aquarium
  - Pacific Grove ASBS
- Hopkins Marine Station
  - Pacific Grove ASBS
- City of Monterey
  - Pacific Grove ASBS
- City of Pacific Grove
  - Pacific Grove ASBS
- City of Carmel
  - Carmel Bay ASBS
- Pebble Beach Company
  - Carmel Bay ASBS
- County of Monterey
  - Carmel Bay ASBS
- Caltrans
  - James V. Fitzgerald ASBS
  - Año Nuevo ASBS
  - Carmel Bay ASBS

Appendix C: Pollutant Load Reduction Targets and Outfall Prioritization Technical Memo

FALL CREEK ENGINEERING, INC.
Civil • Environmental • Water Resource Engineering and Sciences
Tel. (831) 426-9054 1525 Seabright Avenue, Santa Cruz, CA 95062 Fax. (831) 426-4932

September 19, 2016

City of Pacific Grove
Attn: Daniel Gho, Public Works Director
300 Forest Avenue
Pacific Grove, CA 93950

City of Monterey
Attn: Tricia Wotan, Environmental Regulations Manager
580 Pacific Street
Monterey, CA 93940

Subject: **Pollutant Load Reduction Targets and Outfall Prioritization Summary and Recommendations**
Pacific Grove ASBS Compliance Plan Update
Cities of Pacific Grove and Monterey

Dear Daniel and Tricia:

Fall Creek Engineering Inc. (FCE) is pleased to present to you this summary of our review of the Central California Regional Monitoring Program (CCRMP) results for the Pacific Grove Area of Biological Significance (ASBS). The CCRMP collected samples consistently from three locations in the Pacific Grove ASBS over three storm seasons, with the purpose of meeting the Special Protections for Traditional and Non-Traditional Small MS4 ASBS Discharges (Special Protections) Monitoring Requirements[1]. The measured concentrations from storm and pre-storm samples collected within the ASBS were compared to concentrations from reference samples according to the ASBS Special Protections Flow Chart to Determine Compliance with Natural Water Quality[2]. The purpose of this memo is to present the findings of the CCRMP monitoring program for the Pacific Grove ASBS and identify the priority outfalls based on the CCRMP and supporting data.

METHODOLOGY

1. Central California ASBS Regional Monitoring Program (CCRMP)

The CCRMP is a collaboration of various agencies and entities, covering an area from Big Sur, in Monterey County, to Pt. Reyes, in Marin County. The project includes monitoring requirements (i.e. water sampling and analysis for various pollutants of concern) specified in the Special Protections for ten (10) participants designated as Responsible Parties that include: The Counties of Marin, Monterey, San Mateo; the Cities of Carmel-by-the-Sea, Monterey, Pacific Grove; Caltrans, Hopkins Marine Station, Monterey Bay Aquarium and the Pebble Beach Company. The Scope of Work for the CCRMP was developed through discussions with staff from State and Regional Water Boards, as well as the responsible parties discharging stormwater into ASBS.

[1] Section IV of Attachment C of the Phase II Small MS4 General Permit
[2] Section IV.C. of Attachment C of the Phase II Small MS4 General Permit

In early 2013, a CCRMP Memorandum of Agreement was executed between all parties to perform a coordinated monitoring effort to investigate concentrations of pollutants of concern at particular freshwater reference sites, ocean receiving water sites, and urban stormwater discharge sites. Additionally, the program includes biological and bioaccumulation monitoring. The purposes of the CCRMP are to leverage limited agency funds to address shared monitoring compliance needs by providing consistent methods and data quality among all participants, while also performing the scientific work required by the Special Protections in a manner so the final data can be compared to or contrasted with those from other regional efforts along the California coastline.

Applied Marine Sciences (AMS) was selected to direct and perform the scientific monitoring needs of the CCRMP, including field and follow-up analytical and statistical work. Monterey Bay National Marine Sanctuary staff and volunteers also assist with portions of the ASBS monitoring program.[3] Six samples were collected at each of three locations within the Pacific Grove ASBS over the course of three years starting in February 2014 through March 2016. The sampling locations and sample collection dates are summarized in Figure 1 and Table 1, respectively.

2. Determination of Exceedances

The process for determining if natural ocean water quality is exceeded in the Pacific Grove ASBS is outlined in the Special Protections[4]. Specifically, "if the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the Permittee must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded." A Flow Chart to Determine Compliance with Natural Water Quality[5] summarizes this process of identifying exceedances and is reproduced in Figure 2.

The CCRMP developed an operational natural water quality for the Central Coast through the use of water quality data from "reference sites". The "reference" data and subsequent constituent concentration ranges define an operational natural water quality envelope that sets an 85th percentile threshold of reference water quality data. The 85th percentile threshold was used to analyze water quality monitoring results in the Pacific Grove ASBS and determine if natural water quality exceedances occurred.

Reference sites were selected in regions north and south of the Pacific Grove ASBS as part of the CCRMP. The reference site locations are in watersheds with greater than 90 percent open space and no listed water quality impairments (AMS, 2014). The northern three (3) reference sites span the coastline from San Mateo County into Monterey Bay and the southern six (6) reference sites are distributed along the open coast from Malpaso Creek to Big Creek. The northern reference sites are in the surf zone at the mouths of Tunitas Creek, Gazos Creek, and Scott Creek. The southern reference sites are in the surf zone at the mouths of Malpaso Creek, Soberanes Creek,

[3] The complete program methodology is presented in the AMS Scope of Work.
[4] Section I.A.3.e of Attachment C of the Phase II Small MS4 General Permit
[5] Section IV.C. of Attachment C of the Phase II Small MS4 General Permit

Doud Creek, Big Sur River, Sycamore Creek, and Big Creek. Table 2 summarizes the preliminary and best available estimate of the 85th percentile reference threshold for the CCRMP northern, southern, and combined northern and southern reference sites. There are clear differences in constituent concentrations between the northern and southern reference sub-regions; every constituent, except silver, had a higher concentration in the northern sub-region.[6]

To evaluate which reference data set is most applicable to the Pacific Grove ASBS, the dominant geologic units and rock types within the drainage areas to each reference site were compared to the Pacific Grove ASBS. Table 3 summarizes the dominant geologic types within each reference site watershed and within the Pacific Grove ASBS based on California Geologic Map Data available from the United States Geologic Society (USGS)[7]. The northern reference sites are dominated by sandstone and mudstone, whereas the southern reference sites have a range of dominant rock types. Malpaso, Soberanes, and Doud Creeks are dominated by granodiorite and quartz monzonite, the Big Sur River and Big Creek by plutonic rock and gneiss, and Sycamore Creek by sandstone and mudstone. The Pacific Grove ASBS watershed is approximately 37% sandstone and mudstone and 63% granodiorite and quartz monzonite. These geologic units are located in the northern and southern reference sites, therefore based on this evaluation criteria, the combined north/south 85th percentile threshold appears applicable.

FCE was advised by AMS that due to technical and logistical difficulties the sampling regime for the three most southern sampling sites on the Big Sur Coast (Big Sur River, Big Creek and Sycamore) were not sampled with a frequency to reliably include in the combined 85th percentile threshold reference data set.[8] In coordination with nearby ASBS permittees the six most northern (6N) reference sites were considered the most reliable to establish as the 85th percentile threshold for the Pacific Grove ASBS. The six northern (6N) 85th percentile benchmark threshold data is presented in Table 2 and has been applied to evaluate natural water quality exceedances within the Pacific Grove ASBS.

3. Approach to Compliance

If it is determined that an exceedance of the natural water quality has occurred, the Special Protections require that "BMPs to control stormwater runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

(1) Table B[9] Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan;

or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges. The baseline for the reduction is the effective date of the Exception. The baseline for these

[6] AMS. August 1, 2016. Central Coast Regional ASBS Monitoring Program, Final Report 2013-2016.
[7] https://mrdata.usgs.gov/geology/state/state.php?state=CA
[8] Personal Communication from Dane Hardin, AMS, September 15, 2016.
[9] In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.

determinations is the effective date of the Exception, and the reductions must be achieved and documented within six (6) years of the effective date." [10]

For the constituents analyzed in the CCRMP, Table 2 of this report identifies the Instantaneous Maximum Water Quality Objectives, if available, or notes that it is not available (NA). For the constituents analyzed in the CCRMP that do not have an Instantaneous Maximum Water Quality Objectives in Table B, it is assumed that a 90% reduction in pollutant loading during storm events is the required approach to compliance. FIB Ocean Plan objectives also were developed to protect human health from diseases transmitted via contact with water[11] and are also listed in Table 2.

RESULTS

Samples were analyzed for constituents in six (6) categories: (1) trace metals, (2) polynuclear aromatic hydrocarbons, (3) pyrethroid and organophosphate pesticides, (4) toxicity, (5) nutrients and conventional constituents, and (6) fecal indicator bacteria.

1. Trace Metals

Trace Metals, sometimes called heavy metals, can be toxic at elevated concentrations. They are found naturally in rocks and soils and also can be elevated in association with anthropogenic sources such as architectural, construction, automotive, and other non-point source pollution.

CCRMP Results. Attachment 1 presents the CCRMP Trace Metal sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS. Analytes included Mercury (Hg), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Nickel (Ni), Selenium (Se), Silver (Ag), and Zinc (Zn).

Determination of Exceedances. Table 4 summarizes the results of applying the flow chart (Figure 2) to determine exceedances to each of the constituents and indicates if an exceedance was detected. Exceedances of the natural ocean water quality were identified for Mercury, Arsenic, Copper, Lead, Silver, and Zinc.

Approach to Compliance. Table B[12] Instantaneous Maximum Water Quality Objectives are available for all the measured Trace Metals (Table 2). For all samples where an exceedance was identified the measured concentration was less than the Instantaneous Maximum Water Quality Objectives. Therefore, though sample concentrations exceeded the 85th percentile reference benchmark concentrations, they were still in compliance with the Special Protections and no additional BMPs are required specific to Trace Metals.

2. Polynuclear Aromatic Hydrocarbons (PAHs)

Polynuclear aromatic hydrocarbons, or PAHs, are compounds found in petroleum and combustion products and can be toxic at elevated concentrations. PAHs can originate from petroleum spills, natural seeps, vehicle leakage, and various combustion sources.

[10] March 20, 2018 will be six (6) years after the effective date of the Exception.
[11] AMS. August 1, 2016. Central Coast Regional ASBS Monitoring Program, Final Report 2013-2016.
[12] In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.

CCRMP Results. Attachment 2 presents the CCRMP PAHs sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS.

Determination of Exceedances. Table 5 summarizes the results of applying the flow chart (Figure 2) to determine if an exceedance was identified. Exceedances of the natural ocean water quality were identified for PAHs.

Approach to Compliance. A Table B[13] Instantaneous Maximum Water Quality Objectives is not available for PAHs, but a 30-day average objective is (Table 2). PAHs were detected in nine (9) storm samples and five (5) were greater than the 30-day average. A 90% reduction in pollutant loading during storm events is the required approach to compliance. The 90% reduction target has been achieved at both 203PAC040 (Greenwood) and 203PAC010 (Hopkins PG), but not at 203PAC080 (Forest). For each site, Attachment 2 presents the 90% pollution load reduction target based on the PAH concentration in the first sample collected in February 2014 and the pollutant load for each of the six sample events. The pollutant loads at 203PAC040 (Greenwood) and 203PAC010 (Hopkins PG) are below the 90% pollutant load target and therefore the constituent at these sites is considered in compliance.

3. Pyrethroid and Organophosphate Pesticides

Pyrethroid and Organophosphate pesticides are known to cause toxicity to aquatic organisms in urban streams. Pyrethroid pesticides were primarily developed to replace organophosphate pesticides, which are noted for causing significant toxicity in ambient waters. Pyrethroids are widely applied in agricultural and residential land uses.

CCRMP Results. Attachment 3 presents the CCRMP pyrethroid and organophosphate pesticides sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS.

Determination of Exceedances. Table 6 summarizes the results of applying the flow chart (Figure 2) to determine if an exceedance was identified. Exceedances of the natural ocean water quality were identified for one organophosphate insecticide, Malathion at 203PAC040 (Greenwood).

Approach to Compliance. A Table B[14] Instantaneous Maximum Water Quality Objectives is not available for Malathion, therefore a 90% reduction in pollutant loading during storm events is the required approach to compliance. Attachment 3 presents the 90% pollution load reduction target based on the Malathion concentration in the first sample collected in February 2014 and the pollutant load for each of the six sample events. Malathion concentrations have reduced below the 90% pollutant load target at 203PAC040 and therefore the constituent is considered in compliance.

4. Toxicity

To determine whether sample waters affect natural biological processes, toxicity tests are used to assess chronic impacts to aquatic organisms. Using standardized procedures, success of sea urchin

[13]In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.
[14]Ibid.

egg fertilization, development of bivalve embryos, and germination and growth of kelp are compared between controls and sample water to determine whether sampled waters cause unreasonable toxicity. Toxicity measured in receiving water samples suggest that marine biological resources could be affected by ASBS discharges.[15]

CCRMP Results. Attachment 4 presents the CCRMP chronic toxicity sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS.

Determination of Exceedances. Table 7 summarizes the results of applying the flow chart (Figure 2) to determine if an exceedance was identified. An exceedance was defined as two consecutive samples failing the toxicity test. An exceedance of the natural ocean water quality was identified for one toxicity measurement: urchin fertilization at 203PAC010 (Hopkins PG).

Approach to Compliance. A Table B[16] Instantaneous Maximum Water Quality Objective is not available for chronic toxicity; therefore, a 90% reduction in pollutant loading during storm events is the required approach to compliance. The consecutive failed toxicity tests were measured in February 2014 and no subsequent tests over the next two years and four storm samples failed at this location, therefore the site is considered in compliance in regards to toxicity.

5. Nutrients and Conventional Constituents

Nutrients include the species nitrate, nitrogen, ammonia, nitrose, urea, and orthophosphate, all of which can contribute to the growth of harmful algae. Sources of nutrients include runoff of residential, urban, and agricultural fertilizers, as well as metabolic excretory waste products from animals. Total suspended solids (TSS), and oil and grease are conventional constituents that can be associated with erosion (reducing water clarity) and improper maintenance of grease traps, respectively.

CCRMP Results. Attachment 5 presents the CCRMP nutrients and conventional constituent sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS.

Determination of Exceedances. Table 8 summarizes the results of applying the flow chart (Figure 2) to determine if an exceedance was identified. Exceedances of the natural ocean water quality were identified for urea and organophosphate as P.

Approach to Compliance. Table B[17] Instantaneous Maximum Water Quality Objectives are not available for urea or organophosphate; therefore, a 90% reduction in pollutant loading during storm events is the required approach to compliance. Attachment 5 presents the 90% pollution load reduction targets for urea based on concentrations in the first sample collected in February 2014 and the pollutant load for each of the six sample events. The last sample collected in March 2016 for each site had no detected concentration of urea, therefore bringing the constituent into compliance through a 90% reduction in pollutant load.

6. Fecal Indicator Bacteria (FIB)

[15] Applied Marine Sciences (AMS). August 1, 2016. Central California Regional Monitoring Program Stormwater Discharges into Areas of Special Biological Significance, Final Report (2013-2016).

[16] In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.

[17] Ibid.

Three fecal indicator bacteria (FIB) were measured, including Fecal Coliforms, Enterococcus, and E. coli. They are used as indicators of fecal contamination. FIBs can be elevated due to sewage leakage and domestic animal and wildlife feces.

CCRMP Results. Attachment 6 presents the CCRMP FIB sampling results in graphical and table format for the three sampling locations in the Pacific Grove ASBS. .

Determination of Exceedances. Table 9 summarizes the results of applying the flow chart (Table 2) to determine if an exceedance was identified. Exceedances of the natural ocean water quality were identified for all FIBs: Fecal Coliforms, E. coli, and Enterococcus.

Approach to Compliance. Table B[18] Instantaneous Maximum Water Quality Objectives are not available for FIBs, Ocean Plan objectives have been developed to protect human health from diseases transmitted via contact with water[19] for Fecal Coliforms and Enterococcus and these limits have been applied as the target water quality objective to achieve compliance. For E.coli a 90% reduction in pollutant loading during storm events is the available approach to compliance. Attachment 6 presents the 90% pollution load reduction targets for each FIB based on concentrations in the first sample collected in February 2014 and the pollutant load for each of the six sample events. For Fecal Coliforms, the last sample collected in March 2016 for each site was below the Ocean Plan human health objective, therefore bringing the constituent into compliance. For Enterococcus, the last sample collected in March 2016 at 203PAC010 (Hopkins PG) was below the Ocean Plan human health objective, therefore bringing the constituent into compliance at this site. Enterococcus loads have reduced below the 90% pollutant load target at 203PAC040 (Greenwood) and therefore the constituent is considered in compliance at this site as well. At 203PAC080 (Forest) the Enterococcus pollutant loads have not come below the 90% load reduction target nor are concentrations below the Ocean Plan human health objective, therefore Enterococcus at this location is not in compliance. E.coli loads have reduced below the 90% pollutant load target at 203PAC040 (Greenwood) and 203PAC010 (Hopkins PG) and therefore the constituent is considered in compliance at these sites. E.coli loads are not below the 90% pollutant load target at 203PAC080 (Forest) therefore E.coli at this location is not in compliance.

EVALUATION OF PRIORITY OUTFALLS

The Special Protections require the ASBS Compliance Plan to include a map indicating the priority of discharges, where high priority discharges are those that pose the greatest threat to water quality and potentially require the installation of structural BMPs. The vast majority of runoff from Pacific Grove ASBS watersheds flows through the City of Pacific Grove's storm drainage system for discharge through ocean outfalls to the ASBS. Figure 3 shows the seventeen (17) ASBS subwatersheds classified as either discrete or distributed discharges to the ASBS. Thirty-two (32) outfalls discharging into the ASBS have been classified as an 'observable discrete outfall' if it drains a discrete subwatershed or an 'other mapped outfall' if it drains a distributed subwatershed. Table 10 lists each of the 32 confirmed outfalls along with size, type, alias names used in other monitoring programs where applicable, and a designation of high, medium or low

[18]In the 2012 Ocean Plan, Table 1 (formerly Table B) lists the Water Quality Objectives for Protection of Marine Aquatic Life.
[19] AMS. August 1, 2016. Central Coast Regional ASBS Monitoring Program, Final Report 2013-2016.

priority level. Table 10a provides a reference key to outfall labels by stormwater program. Priority level was determined based on monitoring results and pollutant load modeling predictions, where high priority outfalls are considered to pose the greatest water quality threat and have been prioritized for installation of structural BMPs, as described below.

Water Quality Monitoring Results to Prioritize Outfalls. Discharges from each of the three CCRMP ASBS sampling locations recorded samples in exceedance of the natural ocean water quality. Of the three, 203PAC040 (Greenwood) had the highest number of samples where storm concentrations exceeded the 85th percentile benchmark threshold and the pre-storm concentration, followed by 203PAC080 and 203PAC010. Table 11 summarizes the total number of samples meeting these criteria for the three sample locations for each of the constituents with exceedances. Each of these CCRMP monitored outfalls has been identified as a high priority outfall.

The MRSWMP Summary Data Analysis and Graphic Analysis Display Report[20] presents data from an additional five (5) ASBS outfalls in such a manner that the number of samples exceeding a City wide combined wet and dry weather 85th percentile runoff concentration can be tallied. Table 12 summarizes this tally which compares the CCRMP and MRSMP sampling locations. The previously identified CCRMP High Priority Outfalls all had tallies greater than or equal to ten (10), re-inforcing the designation of these outfalls as high priority. All the remaining MRWMP outfalls were assigned a medium priority.

Pollutant Load Modeling to Prioritize Outfalls. The Tool for Estimating Load Reductions (TELR) was used to estimate baseline urban catchment sediment loads (as TSS) before BMP implementation. Where more than one subwatershed drains to a single outfall, the pollutant loads for each catchment was added to estimate the total pollutant load at the outfall. Where more than one outfall is within a single catchment the load is distributed across all the outfalls in that subwatershed. The following text provides additional information about TELR and its assumptions:

"Credible Pollutant Load Estimation. The model will integrate the most sensitive parameters driving existing urban water quality models in a manner that minimizes user complexity yet preserves the relative technical accuracy and rigor necessary to generate relatively reliable stormwater pollutant loading estimates to inform management decisions and account for progress using average annual pollutant load reductions as the unit of measure. TELR will run on regionally representative precipitation inputs/data using a probability-based integration approach of daily rainfall and runoff intensities. Precipitation inputs will be held constant between Land Use and Current Load scenarios to document the estimate load reductions due to BMP implementation and performance. The water quality benefits of source control and small scale structural BMPs have a level of performance that aligns with the density of implementation by land use, literature values regarding performance, Post Construction Requirements (PCR), and/or annual effectiveness assessments. Larger scale centralized BMP performance includes an event volume accounting and treatment performance also informed by existing literature and annual effectiveness assessments. While the absolute estimates of all models will vary, TELR will be developed to generate

[20] Pam Krone-Davis, Lisa Emanuelson, Bridget Hoover. August 2015

catchment results that will generally correlate with estimates using more complex modelling platforms. The intent is to have confidence that the priorities and/or relative load reductions identified by TELR are relatively accurate, thereby providing the correct information to guide effective stormwater management. A transparent documentation and supporting template of the fundamental assumptions and how user inputs are integrated TELR to generate average annual loads will be created and readily available.

Modeled Pollutants. The pollutants selected for modeling are stormwater volumes and sediment loads. These pollutants are assumed to serve as reliable collective proxies to guide prioritization of catchments and implementation of improvements for the majority of urban pollutants known to impact receiving water quality. The catchments identified with the highest loading rates are, in most instances, the greatest potential threat of most urban derived pollutants delivered to receiving waters.

> **Stormwater Volume:** If stormwater program actions are effective, stormwater volumes discharging from the Municipal Separate Storm Sewer Systems (MS4) to receiving waters will be substantially reduced or eliminated, even during the highest intensity storms. Eliminating stormwater discharge equates to removal of urban pollutants associated with these wet weather discharges and concomitant reduction of pollutant loading to the receiving waters.
>
> **Sediment**: Sediment, reported as total suspended solids (TSS), is a common and well researched stormwater quality parameter. There is extensive literature and national datasets documenting the ranges of TSS concentrations in land use and mixed urban runoff. While TSS loading from urban catchments may or may not exceed regulatory thresholds, there is a well-documented range of concentrations emanating from urban lands that are maintained from good to poor condition. In addition, stormwater improvement actions implemented to reduce sources of TSS or treat TSS loads entrained in stormwater are, in many instances, also effective at reducing the concentrations and loads of other common urban pollutants. TSS has been documented to correlate to pathogens, trace metals, hydrocarbons, and phosphorus in urban runoff (Chen and Chang 2014; National Stormwater Quality Database v1.1). Processes commonly used to treat urban stormwater via structural BMPs - infiltration, particle capture and media filtration - are equally effective at treating most hydrophobic pollutants. Hydrophilic pollutant load reductions (i.e., nitrate) are assumed to occur concurrently with effective stormwater volume reductions." [21]

The TELR results combine contributions from the entire ASBS watershed including the portions draining from the City of Monterey into Pacific Grove. Based on the total pollutant load estimation provided by TELR, the drainage area to outfall 4a was also categorized as a high priority outfall, as shown in Table 10 and Figure 3.

[21] E.14 PEAIP Item: Methodology to Quantify Pollutant Load Reductions Achieved by the Program as a Whole , 2Nd Nature, Accessed July 19, 2016. http://www.2ndnaturellc.com/client-access/central-coast-stormwater-ms4-support/

SUMMARY

By March 2018 the Cities of Pacific Grove and Monterey, both of whom have contributing area draining into the ASBS, must comply with the requirement that their discharges into the ASBS maintain natural ocean water quality.[22] The determination if natural ocean water quality is exceeded was made by comparing pre-storm, storm, and a measured 85th percentile threshold of reference water quality data as provided by the CCRMP. The combined 85th percentile threshold from both northern and southern CCRMP reference sites was applied to the Pacific Grove ASBS based on a comparison of regional geology.

Trace metals, PAHs, an organophosphate insecticide (Malathion), chronic toxicity (urchin fertilization), and FIB concentrations were identified as exceeding the natural ocean water quality from stormwater discharges into the ASBS. Trace metals were all found in concentrations below the Ocean Plan Water Quality Objectives, and therefore these constituents are considered in compliance with the Special Protections. For the other constituents exceeding the water quality objective, a 90% reduction in pollutant loading during storm events will be required to achieve compliance. Table 13 summarizes each of the constituents and sites not in compliance along with urea and Fecal Coliforms that were determined in compliance based on the last sample collected.

If the northern reference sites' 85th percentile reference threshold is applied to the Pacific Grove ASBS CCRMP data, instead of the combined, there would be no exceedances in metals, with the exception of silver, and fewer FIB exceedances. PAH, TSS, Ammonia, Nitrate as N, Urea would all have the same result if the northern or combined 85th reference threshold is applied. Overall, the combined and 6N 85th percentile thresholds provide a more conservative comparison for evaluation of natural ocean water quality exceedances.

The three CCRMP outfall sample locations and the outfall at 8th Street (Map Label 4a) were designated as high priority for identification of appropriate BMPs to improve the quality of runoff entering the ASBS based on monitoring results and pollutant load modeling predictions.

The CCRMP collected water quality samples during two storms in 2016 for analysis of dissolved metals. The amount of information was not sufficient to establish causal links between the significant constituents and toxicity.[23] It was determined that none of the trace metals with high dissolved percentages were significantly correlated with TSS.[24]

[22] Section I.A.3.e of Attachment C of the Phase II Small MS4 General Permit
[23] AMS. August 1, 2016. Central Coast Regional ASBS Monitoring Program, Final Report 2013-2016.
[24] Personal communication, Dane Hardin, September 16, 2016.

This concludes our summary of findings pertaining to the determination of natural ocean water quality exceedances and priority discharges to the Pacific Grove ASBS. Please contact us if you have any questions or require any additional information.

Sincerely,

EMILY CORWIN, M.S., P.E.
Senior Associate Engineer

ROBYN COOPER, M.S., P.E
Senior Engineer

FIGURES

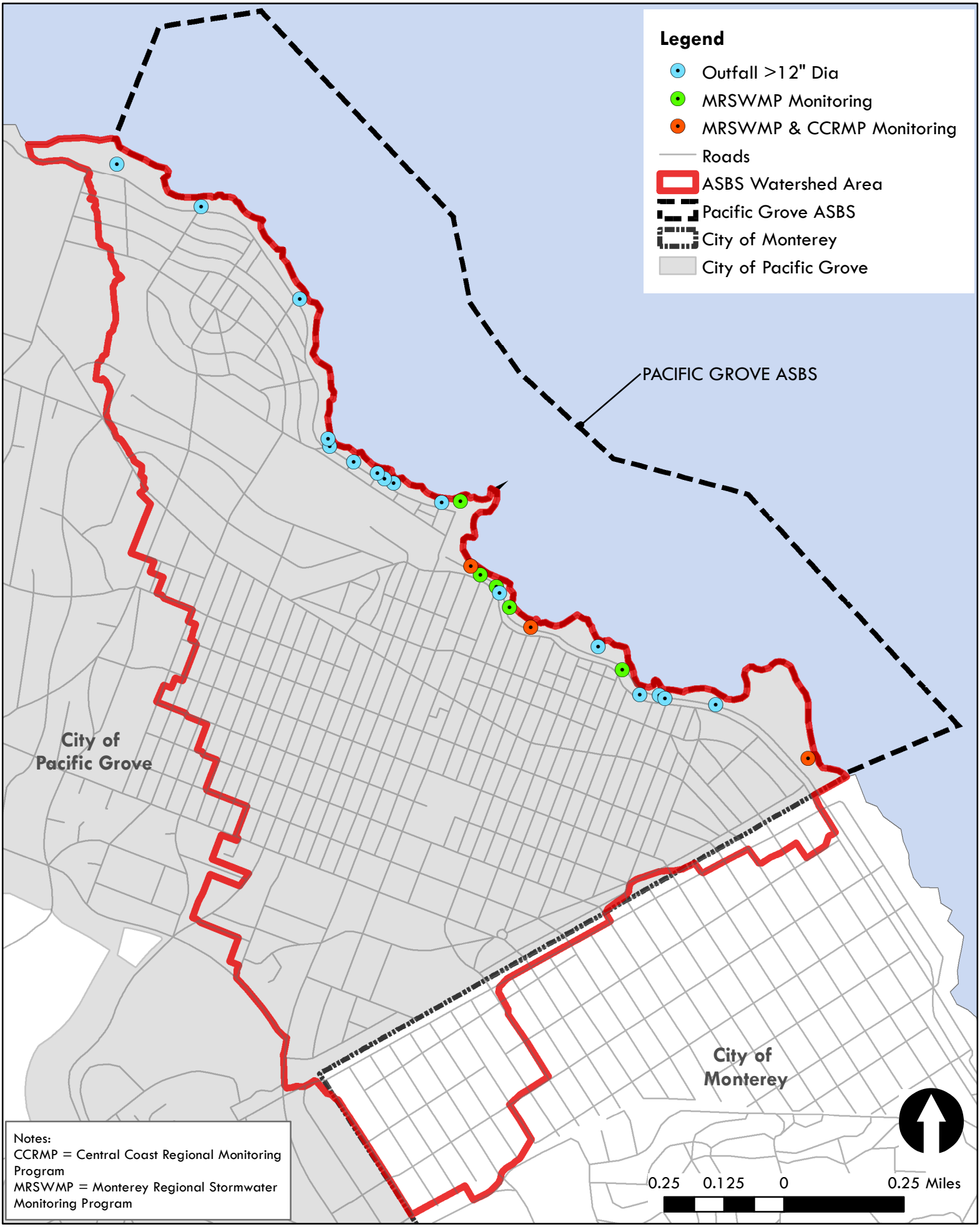
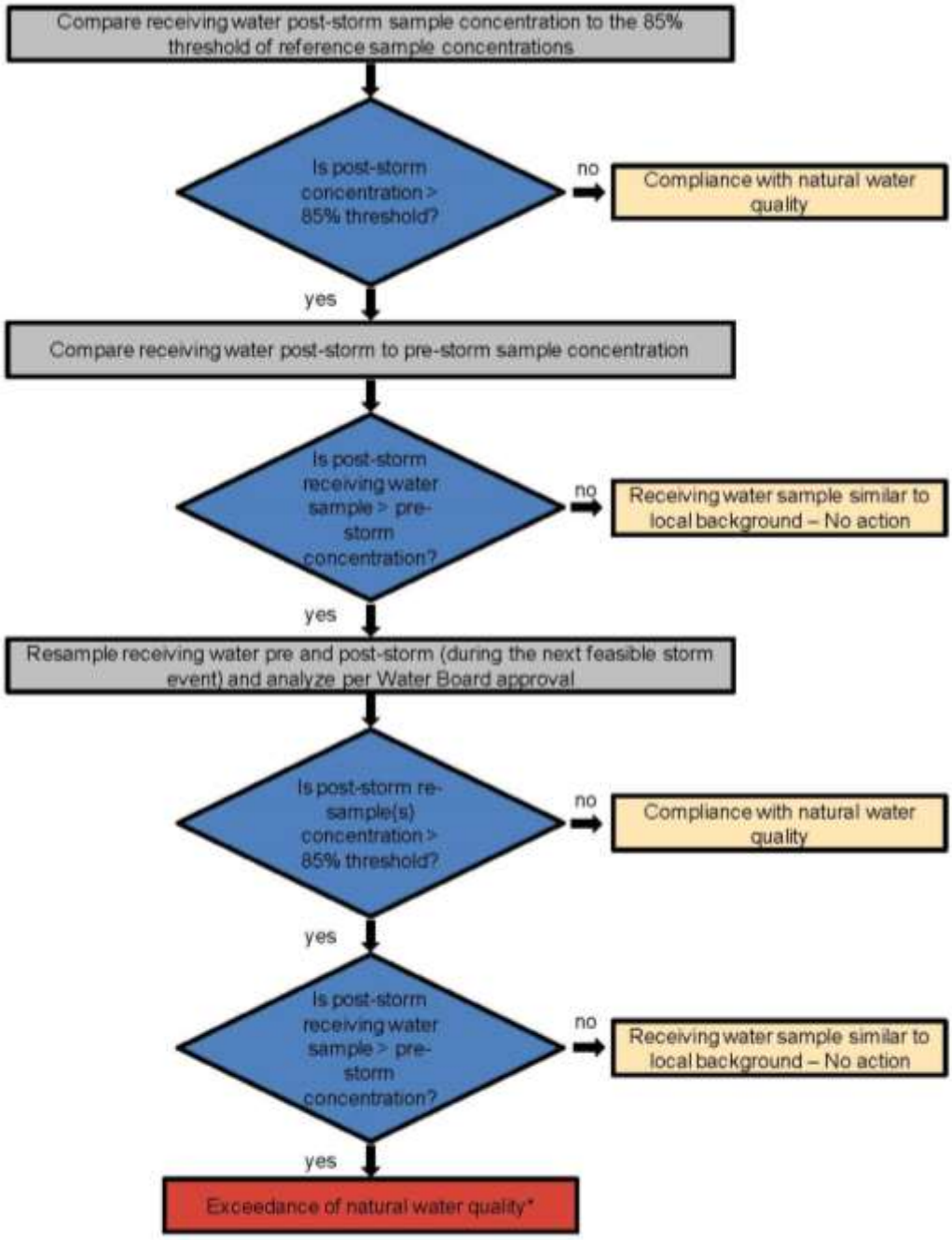


FIGURE 1 - Pacific Grove ASBS CCRMP Sampling Locations
Compliance Plan Update 2016

FALL CREEK ENGINEERING
Date: 8/16/2016

Figure 2. Flow Chart to Determine Compliance with Natural Water Quality
Source: Section IV.C. of Attachment C of the Phase II Small MS4 General Permit



*Note: When an exceedance of natural water quality occurs, the discharger must comply with Section I.A.2.h (for permitted storm water) or Section I.B.2.C (for non-point sources). Note, when sampling data are available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.

Source: General Exception, Attachment 1

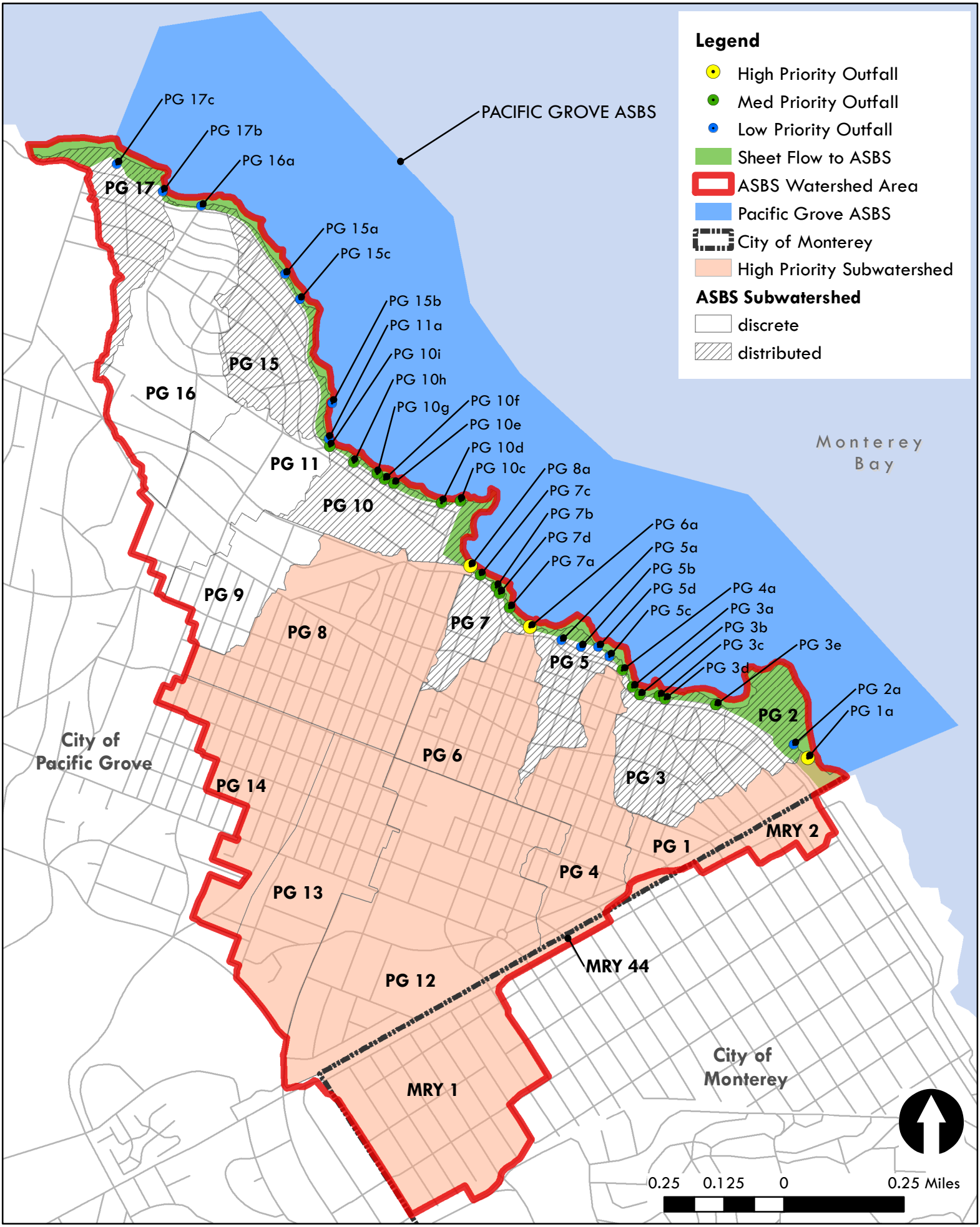


FIGURE 3 - Pacific Grove ASBS Subwatershed and Outfall Priority Map
Compliance Plan Update 2016

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Date: 9/17/2016

TABLES

Table 1. Summary of Pacific Grove ASBS Sampling Locations and Dates

Water Quality Sample Collection Date	CCRMP Sample Location		
	203PAC080	203PAC040	203PAC010
	Site Name[1]		
	Forest	Greenwood	Hopkins PG
	Map Label		
	8a	6a	1a
2/5/2014	X	X	X
2/25/2014	X	X	X
12/9/2014	X	X	X
2/5/2015		X	X
1/5/2016	X	X	X
2/18/2016	X	X	X
3/6/2016	X		

1. Consistent with Monterey Bay National Marine Sanctuary (MBNMS) citizen science program Monetery Regional Stormwater Management Program (MRSWMP) monitoring effort.

Table 2. 85th Percentile Reference Thresholds and Ocean Plan Objectives

Constituent	Unit	NORTHERN 85th Percentile Benchmark Threshold	SOUTHERN 85th Percentile Benchmark Threshold	COMBINED 85th Percentile Benchmark Threshold	SIX NORTHERN (6N) 85th Percentile Benchmark Threshold	Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan
Trace Metals						
Arsenic (As)	ug/L	4.95	1.60	1.64	1.74	80
Cadmium (Cd)	ug/L	0.24	0.04	0.06	0.07	10
Chromium (Cr)	ug/L	13.28	0.97	1.74	2.00	20
Copper (Cu)	ug/L	11.81	1.00	1.11	1.37	30
Lead (Pb)	ug/L	3.02	0.18	0.22	0.27	20
Nickel (Ni)	ug/L	26.89	0.75	1.67	2.24	50
Selinium (Se)	ug/L	0.34	0.08	0.11	0.10	150
Silver (Ag)	ug/L	0.37	0.62	0.60	0.62	7
Zinc (Zn)	ug/L	31.76	1.75	2.66	4.74	200
Mercury (Hg)	ng/L	25.90	3.16	4.23	5.08	400
Nutrients and Conventional Constituents						
Total Suspended Solids (TSS)	mg/L	560.3	19.8	24	46	NA
Ammonia as N	mg/L	0	0	0	0	6
Nitrate as N	mg/L	1.145	0.6	0.675	1.1	NA
Urea	mg/L	0.01045	0.0045	0.01	0.01	NA
Orthophosphate	mg/L	0.1635	0.05	0.08	0.09	NA
Oil and Grease	mg/L	0	0	0	0	NA
Polynuclear Aromatic Hydrocarbons (PAHs)						
PAHs	ug/L	0.00375	0	0	0	0.0088 (30-day average)
Fecal Indicator Bacteria (FIB)						
Fecal Coliforms[1]	MPN/100ml	1024	84	143	146	400
E. coli	MPN/100ml	671	84	125.5	134	NA
Enterococcus[1]	MPN/100ml	477	189	229	238	100
Chronic Toxicity						
Urchin Fertilization	PASS/FAIL	NA				
Mussel Embryo	PASS/FAIL	NA				
Kelp Germination	PASS/FAIL	NA				
Kelp Growth	PASS/FAIL	NA				
Pyrethroid and Organophosphate Pesticides						
Bifenthrin	ug/L	0	0	0	0	NA
Chlorpyrifos	ug/L	0	0	0	0	NA
Cyfluthrin	ug/L	0	0	0	0	NA
Cyhalothrin	ug/L	0	0	0	0	NA
Delta/Tralomethrin	ug/L	0	0	0	0	NA
Diazinon	ug/L	0	0	0	0	NA
Esfen/Fenvalerate	ug/L	0	0	0	0	NA
Fenpropathrin	ug/L	0	0	0	0	NA
Fonofos	ug/L	0	0	0	0	NA
Malathion	ug/L	0	0	0	0	NA
Permethrin, cis	ug/L	0	0	0	0	NA
Permethrin, trans	ug/L	0	0	0	0	NA

1. FIB Ocean Plan objectives also were developed to protect human health from diseases transmitted via contact with water (AMS, 2016).

NA = No Ocean Plan Maximum Water Quality Objectives available

Greater 85th Percentile Benchmark Threshold between Northern and Southern

Table 3. Comparison of Dominant Geology in Reference Site Watersheds and the Pacific Grove ASBS Watershed.

Region	Reference Site	Dominant Geology in Watershed[1]		
		Unit Age	Rock Type 1	Rock Type 2
North	Gazos Creek	Oligocene to Pliocene	Sandstone	Mudstone
	Tunitas Creek	Miocene to Pleistocene	Sandstone	Mudstone
	Scott Creek	Oligocene to Pliocene	Sandstone	Mudstone
Pacific Grove ASBS	63%	Early to Late Cretaceous	Granodiorite	Quartz Monzonite
	37%	Oligocene to Pliocene	Sandstone	Mudstone
South	Malpaso Creek	Early to Late Cretaceous	Granodiorite	Quartz Monzonite
	Soberanes Creek	Early to Late Cretaceous	Granodiorite	Quartz Monzonite
	Doud Creek	Early to Late Cretaceous	Granodiorite	Quartz Monzonite
	Big Sur River	Eartly Proterozoic to Late Cretaceous	Plutonic rock (phaneritic)	Gneiss
	Sycamore Creek	Jurassic to Cretaceous	Sandstone	Mudstone
	Big Creek	Eartly Proterozoic to Late Cretaceous	Plutonic rock (phaneritic)	Gneiss

1. Source: USGS California geologic map data from https://mrdata.usgs.gov/geology/state/state.php?state=CA

Table 4. Summary of CCRMP Trace Metal Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Trace Metals						
	# of Samples	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]	# Consecutive Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Exceedance Occurred (Per Flowchart)	% of Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Samples with Concentrations Greater Than Table 1 WQO Instantaneous Maximum
	Mercury (Hg)					
203PAC080	6	4	1	Yes	67%	0
203PAC040	6	3	1	Yes	50%	0
203PAC010	6	0	0	No	0%	0
	Arsenic (As)					
203PAC080	6	2	1	Yes	33%	0
203PAC040	6	1	0	No	17%	0
203PAC010	6	4	1	Yes	67%	0
	Cadmium (Cd)					
203PAC080	6	2	0	No	33%	0
203PAC040	6	1	0	No	17%	0
203PAC010	6	1	0	No	17%	0
	Chromium (Cr)					
203PAC080	6	0	0	No	0%	0
203PAC040	6	1	0	No	17%	0
203PAC010	6	0	0	No	0%	0
	Copper (Cu)					
203PAC080	6	5	3	Yes	83%	0
203PAC040	6	5	3	Yes	83%	0
203PAC010	6	3	2	Yes	50%	0
	Lead (Pb)					
203PAC080	6	5	3	Yes	83%	0
203PAC040	6	6	5	Yes	100%	0
203PAC010	6	5	3	Yes	83%	0
	Nickel (Ni)					
203PAC080	6	0	0	No	0%	0
203PAC040	6	0	0	No	0%	0
203PAC010	6	0	0	No	0%	0
	Selenium (Se)					
203PAC080	6	0	0	No	0%	0
203PAC040	6	1	0	No	17%	0
203PAC010	6	1	0	No	17%	0
	Silver (Ag)					
203PAC080	6	2	1	Yes	33%	0
203PAC040	6	1	0	No	17%	0
203PAC010	6	1	0	No	17%	0
	Zinc (Zn)					
203PAC080	6	5	3	Yes	83%	0
203PAC040	6	4	3	Yes	67%	0
203PAC010	6	4	2	Yes	67%	0

Table 5. Summary of CCRMP Polynuclear Aromatic Hydrocarbons (PAHs) Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Polynuclear Aromatic Hydrocarbons (PAHs)						
	# of Samples	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]	# Consecutive Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Exceedance Occurred (Per Flowchart)	% of Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Samples with Concentrations Greater Than Table 1 WQO Instantaneous Maximum
	PAHs					
203PAC080	6	4	2	Yes	67%	NA
203PAC040	6	3	1	Yes	50%	NA
203PAC010	6	2	1	Yes	33%	NA

NA = Not Available

Table 6. Summary of CCRMP Pyrethroid & Organophosphate Pesticide Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Pyrethroid and Organophosphate Pesticides						
	# of Samples	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]	# Consecutive Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Exceedance Occurred (Per Flowchart)	% of Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Samples with Concentrations Greater Than Table 1 WQO Instantaneous Maximum
	Bifenthrin					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Chlorpyrifos					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	1	0	No	17%	NA
203PAC010	6	0	0	No	0%	NA
	Cyfluthrin					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	2	0	No	33%	NA
	Cyhalothrin					
203PAC080	6	2	0	No	33%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Delta/Tralomethrin					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Diazinon					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Esfen/Fenvalerate					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Fenpropathrin					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Fonofos					
203PAC080	5	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Malathion					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	2	1	Yes	33%	NA
203PAC010	6	0	0	No	0%	NA
	Permethrin, cis					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Permethrin, trans					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	1	0	No	17%	NA

NA = Not Available

Table 7. Summary of CCRMP Toxicity Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Toxicity						
	# of Samples	# Samples where Failed	# Consecutive Samples where Failed	Exceedance Occurred (Per Flowchart)	% of Samples where Storm < 85%	Samples with Concentrations Greater Than Table 1 WQO Instantaneous Maximum
	Urchin Fertilization					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	1	0	No	17%	NA
203PAC010	6	1	1	Yes	17%	NA
	Mussel Embryo					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Kelp Germination					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Kelp Growth					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	1	0	No	17%	NA

NA = Not Available

Table 8. Summary of CCRMP Nutrients and Conventional Constituent Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Nutrients and Conventional Constituents						
	# of Samples	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]	# Consecutive Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Exceedance Occurred (Per Flowchart)	% of Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Samples with Concentrations Greater Than Table 1 WQO Instantaneous Maximum
	TSS					
203PAC080	6	0	0	No	0%	NA
203PAC040	6	1	0	No	17%	NA
203PAC010	6	0	0	No	0%	NA
	Ammonia					
203PAC080	6	1	0	No	17%	0
203PAC040	6	2	0	No	33%	0
203PAC010	6	1	0	No	17%	0
	Nitrate					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	1	0	No	17%	NA
203PAC010	6	0	0	No	0%	NA
	Urea					
203PAC080	6	4	2	Yes	67%	NA
203PAC040	6	5	4	Yes	83%	NA
203PAC010	6	4	2	Yes	67%	NA
	Orthophosphate as P					
203PAC080	6	1	0	No	17%	NA
203PAC040	6	0	0	No	0%	NA
203PAC010	6	0	0	No	0%	NA
	Oil and Grease					
203PAC080	All Samples Non-Detect					
203PAC040						
203PAC010						

NA = Not Available

Table 9. Summary of CCRMP Fecal Indicator Bacteria (FIB) Exceedances Identified Through Application of the Flow Chart to Determine Compliance with Natural Water Quality

Fecal Indicator Bacteria						
	# of Samples	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]	# Consecutive Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Exceedance Occurred (Per Flowchart)	% of Samples where [Storm] > 85% & [Storm] > [Pre-storm]	Samples with Concentrations Greater Than Human Health WQO
	Fecal Coliforms					
203PAC080	6	6	5	Yes	100%	4
203PAC040	6	6	5	Yes	100%	5
203PAC010	6	3	0	No	50%	2
	E. coli					
203PAC080	6	5	4	Yes	83%	NA
203PAC040	6	6	5	Yes	100%	NA
203PAC010	6	3	0	No	50%	NA
	Enterococcus					
203PAC080	6	6	5	Yes	100%	6
203PAC040	6	6	5	Yes	100%	6
203PAC010	6	3	1	Yes	50%	4

NA = Not Available

Table 10. Summary of Pacific Grove ASBS Outfalls and Priority Designations

Map Label	Site Name	Pipe Dia (in)	MRSWMP Label	CCRMP Label	Data Sources	Priority	TSS Load (lbs/ac/yr)[1]
6a*	Greenwood	36	309-CENTR-31	203PAC040	MRSWMP & CCRMP	High	**588**
8a	Forest	54	309-PGSD-13	203PAC080	MRSWMP & CCRMP	High	564
1a*	Hopkins PG	36	309-PGSD-08	203PAC010	MRSWMP & CCRMP	High	**424**
4a*	8th st	24	309-PGSD-01	NA	MRSWMP	High	**419**
3a	7th Street	10				Med	
3b	between 5th and 7th street	18				Med	
3c	5th street	12		NA		Med	229
3d	Martine Inn (east of 5th st)	12				Med	
3e	1st Street	11				Med	
10c	17th Avenue	24	309-PGSD-14	NA	MRSWMP	Med	
10d	Borgs Motel	16				Med	
10e	Ocean View/Clyte	14				Med	
10f	Ocean View/Clyte	12		NA		Med	190
10g	Ocean View/Clyte	18				Med	
10h	Ocean View/Clyte	12				Med	
10i	Ocean View/Sea Palm	12				Med	
7a	Fountain & 15th	24	309-PGSD-11	NA	MRSWMP	Med	
7b	Fountain	16	309-PGSD-10	NA	MRSWMP	Med	162
7c	Grand	18	309-PGSD-12	NA	MRSWMP	Med	
7d	Fountain (north)[2]	31				Med	
5a	Carmel Ave	10				Med	
5b	Monterey Avenue	12		NA		Med	146
5c	9th Street	10				Med	
5d	10th street	18				Med	
15a	North of Beach Street	8				Low	
15b	North of Sea Palm Ave	--				Low	116
15c	Ocean View/ Beach	12				Low	
2a	On Hopkins Property	--		NA		Low	107
16a	Ocean View/Coral	18				Low	86
11a	Ocean View/Sea Palm	16				Low	85
17c	Pt Pinos Lower	12				Low	67
17b	North of Coral Street	8				Low	

*** = Includes drainage area from City of Monterey**

NA = No Data Available

1. TELR pollutant load generation for City of Pacific Grove and City of Monterey Contributions.

2. Assumes MRSWMP data collected from 7b (16").

-- size not determined

TSS = Total Suspended Sediment

Table 10a. Reference Key to Outfall Labels by Stormwater Program

Outfall Label		
NPDES & ASBS Compliance Plan	**MRSWMP**	**CCRMP**
8a	309-PGSD-13	203PAC080
6a*	309-CENTR-31	203PAC040
1a*	309-PGSD-08	203PAC010
4a*	309-PGSD-01	NA
10c	309-PGSD-14	NA
7a	309-PGSD-11	NA
7b	309-PGSD-10	NA
7c	309-PGSD-12	NA
*** = Includes drainage area from City of Monterey**		
NPDES = National Pollutant Discharge Elimination System		
NA = Not Applicable		

Table 11. Summary of Exceedances and Proposed Compliance Approach

Constituents with Exceedances	Compliance Approach		Exceedance Summary by Outfall		
			PAC080	PAC040	PAC010
	Water Quality Objectives	90% Reduction in Pollutant Loading	# Samples where [Storm] > 85% & [Storm] > [Pre-storm]		
Trace Metals			Forest	Greenwood	Hopkins PG
Mercury	In Compliance		4	3	0
Arsenic			2	1	4
Copper			5	5	3
Lead			5	6	5
Silver			2	1	1
Zinc			5	4	4
Nutrients and Conventional Constituents					
Urea	NA	In Compliance	2	4	2
Polynuclear Armatic Hydrocarbons					
PAHs	NA	X	4	3	2
Organophosphate Insecticide					
Malathion	NA	In Compliance	0	2	0
Toxicity					
Urchin Fertilization	NA	In Compliance	0	0	1
Fecal Indicator Bacteria (FIB)					
Fecal Coliforms	In Compliance		6	6	3
E.coli	NA	X	5	6	3
Enterococcus[1]	In Compliance	X	6	6	3
		Total	**46**	**47**	**31**

1. Compliance approach varies by site: PAC010 (Hopkins PG) in compliance via Water Quality Objectives, PAC040 (Greenwood) in compliance via 90% Reduction in Pollutant Loading, PAC080 (Forest) not in compliance.

X = One or more sites not in compliance

NA = No Ocean Plan Maximum Water Quality Objectives available

Table 12. MRSWMP Sampling Location/Outfall Comparison

Number of samples above 85th Percentile City of Pacific Grove Combined Runoff Concentrations[1] (starting Sep 2007)												
MRSWMP Label	**CCRMP Label**	E.coli	Enterococci	Cu, total	Lead, total	Zinc, Total	TSS	Nitrate as N	o-phosphate-P	Urea-N	**Total**	**Priority**
309-PGSD-13	203PAC080	2	1	2	2	0	0	0	2	1	10	High
309-CENTR-31	203PAC040	1	2	1	2	5	4	0	2	4	21	High
309-PGSD-08	203PAC010	2	3	3		4	2	2	3	3	22	High
309-PGSD-01	NONE	1	1	0	0	0	0	0	1	0	3	High*
309-PGSD-11	NONE	0	0	0	0	0	1	0	0	1	2	Medium
309-PGSD-10		1	1	0	1	0	1	0	2	0	6	Medium
309-PGSD-12		0	1	2	2	0	0	0	1	1	7	Medium
309-PGSD-14		0	0	0	0	0	0	0	0	0	0	Medium
1. MRSWMP, Summary Data Analysis and Graphic Display, Davis, Emanuelson, Hoover, August 2015												
* Based on Pollutant Load modeling results												

Table 13. Summary of BMP Target Location and Constituents

Constituents Exceeding 85% Threshold	**Sample Location**		
	203PAC080	**203PAC040**	**203PAC010**
	Site Name[1]		
	Forest	**Greenwood**	**Hopkins PG**
	Map Label		
	8a	**6a**	**1a**
Urea[2]	C	C	C
PAH	X	C	C
Fecal Coliform	C	C	C
Ecoli	X	C	C
Enterococcus	X	C	C

1. Consistent with Monterey Bay National Marine Sanctuary (MBNMS) citizen science program Monetery Regional Stormwater Management Program (MRSWMP)

2. All sites measured 0 mg/L on last sample collected, indicating compliance with 90% pollutant load reduction

C = In Compliance through 90% Pollutant Reduction

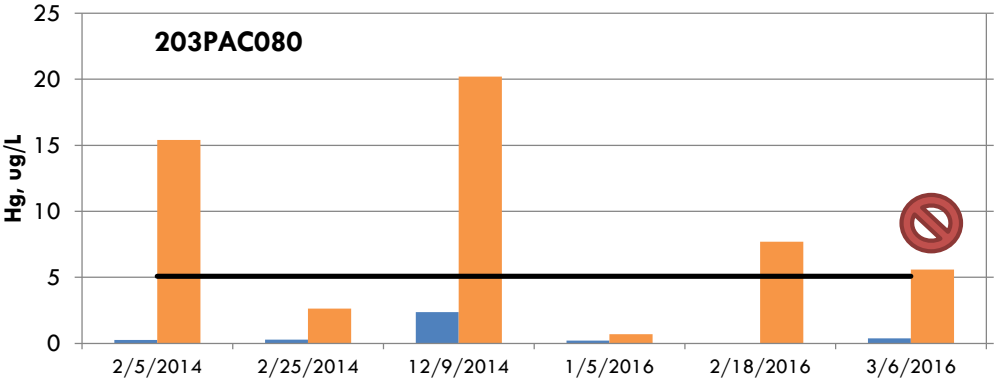
X = BMP Target Location & Constitutent

ATTACHMENTS

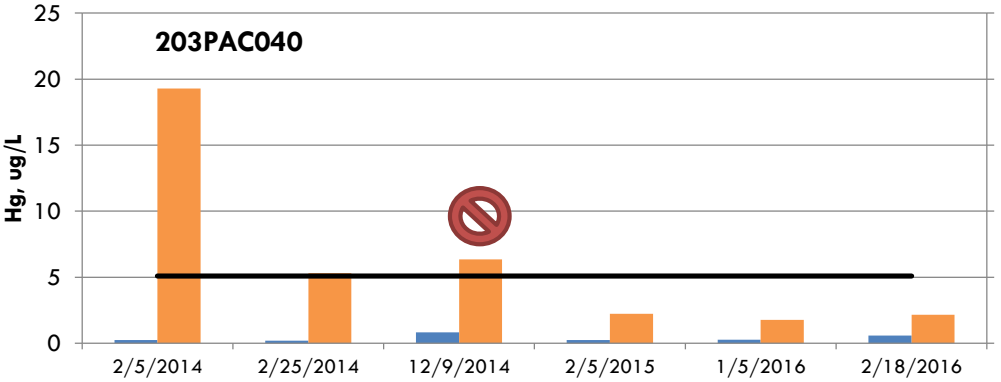
Attachment 1: Trace Metals

Mercury (Hg)

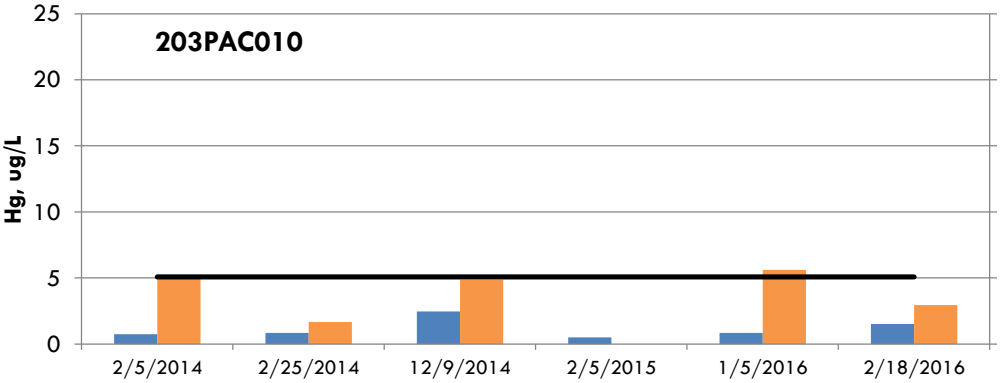
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.251	0.279	2.37	0.204	0	0.373
ASBS Storm	15.4	2.63	20.2	0.7	7.69	5.59
6N 85% Threshold	5.080	5.080	5.080	5.080	5.080	5.080



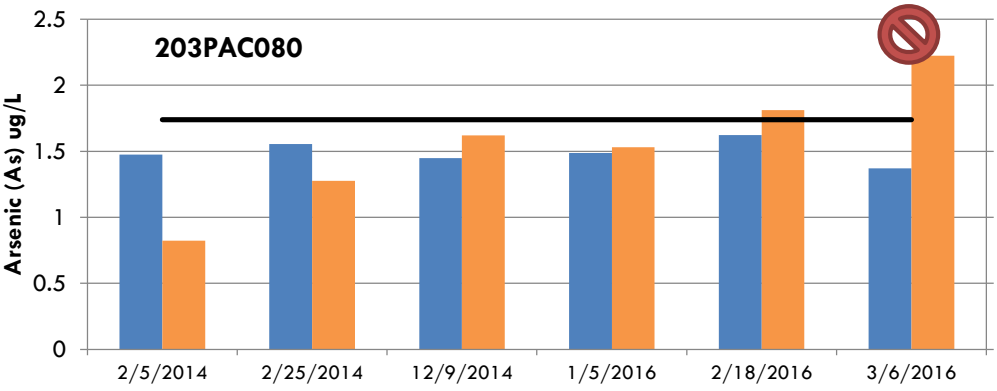
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.246	0.201	0.839	0.254	0.27	0.596
ASBS Storm	19.3	5.3	6.36	2.23	1.78	2.15
6N 85% Threshold	5.080	5.080	5.080	5.080	5.080	5.080



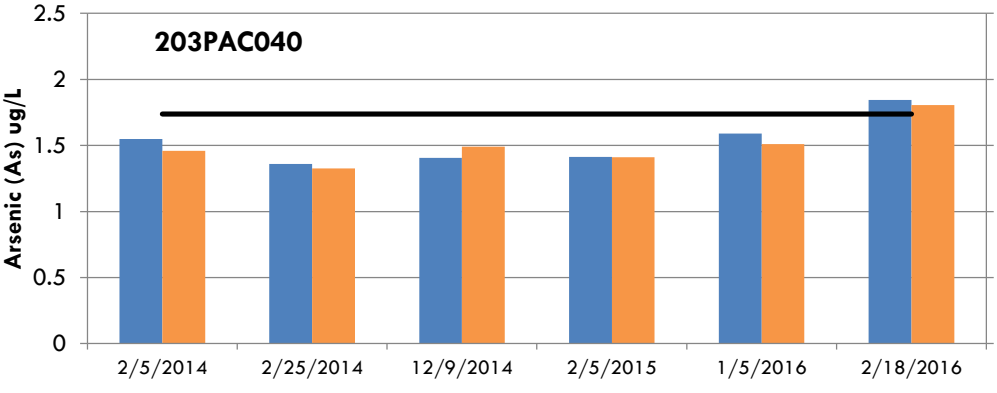
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.739	0.834	2.46	0.511	0.847	1.52
ASBS Storm	5.18	1.67	4.87	0	5.62	2.95
6N 85% Threshold	5.080	5.080	5.080	5.080	5.080	5.080

Arsenic (As)

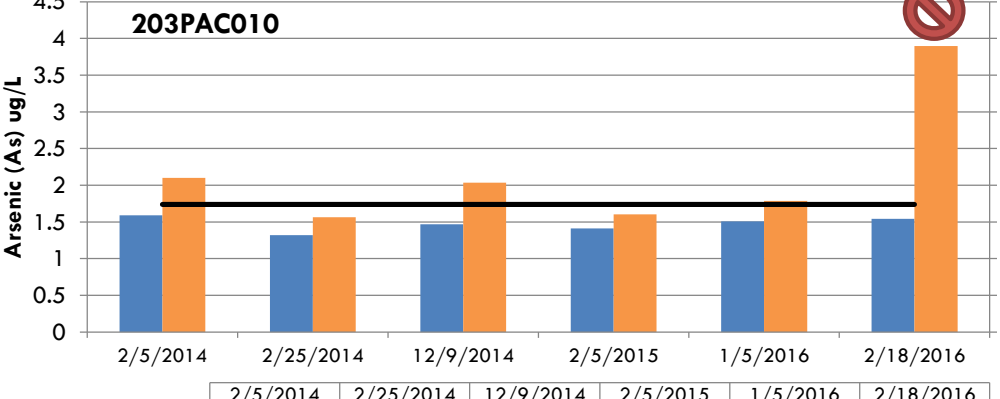
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	1.474	1.554	1.448	1.486	1.623	1.371
ASBS Storm	0.822	1.276	1.619	1.53	1.812	2.223
6N 85% Threshold	1.738	1.738	1.738	1.738	1.738	1.738



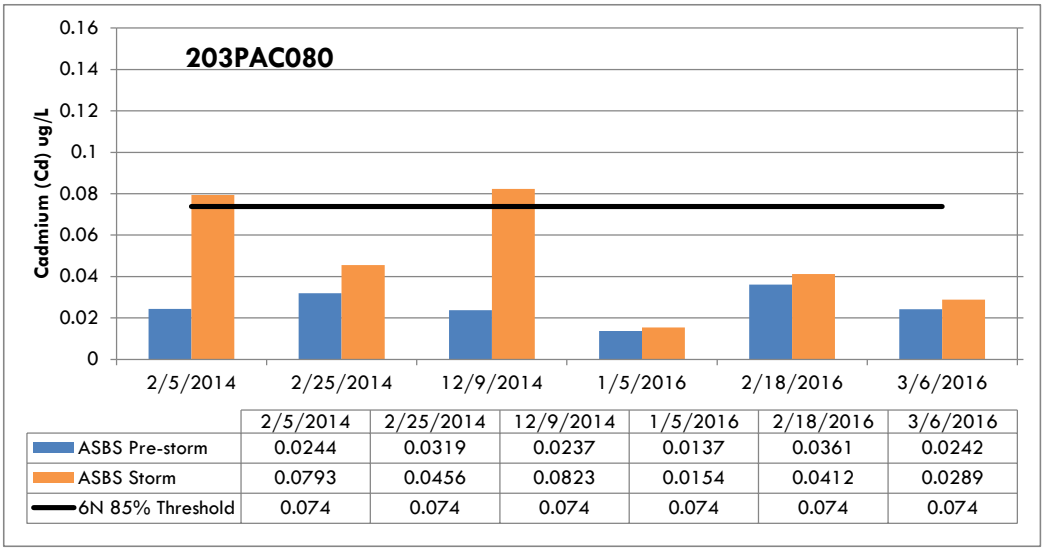
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	1.55	1.359	1.407	1.414	1.589	1.845
ASBS Storm	1.458	1.326	1.491	1.411	1.511	1.805
6N 85% Threshold	1.738	1.738	1.738	1.738	1.738	1.738



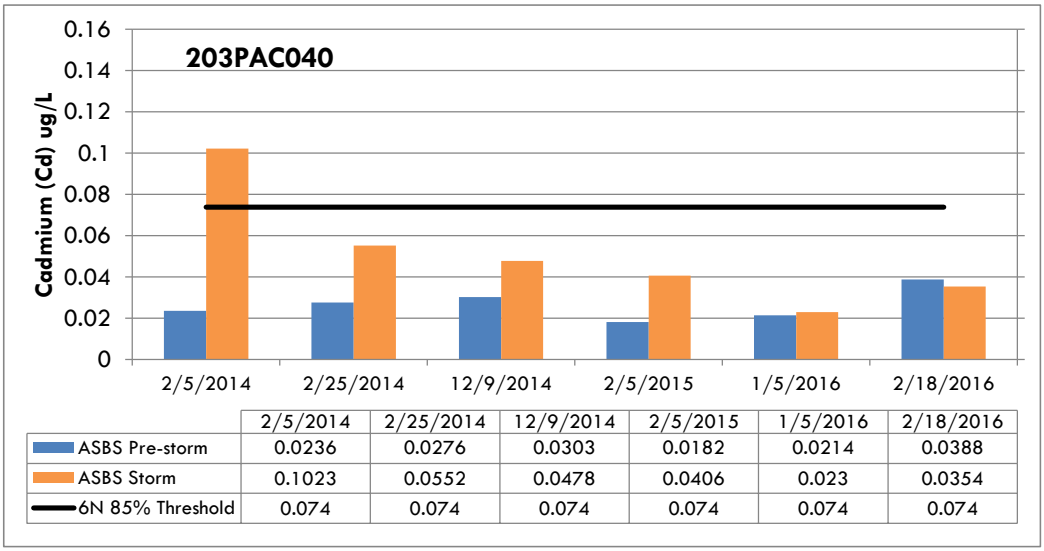
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	1.591	1.32	1.467	1.411	1.507	1.542
ASBS Storm	2.102	1.563	2.033	1.605	1.785	3.895
6N 85% Threshold	1.738	1.738	1.738	1.738	1.738	1.738

Cadmium (Cd)

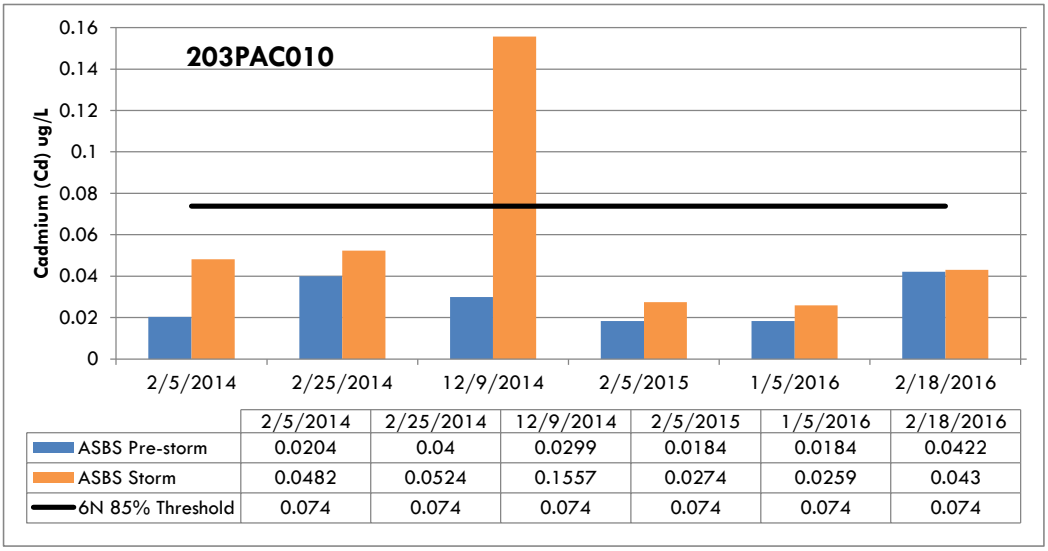
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.0244	0.0319	0.0237	0.0137	0.0361	0.0242
ASBS Storm	0.0793	0.0456	0.0823	0.0154	0.0412	0.0289
6N 85% Threshold	0.074	0.074	0.074	0.074	0.074	0.074



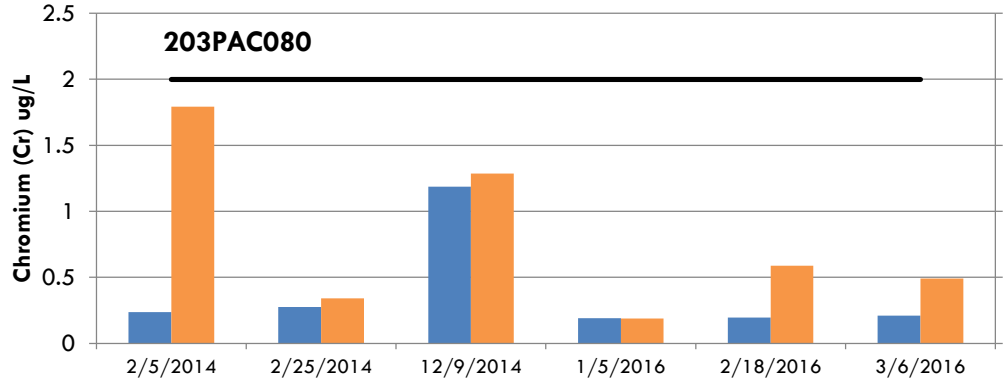
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0236	0.0276	0.0303	0.0182	0.0214	0.0388
ASBS Storm	0.1023	0.0552	0.0478	0.0406	0.023	0.0354
6N 85% Threshold	0.074	0.074	0.074	0.074	0.074	0.074



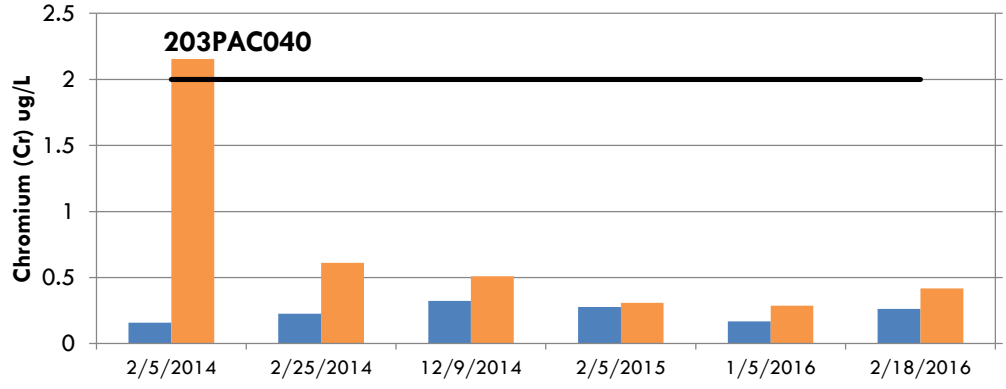
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0204	0.04	0.0299	0.0184	0.0184	0.0422
ASBS Storm	0.0482	0.0524	0.1557	0.0274	0.0259	0.043
6N 85% Threshold	0.074	0.074	0.074	0.074	0.074	0.074

Chromium (Cr)

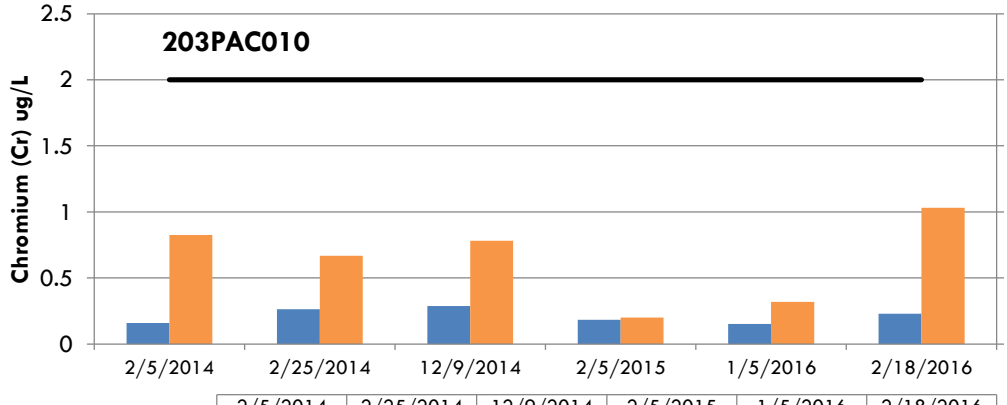
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.2368	0.2751	1.1872	0.1901	0.1945	0.2107
ASBS Storm	1.7926	0.3416	1.2868	0.1879	0.5888	0.49
6N 85% Threshold	1.999	1.999	1.999	1.999	1.999	1.999



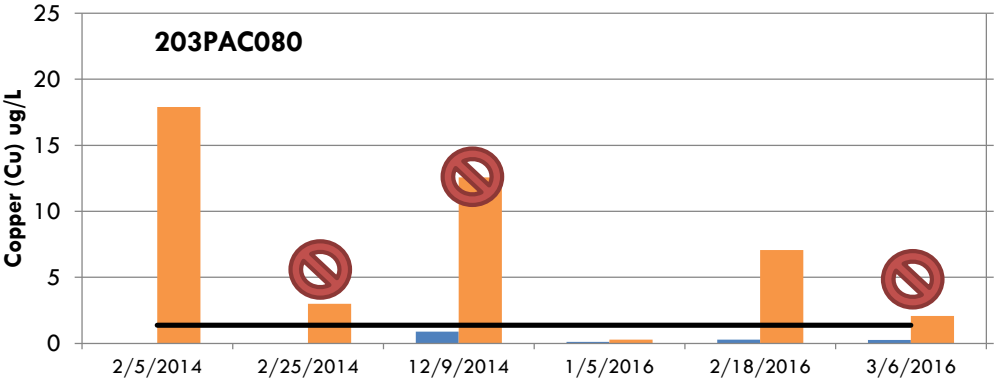
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.1587	0.2252	0.3238	0.2778	0.1677	0.2621
ASBS Storm	2.1539	0.6103	0.5087	0.3093	0.2873	0.4184
6N 85% Threshold	1.999	1.999	1.999	1.999	1.999	1.999



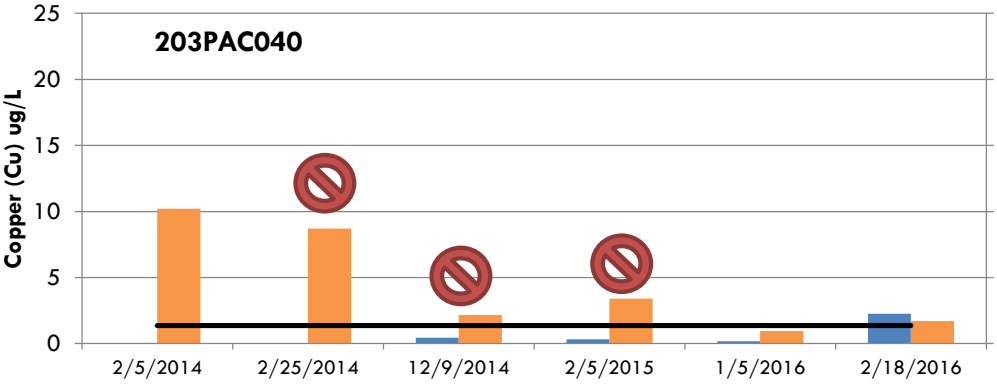
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.159	0.2644	0.2867	0.1844	0.153	0.2293
ASBS Storm	0.825	0.6679	0.7825	0.1994	0.32	1.0311
6N 85% Threshold	1.999	1.999	1.999	1.999	1.999	1.999

Copper (Cu)

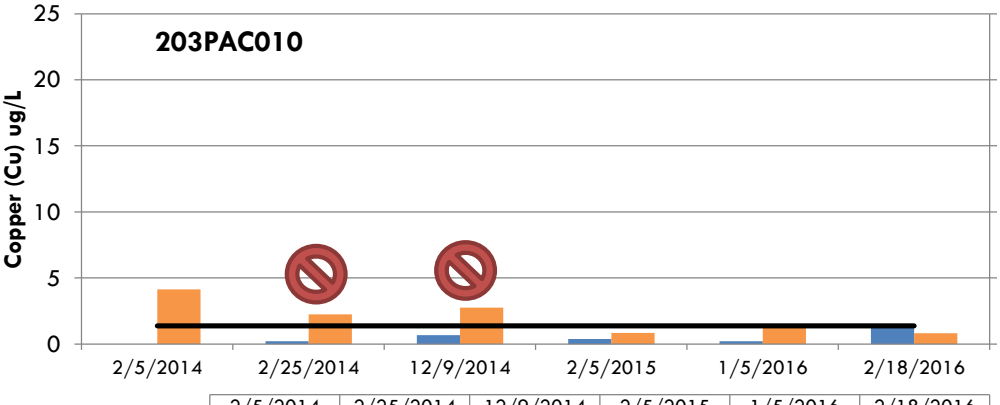
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.015	0	0.885	0.107	0.285	0.266
ASBS Storm	17.9	2.986	12.573	0.279	7.069	2.064
6N 85% Threshold	1.369	1.369	1.369	1.369	1.369	1.369



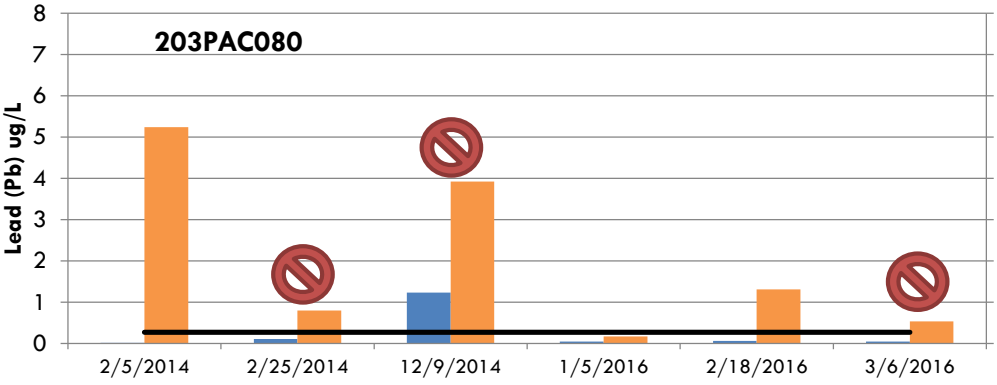
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0.435	0.323	0.168	2.263
ASBS Storm	10.215	8.711	2.159	3.395	0.952	1.694
6N 85% Threshold	1.369	1.369	1.369	1.369	1.369	1.369



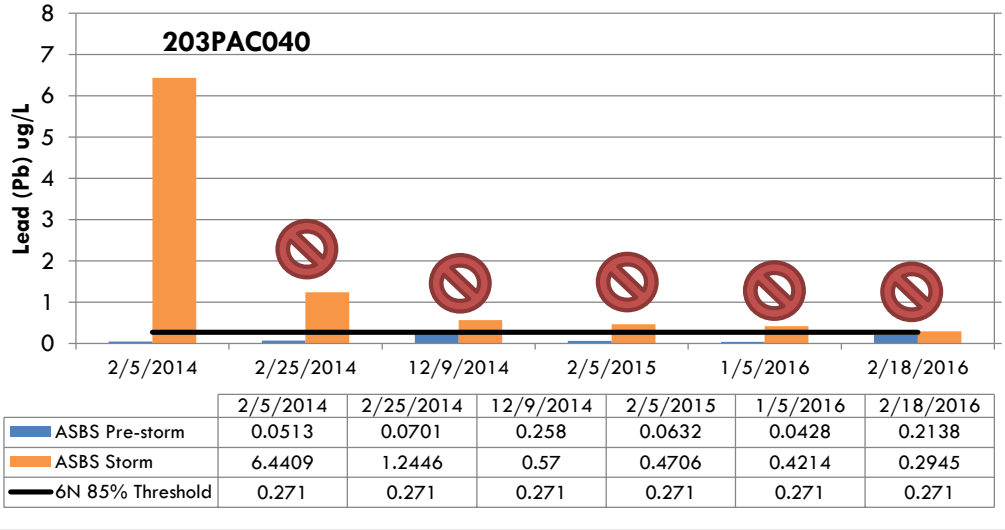
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0.22	0.678	0.378	0.217	1.296
ASBS Storm	4.126	2.249	2.756	0.841	1.251	0.814
6N 85% Threshold	1.369	1.369	1.369	1.369	1.369	1.369

Lead (Pb)

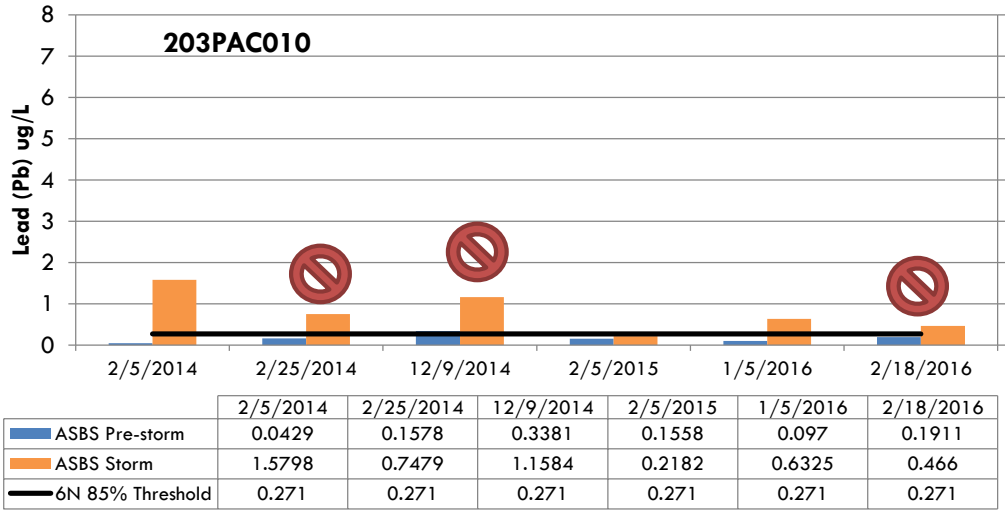
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.0125	0.1064	1.2278	0.0426	0.0561	0.0452
ASBS Storm	5.237	0.7972	3.9219	0.1675	1.3035	0.5326
6N 85% Threshold	0.271	0.271	0.271	0.271	0.271	0.271



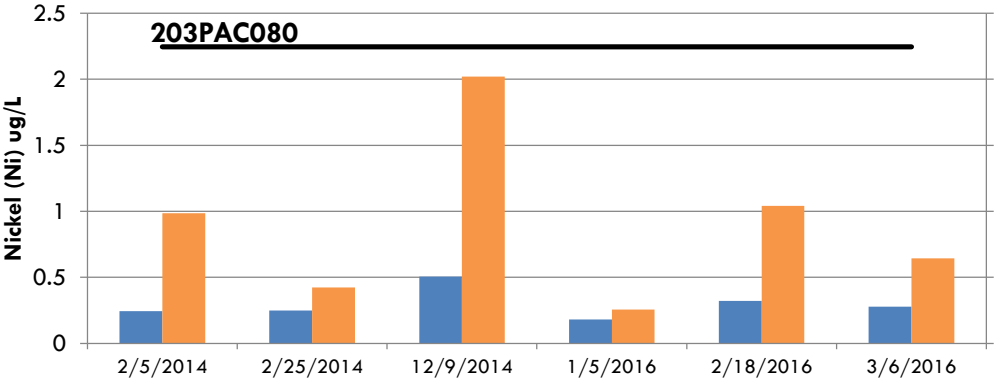
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0513	0.0701	0.258	0.0632	0.0428	0.2138
ASBS Storm	6.4409	1.2446	0.57	0.4706	0.4214	0.2945
6N 85% Threshold	0.271	0.271	0.271	0.271	0.271	0.271



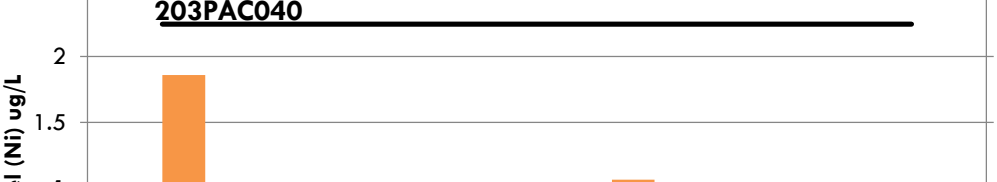
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0429	0.1578	0.3381	0.1558	0.097	0.1911
ASBS Storm	1.5798	0.7479	1.1584	0.2182	0.6325	0.466
6N 85% Threshold	0.271	0.271	0.271	0.271	0.271	0.271

Nickel (Ni)

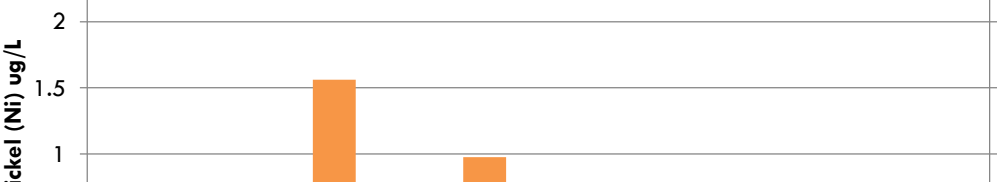
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.2432	0.2478	0.5043	0.1809	0.3225	0.2768
ASBS Storm	0.984	0.4224	2.0208	0.256	1.0403	0.6426
6N 85% Threshold	2.244	2.244	2.244	2.244	2.244	2.244



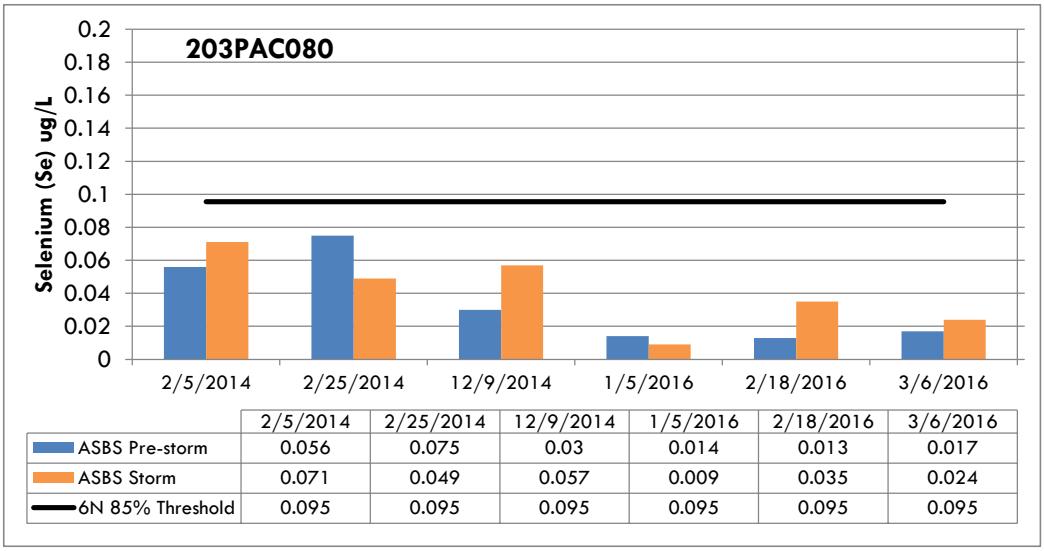
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.1481	0.2782	0.3738	0.2762	0.2266	0.7501
ASBS Storm	1.8585	0.432	0.6874	1.067	0.3292	0.555
6N 85% Threshold	2.244	2.244	2.244	2.244	2.244	2.244



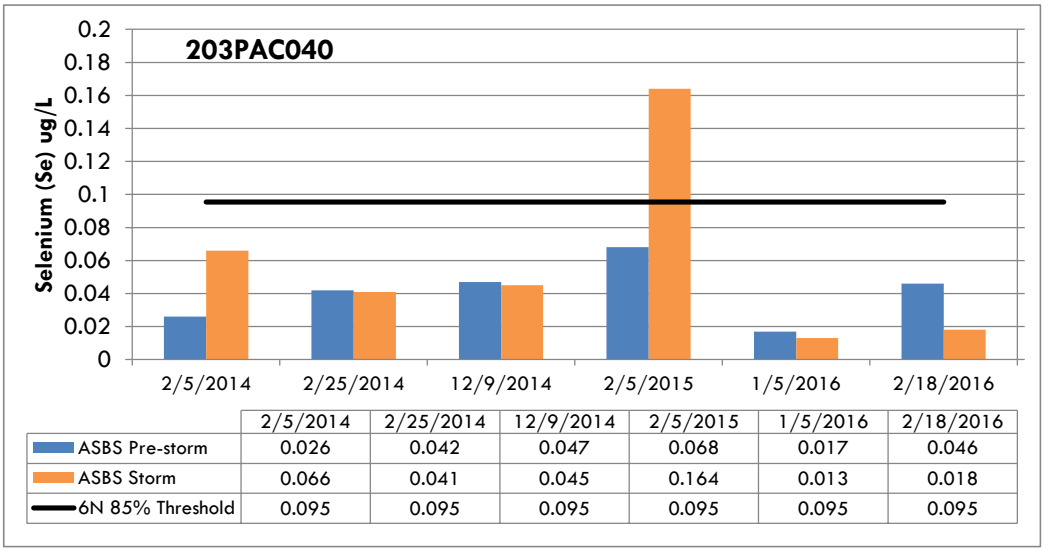
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.1772	0.1434	0.3157	0.24	0.189	0.3155
ASBS Storm	0.7646	1.5618	0.9761	0.2856	0.3499	0.4392
6N 85% Threshold	2.244	2.244	2.244	2.244	2.244	2.244

Selenium (Se)

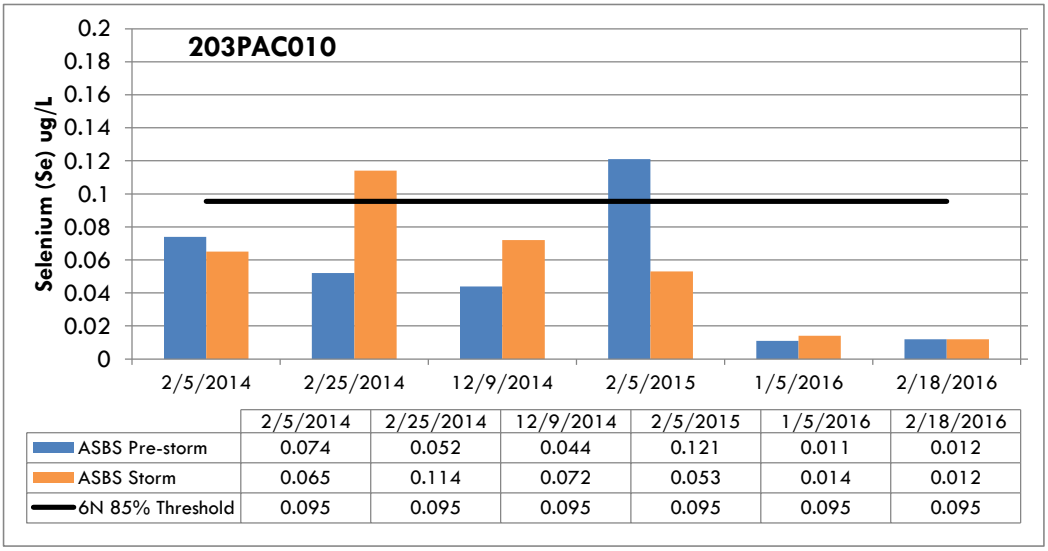
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.056	0.075	0.03	0.014	0.013	0.017
ASBS Storm	0.071	0.049	0.057	0.009	0.035	0.024
6N 85% Threshold	0.095	0.095	0.095	0.095	0.095	0.095



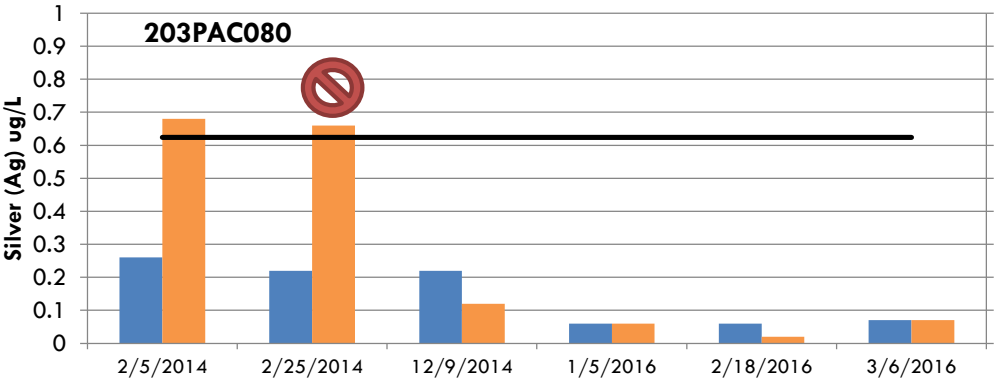
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.026	0.042	0.047	0.068	0.017	0.046
ASBS Storm	0.066	0.041	0.045	0.164	0.013	0.018
6N 85% Threshold	0.095	0.095	0.095	0.095	0.095	0.095



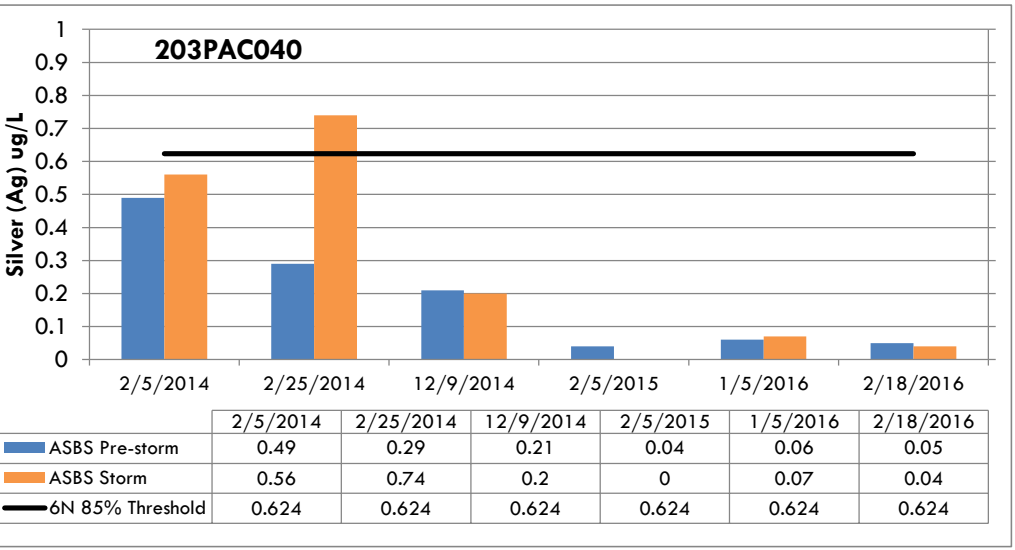
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.074	0.052	0.044	0.121	0.011	0.012
ASBS Storm	0.065	0.114	0.072	0.053	0.014	0.012
6N 85% Threshold	0.095	0.095	0.095	0.095	0.095	0.095

Silver (Ag)

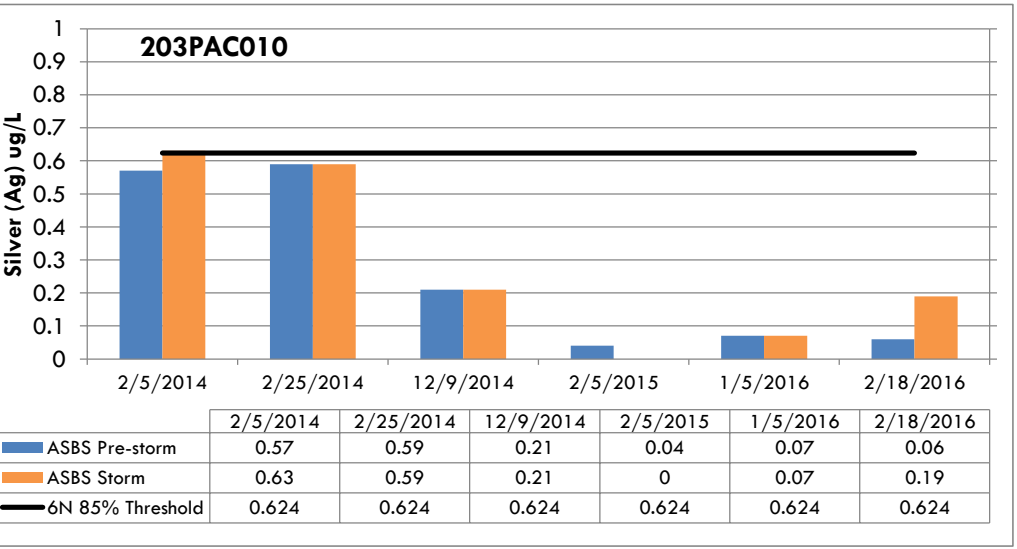
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.26	0.22	0.22	0.06	0.06	0.07
ASBS Storm	0.68	0.66	0.12	0.06	0.02	0.07
6N 85% Threshold	0.624	0.624	0.624	0.624	0.624	0.624



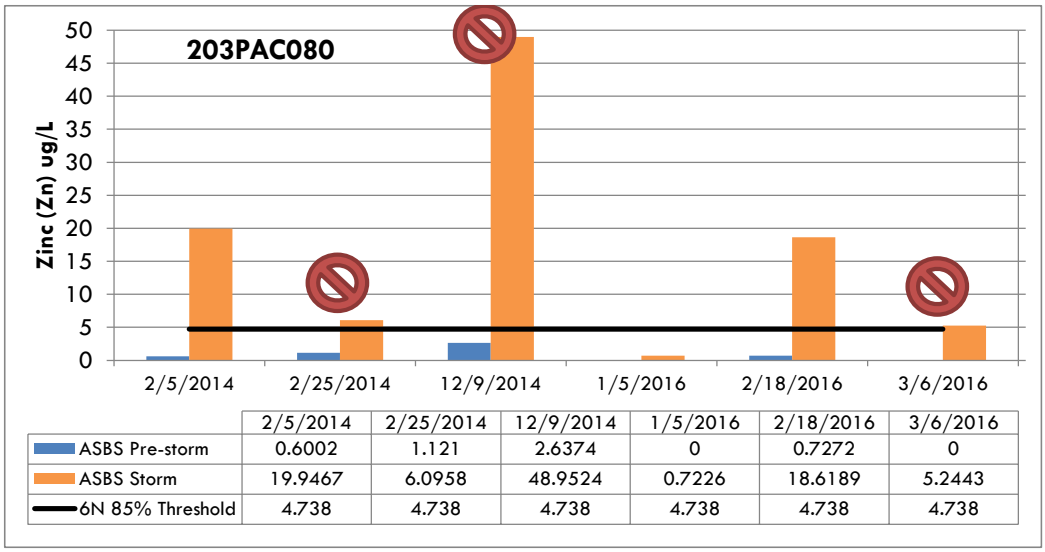
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.49	0.29	0.21	0.04	0.06	0.05
ASBS Storm	0.56	0.74	0.2	0	0.07	0.04
6N 85% Threshold	0.624	0.624	0.624	0.624	0.624	0.624



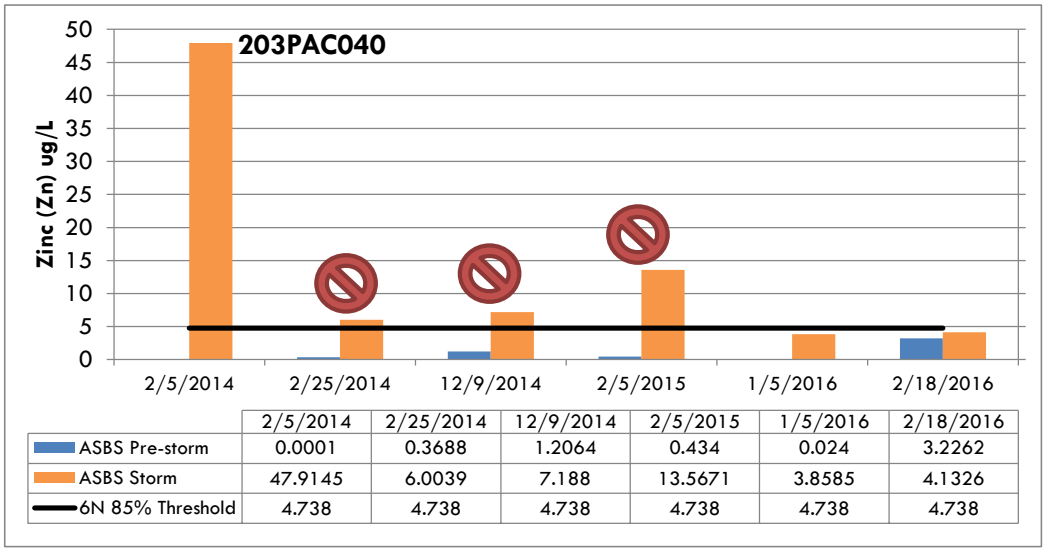
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.57	0.59	0.21	0.04	0.07	0.06
ASBS Storm	0.63	0.59	0.21	0	0.07	0.19
6N 85% Threshold	0.624	0.624	0.624	0.624	0.624	0.624

Zinc (Zn)

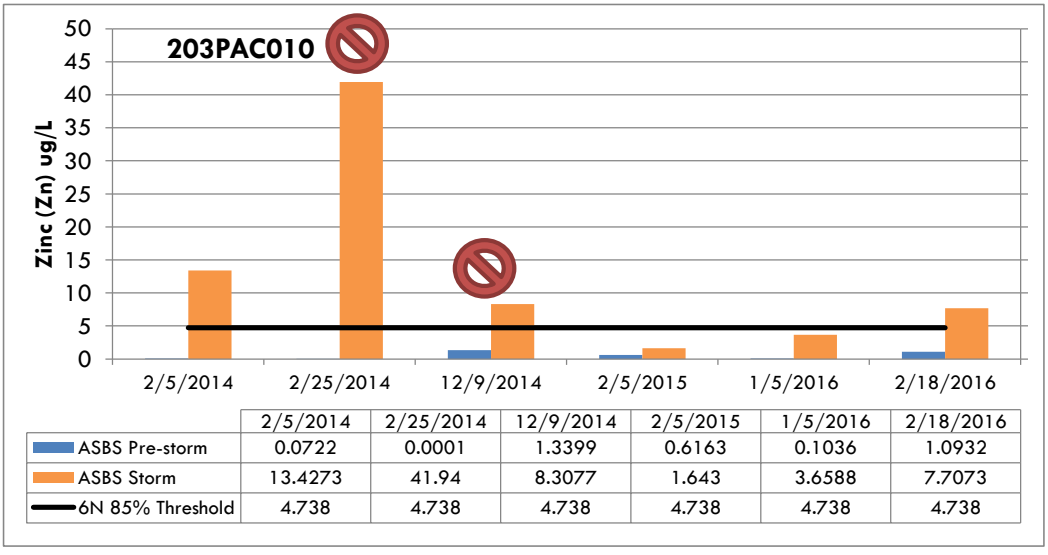
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.6002	1.121	2.6374	0	0.7272	0
ASBS Storm	19.9467	6.0958	48.9524	0.7226	18.6189	5.2443
6N 85% Threshold	4.738	4.738	4.738	4.738	4.738	4.738



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0001	0.3688	1.2064	0.434	0.024	3.2262
ASBS Storm	47.9145	6.0039	7.188	13.5671	3.8585	4.1326
6N 85% Threshold	4.738	4.738	4.738	4.738	4.738	4.738

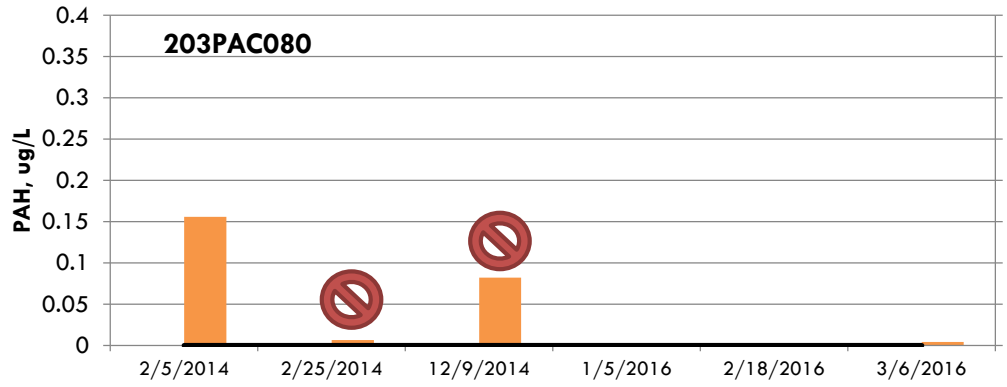


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.0722	0.0001	1.3399	0.6163	0.1036	1.0932
ASBS Storm	13.4273	41.94	8.3077	1.643	3.6588	7.7073
6N 85% Threshold	4.738	4.738	4.738	4.738	4.738	4.738

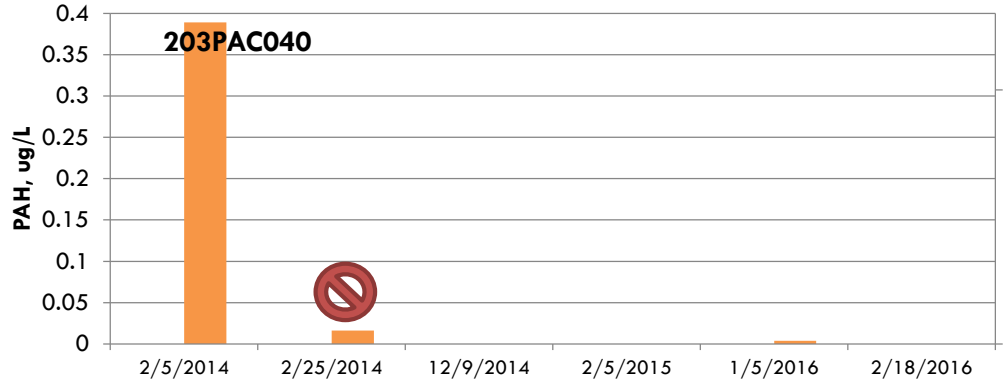
Attachment 2: Polynuclear Aromatic Hydrocarbons

Polynuclear Aromatic Hydrocarbons (PAH)

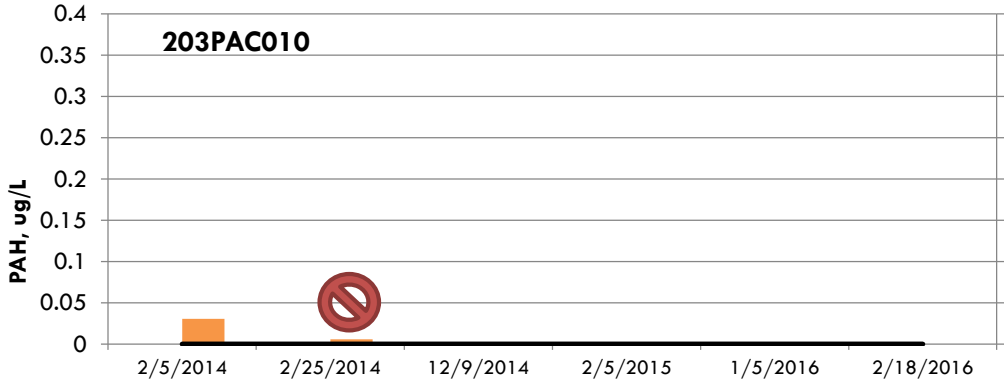
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.15586	0.00646	0.08206	0	0	0.004
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

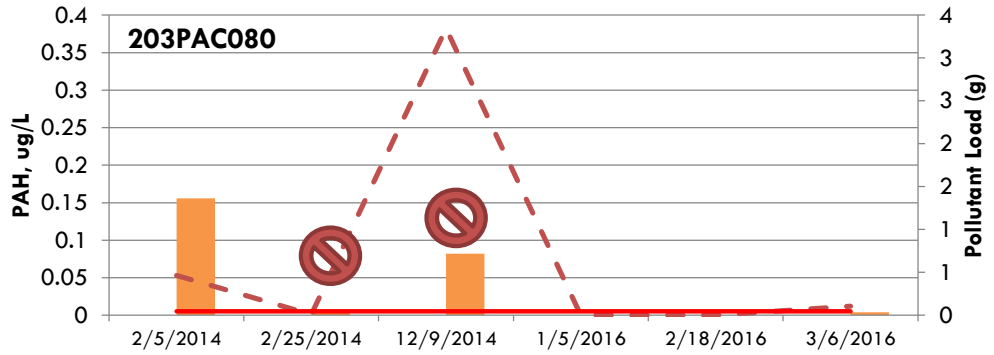


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.38919	0.01616	0	0	0.004	0
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

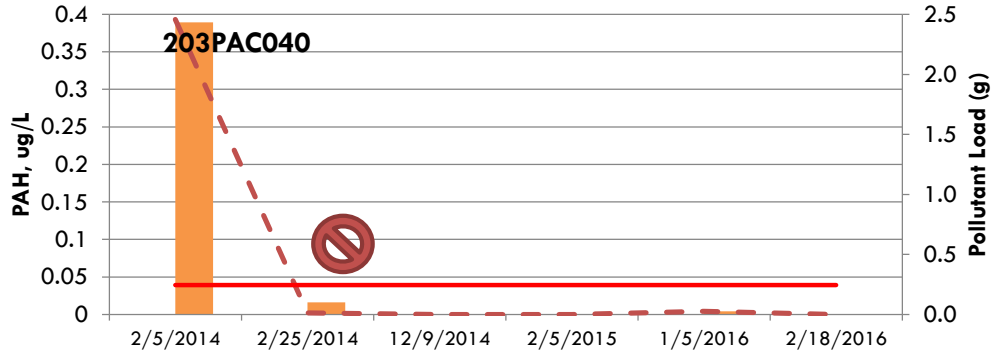


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.03044	0.00571	0	0	0	0
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

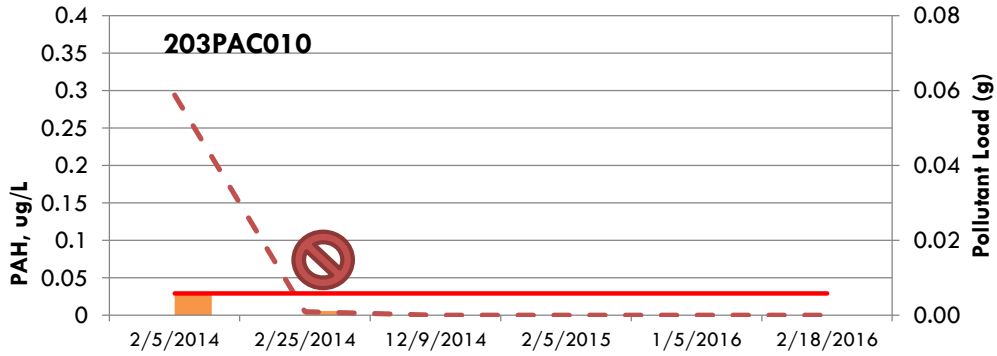
Polynuclear Aromatic Hydrocarbons (PAH) - Compliance



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.15586	0.00646	0.08206	0	0	0.004
Pollutant Load	0.46	0.01	3.35	0.00	0.00	0.11
90% Load Reduction	0.0463	0.0463	0.0463	0.0463	0.0463	0.0463



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.38919	0.01616	0	0	0.004	0
Pollutant Load	2.46	0.01	0.00	0.00	0.03	0.00
90% Load Reduction	0.2458	0.2458	0.2458	0.2458	0.2458	0.2458

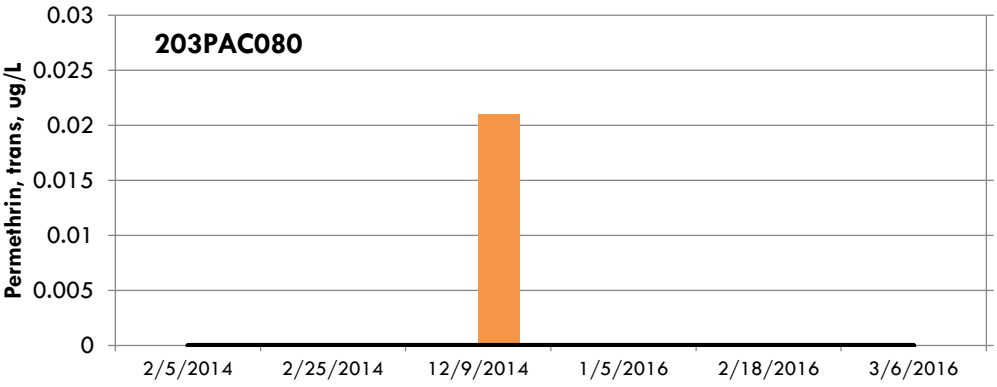


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.03044	0.00571	0	0	0	0
Pollutant Load	0.0588	0.0010	0.0000	0.0000	0.0000	0.0000
90% Load Reduction	0.0059	0.0059	0.0059	0.0059	0.0059	0.0059

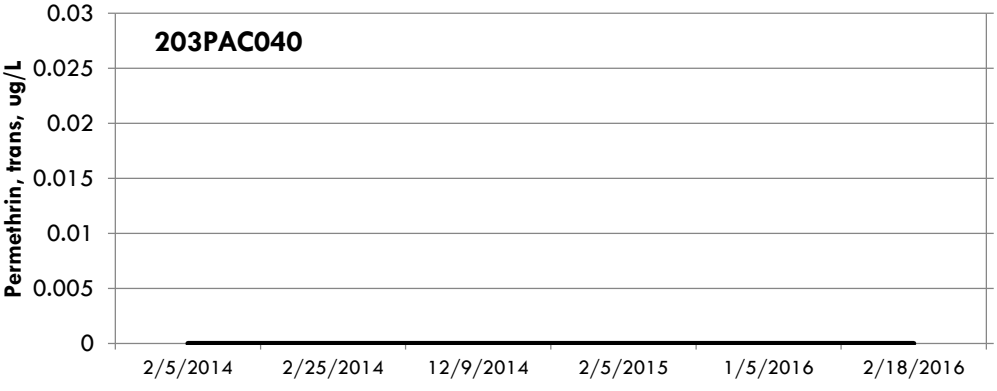
Attachment 3: Pyrethroid and Organophosphate Pesticides

Permethrin, trans

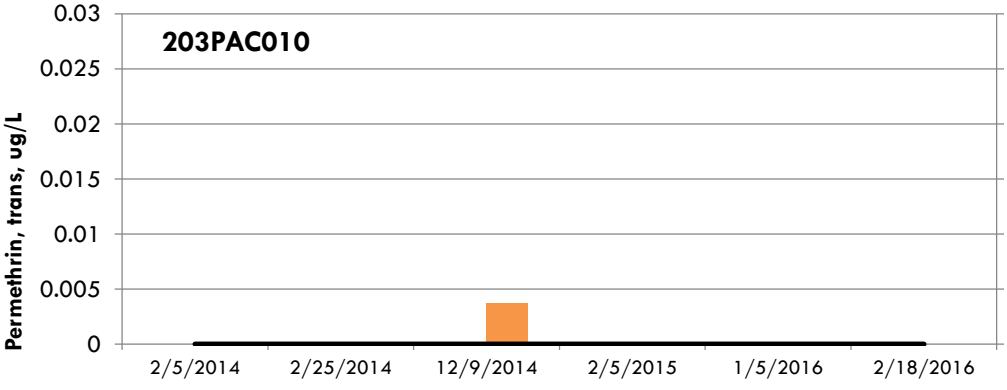
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.021	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



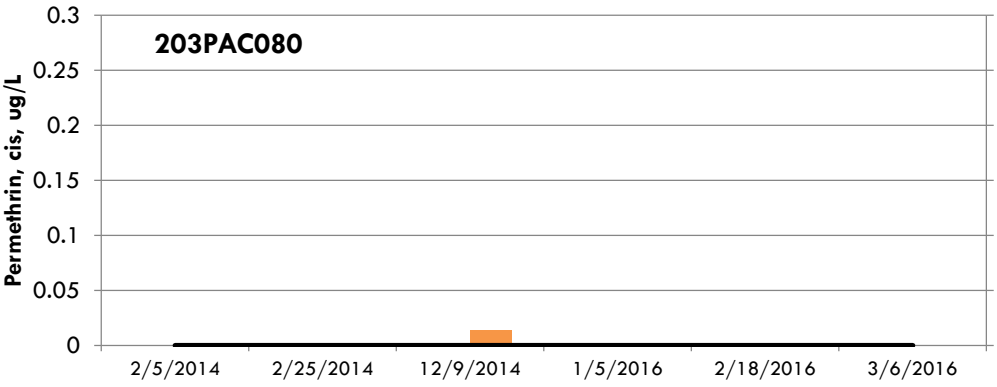
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



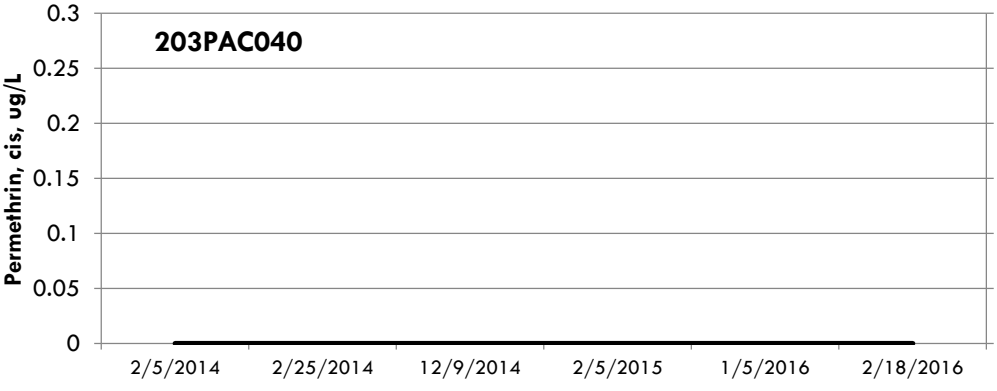
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0.0037	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Permethrin, cis

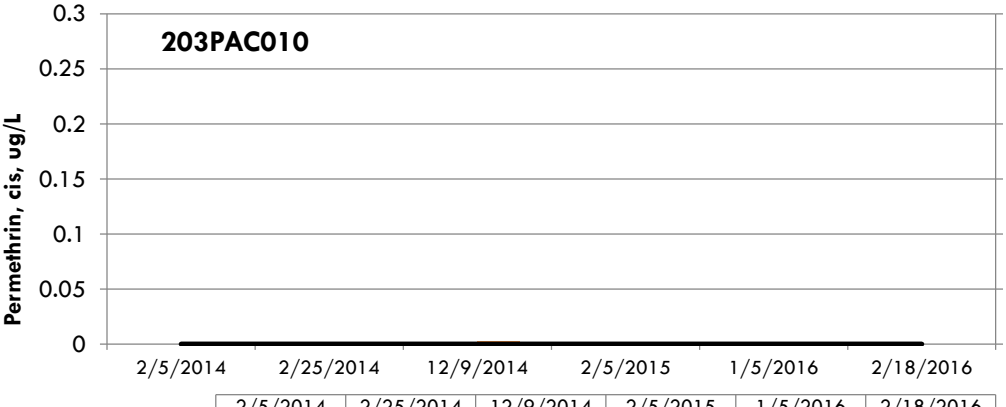
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.014	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



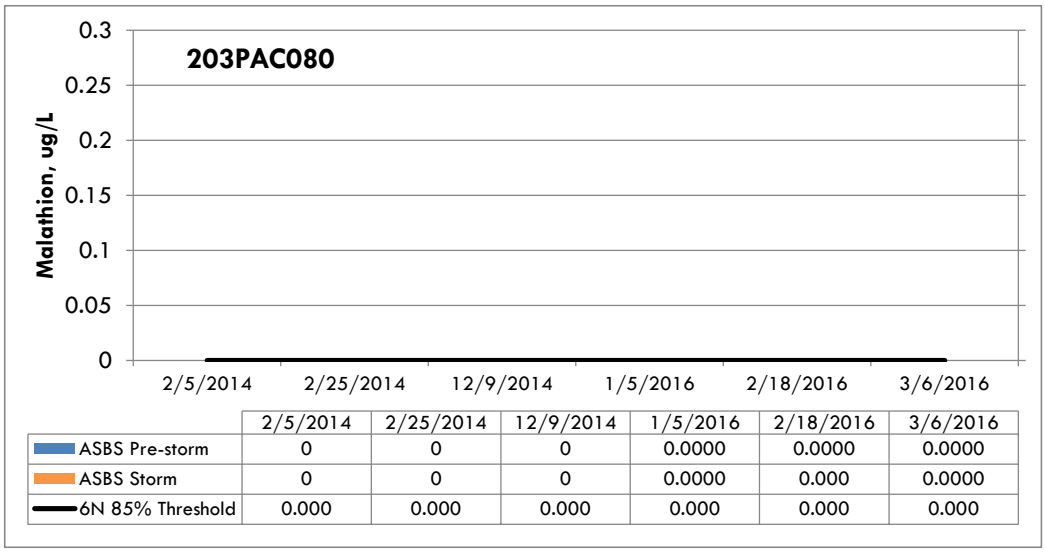
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



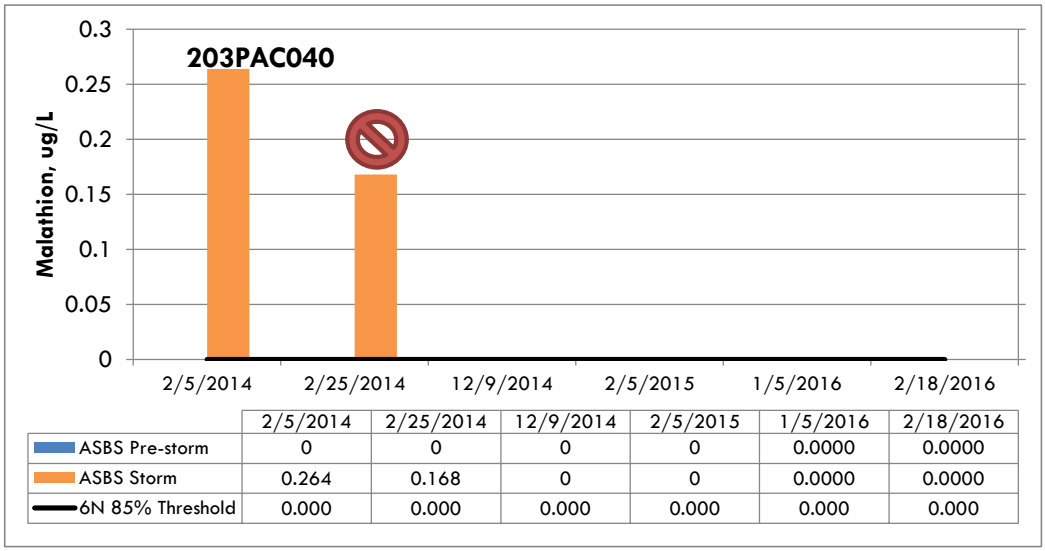
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0.0024	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Malathion

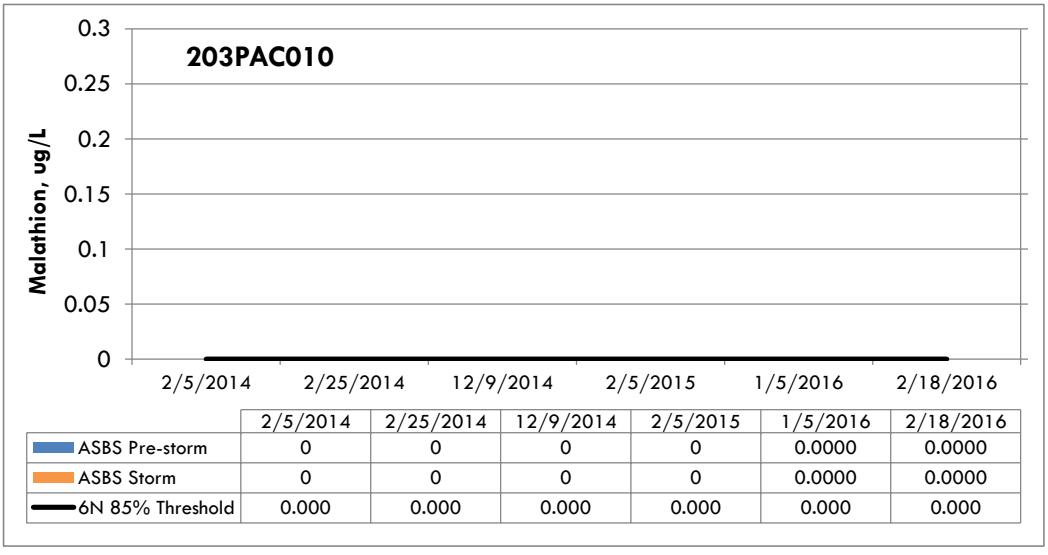
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

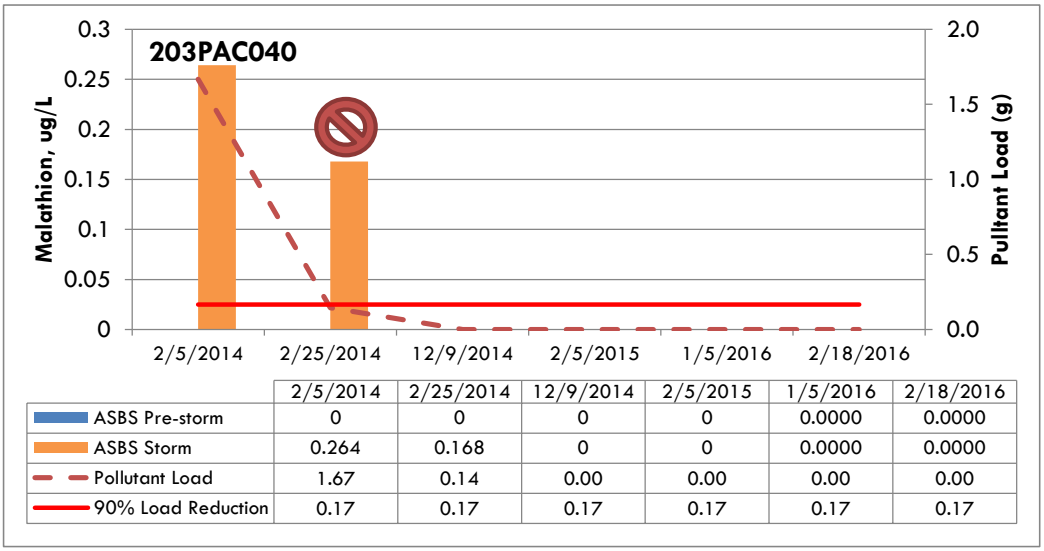


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0.264	0.168	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

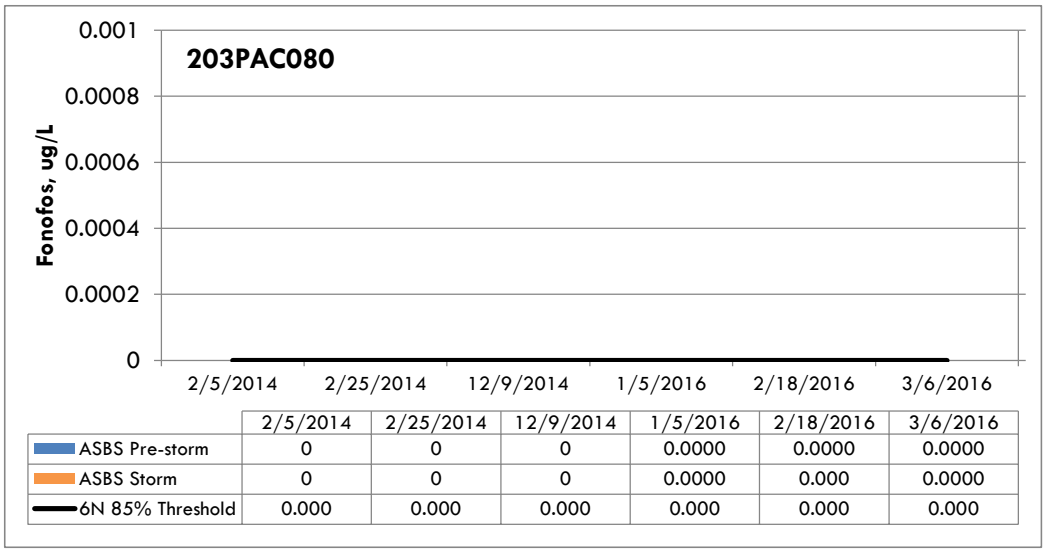
Malathion - Compliance



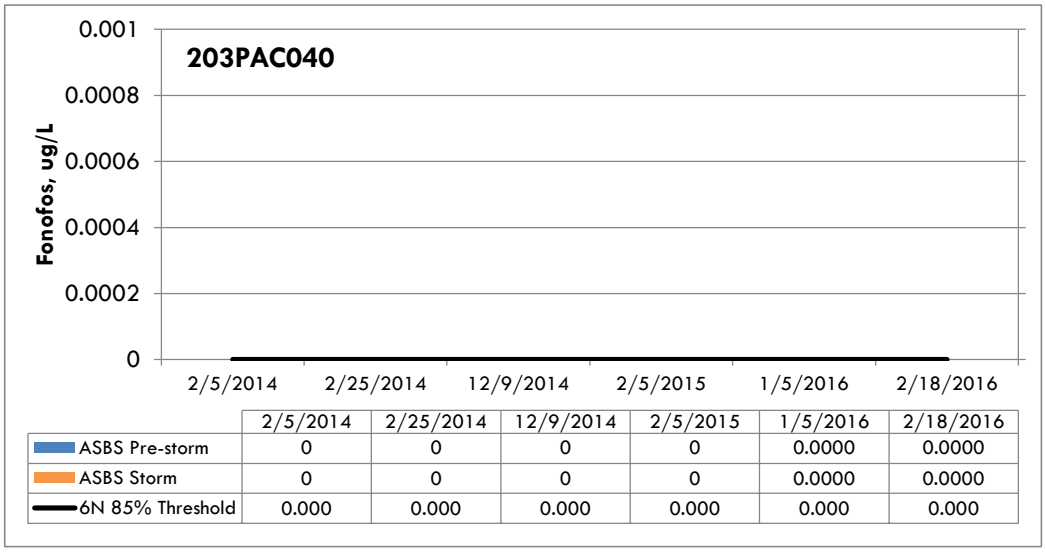
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0.264	0.168	0	0	0.0000	0.0000
Pollutant Load	1.67	0.14	0.00	0.00	0.00	0.00
90% Load Reduction	0.17	0.17	0.17	0.17	0.17	0.17

Fonofos

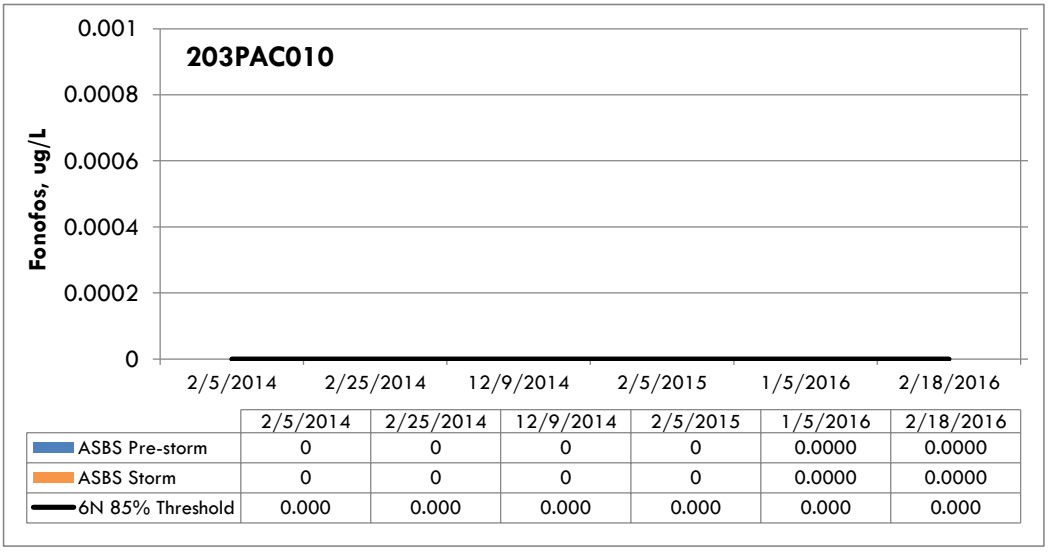
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



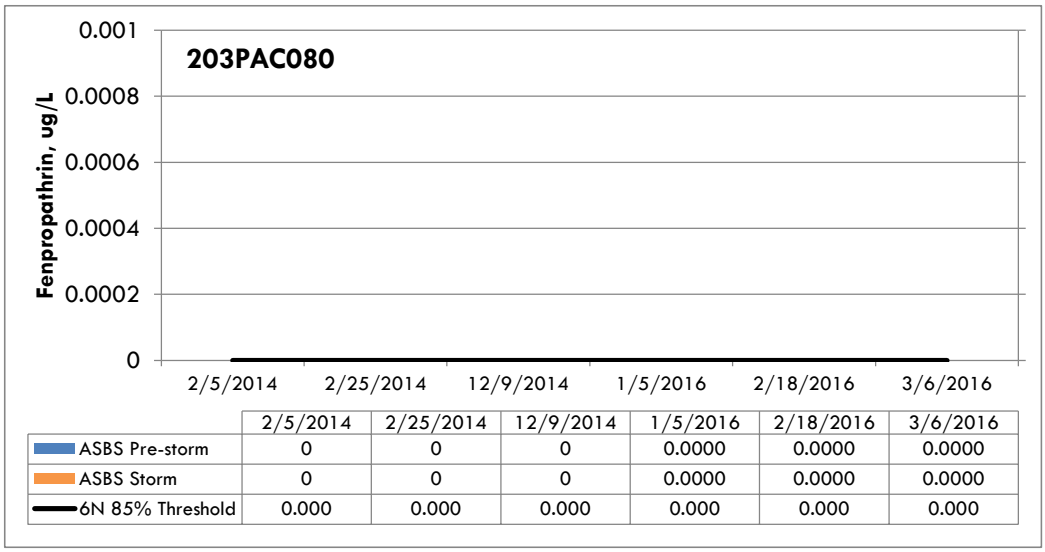
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



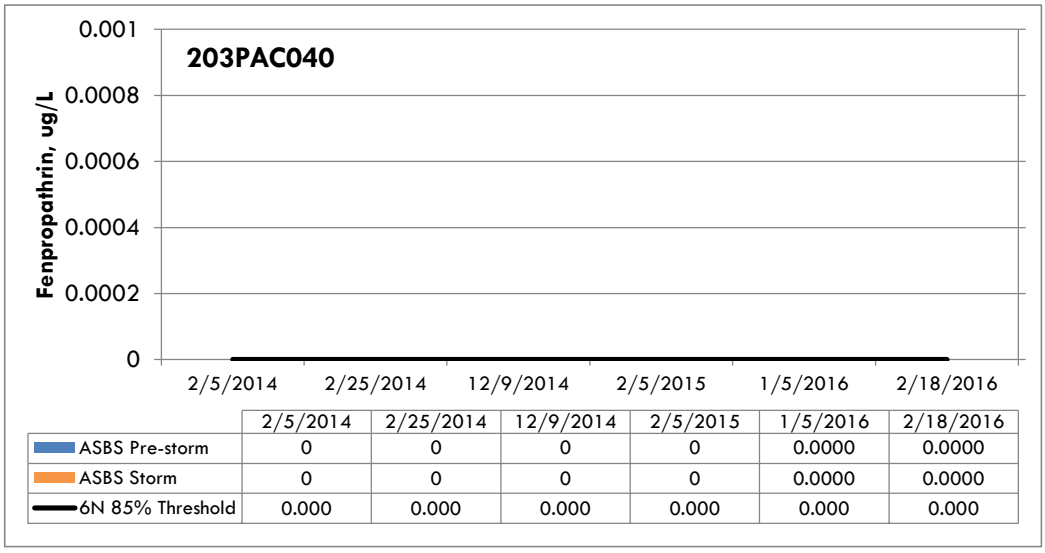
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Fenpropathrin

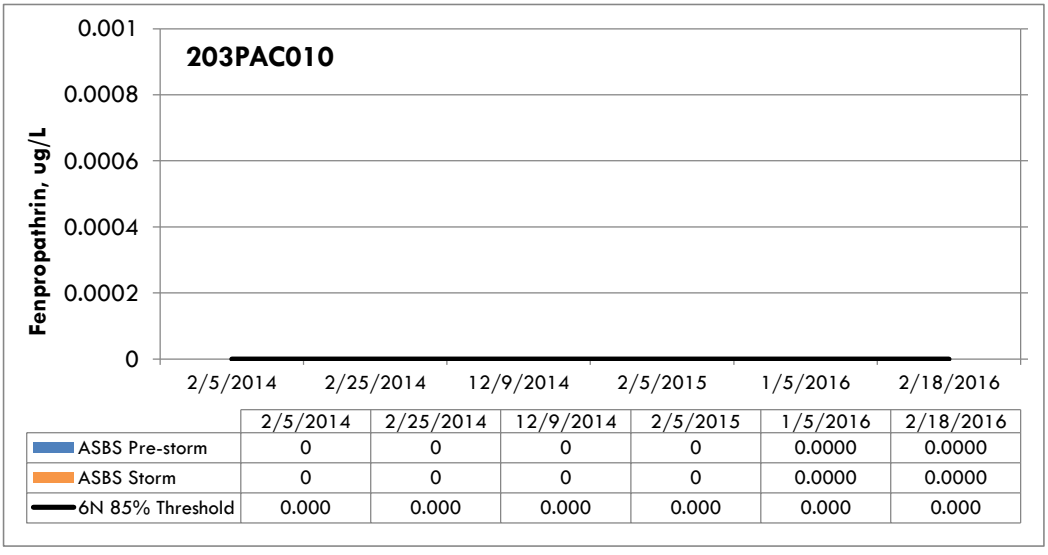
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



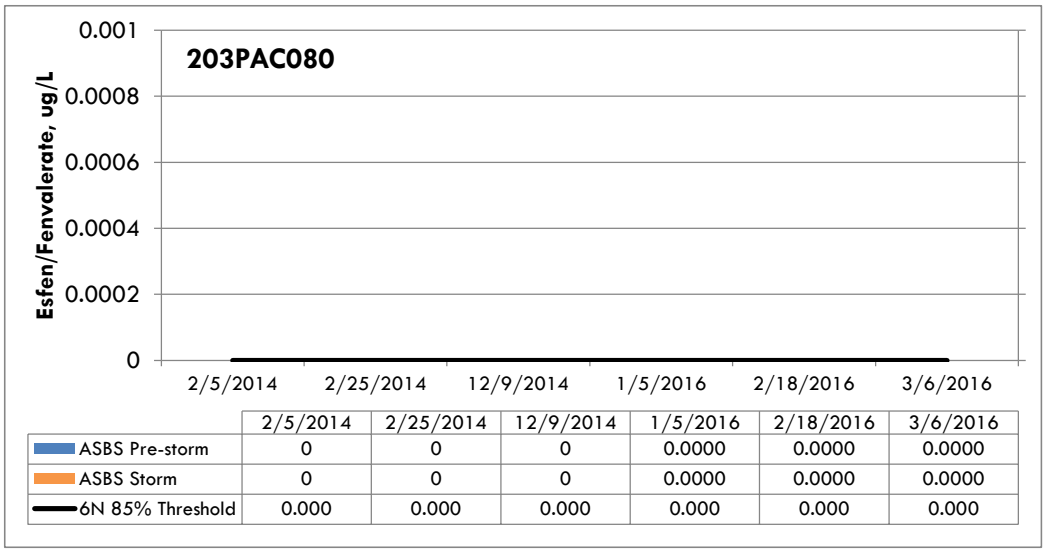
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



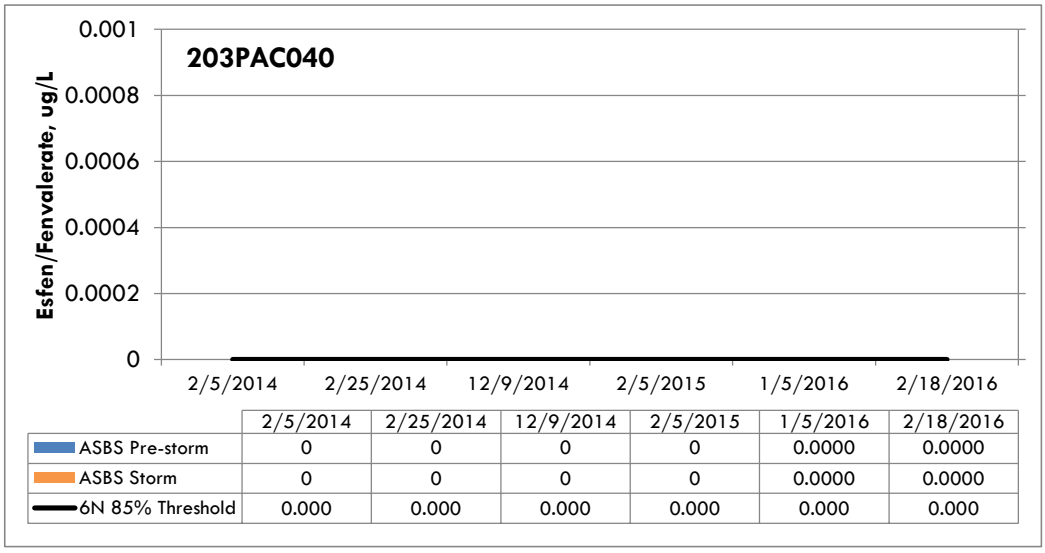
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Esfen/Fenvalerate

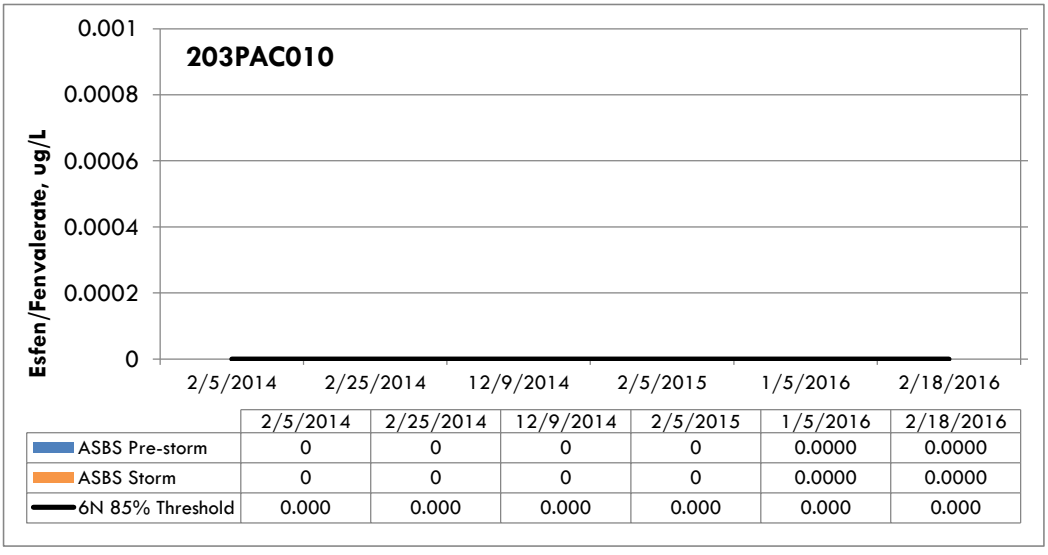
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



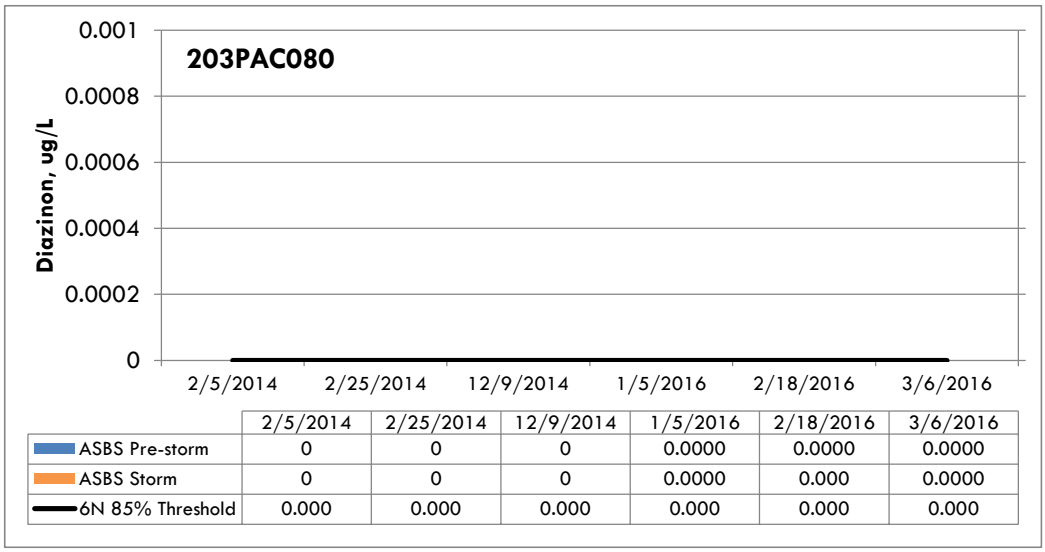
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



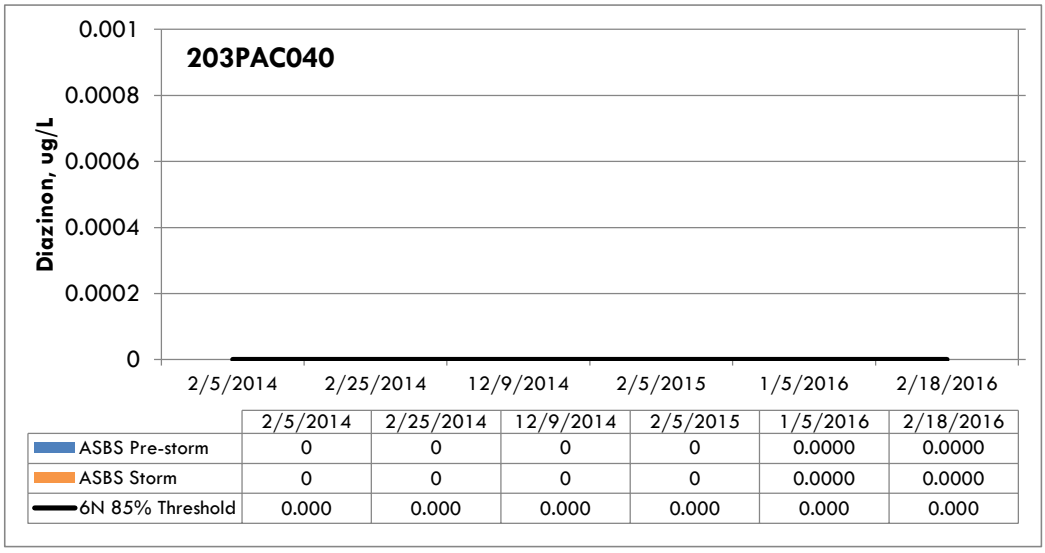
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Diazinon

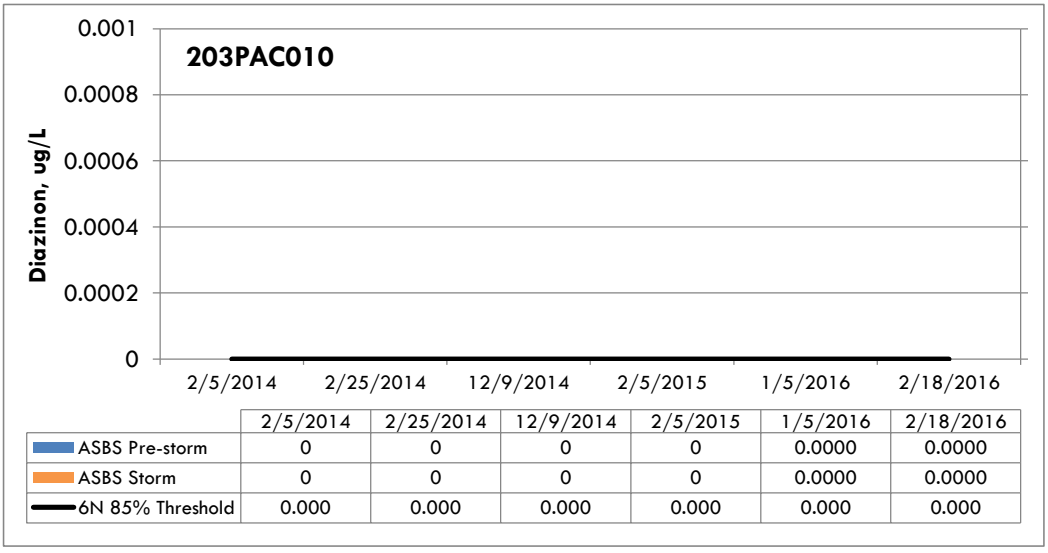
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



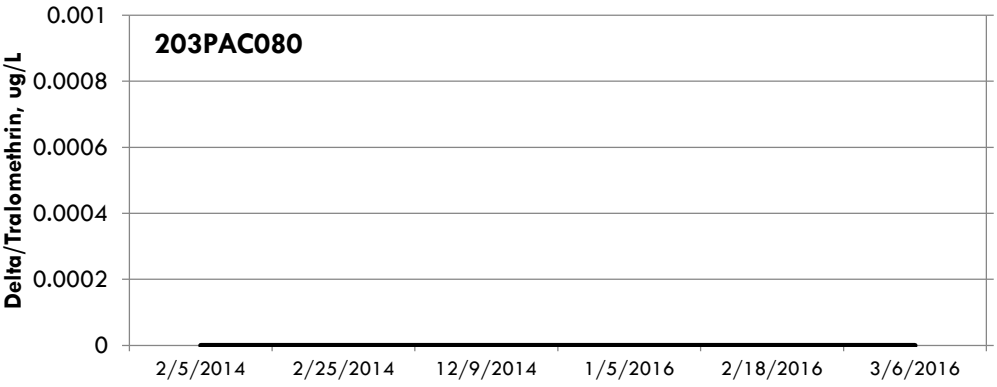
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



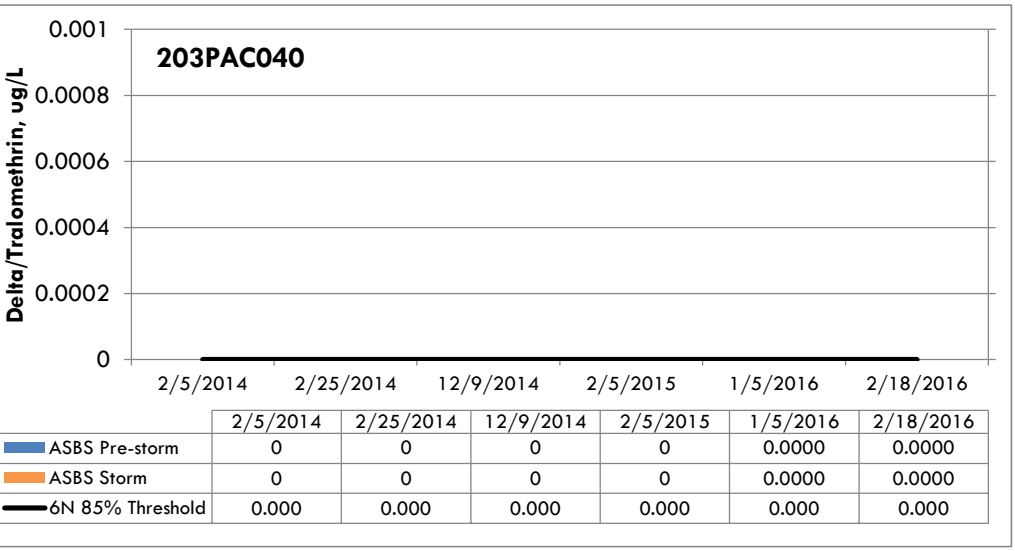
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Delta/Tralomethrin

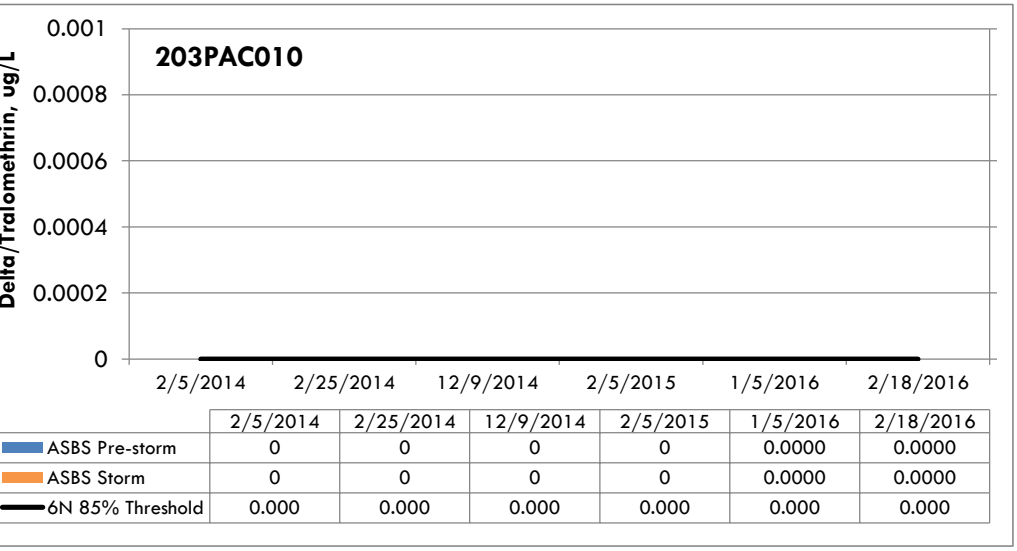
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



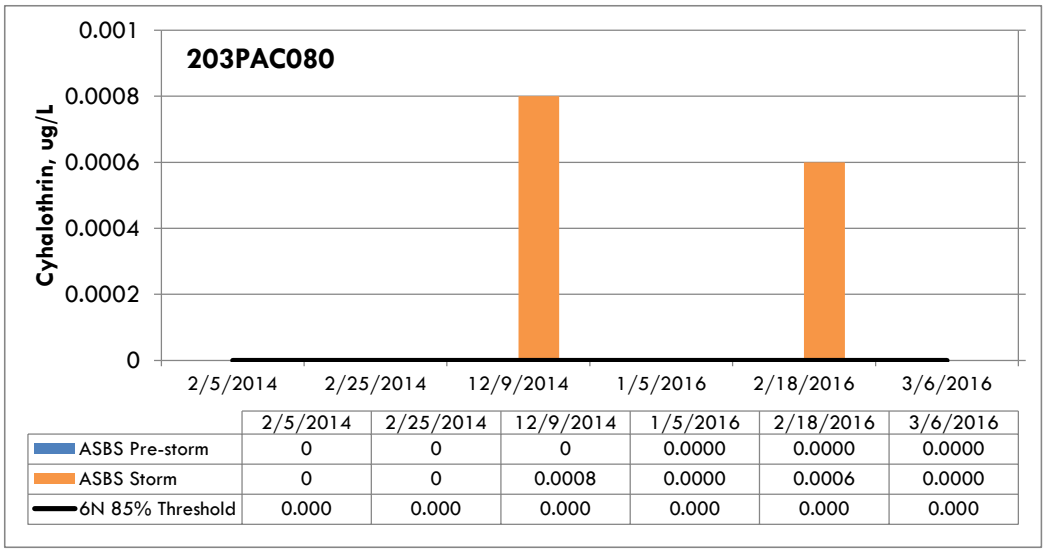
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



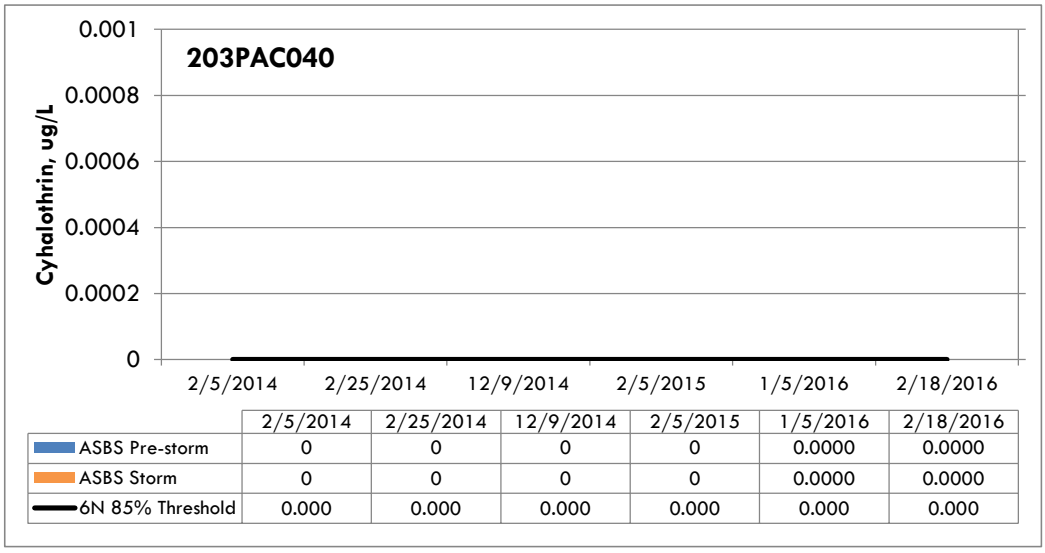
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Cyhalothrin

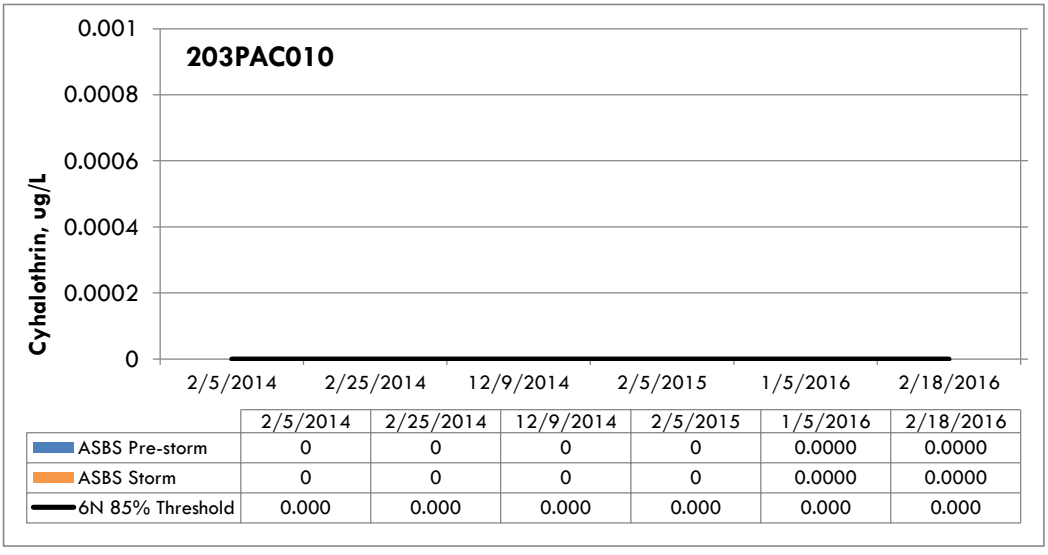
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.0008	0.0000	0.0006	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



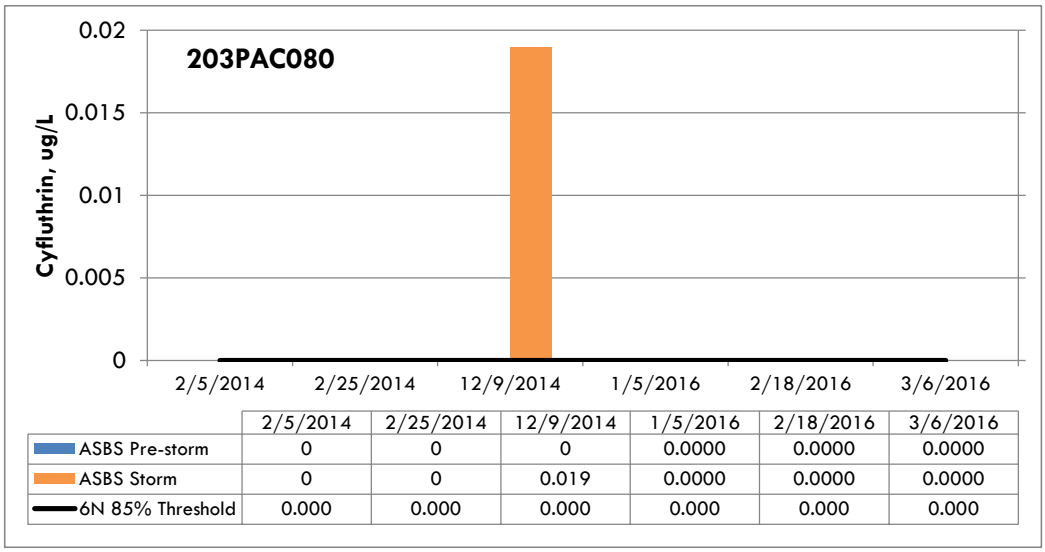
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



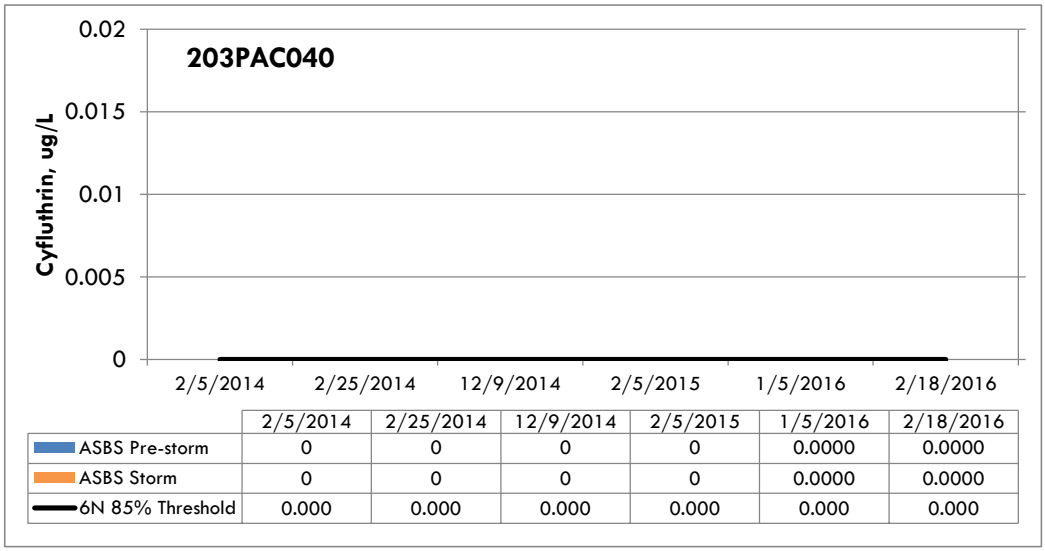
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Cyfluthrin

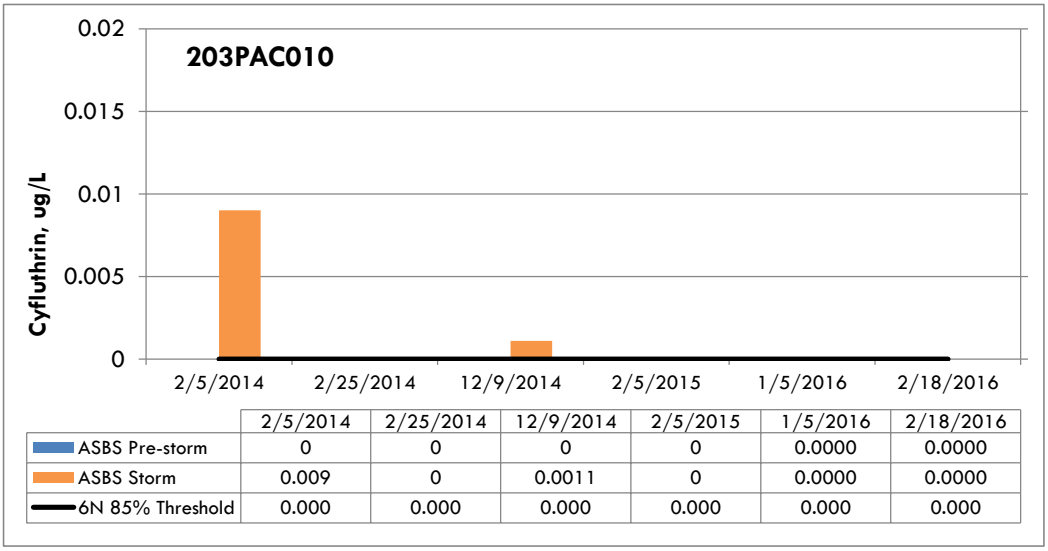
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.019	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



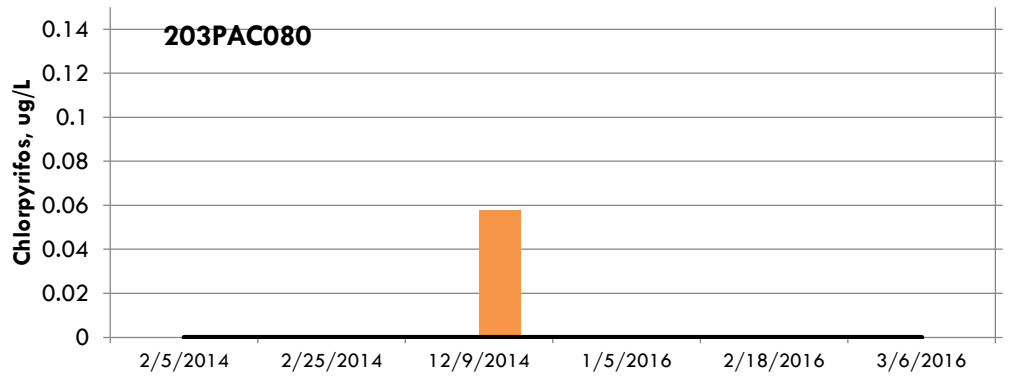
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



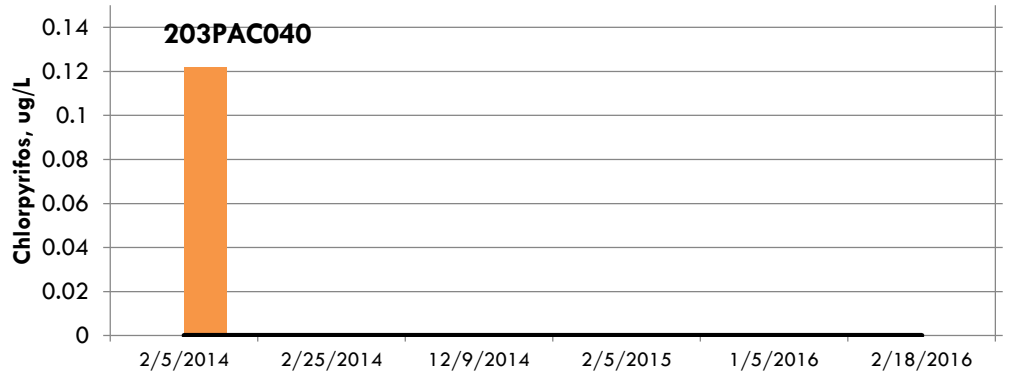
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0.009	0	0.0011	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Chlorpyrifos

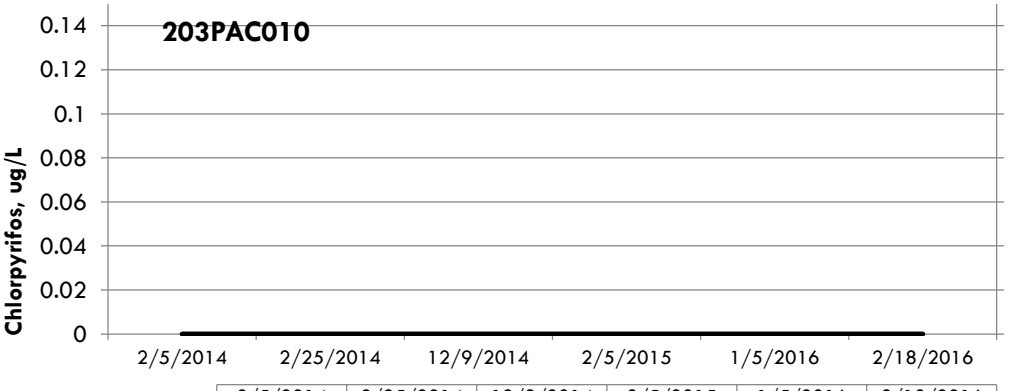
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.058	0.0000	0.000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



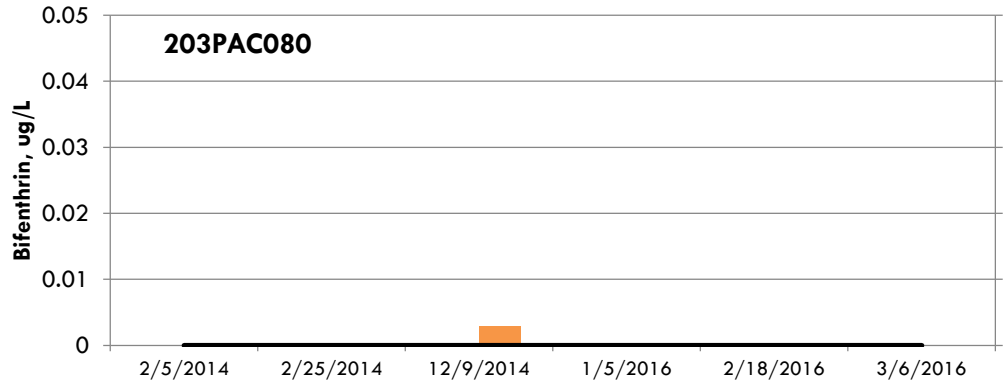
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0.122	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



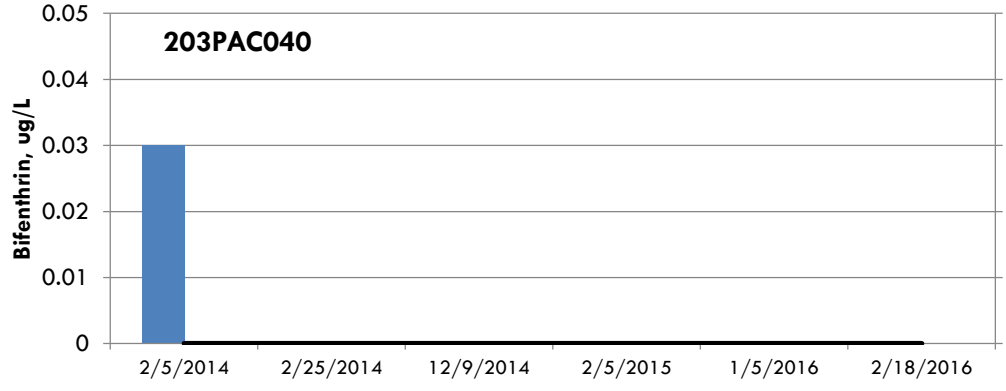
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Bifenthrin

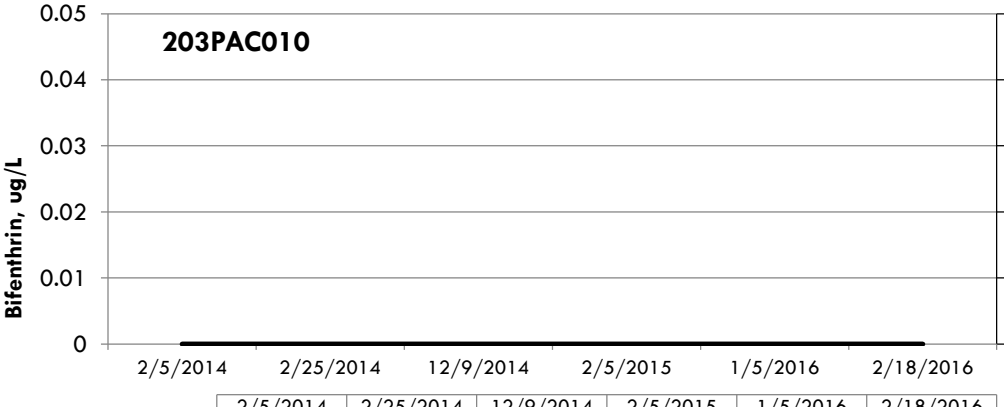
= Consecutive sample where Storm concetration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0.0000	0.0000	0.0000
ASBS Storm	0	0	0.003	0.0000	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.03	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

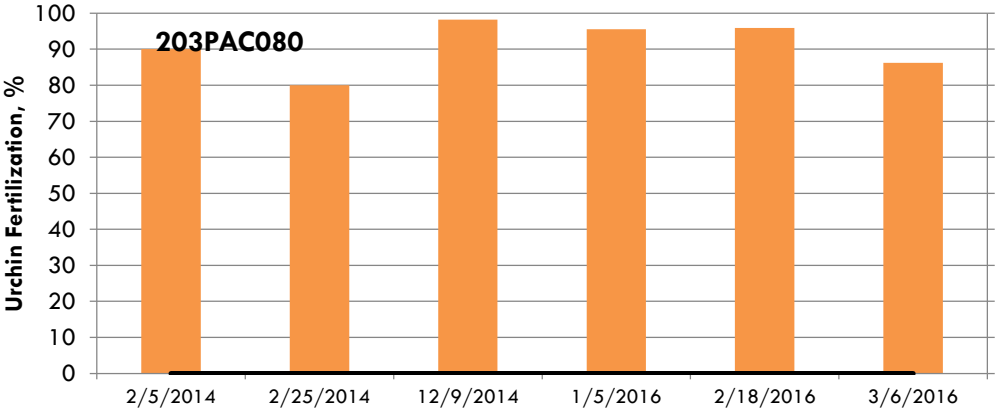


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0.0000	0.0000
ASBS Storm	0	0	0	0	0.0000	0.0000
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Attachment 4: Toxicity

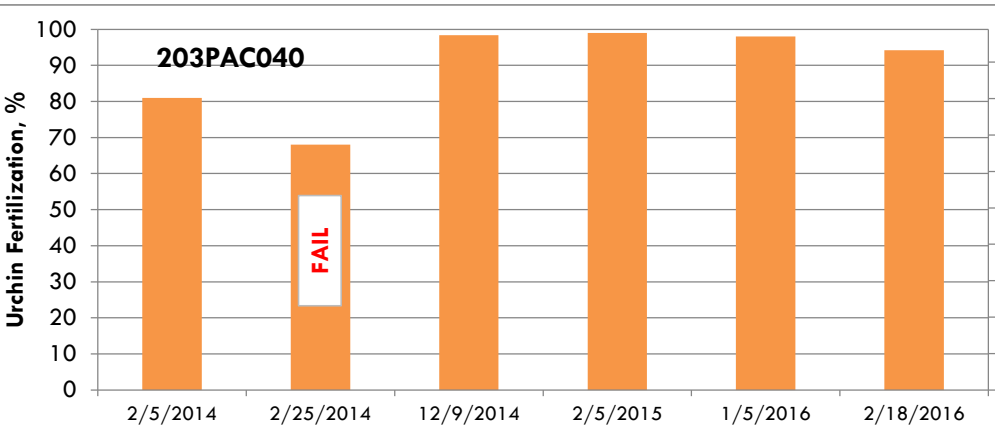
Urchin Fertilization

= Consecutive sample where Chronic Toxicity Test Failed



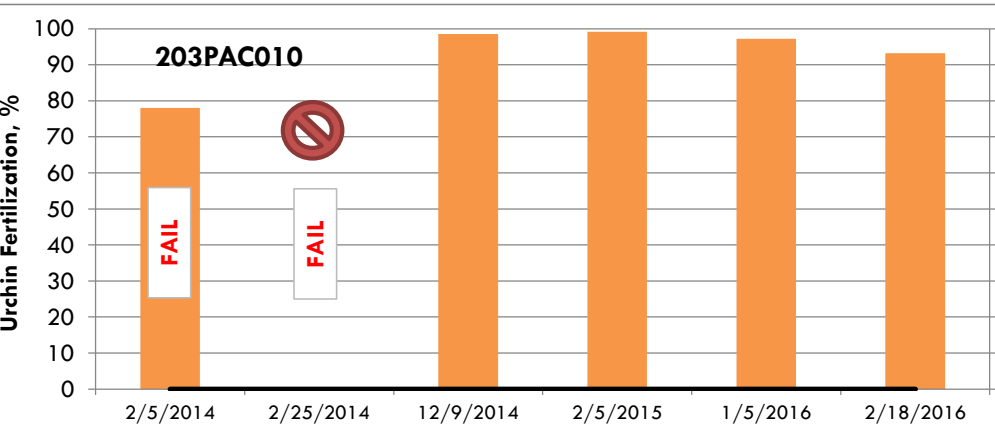
	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Storm	90	80	98.2	95.5	95.9	86.2
6N 85% Threshold	0.000	0.000	0.000	0.000		

No tests completed on Pre-Storm Samples



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	81	68	98.4	99	98.0	94.2
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

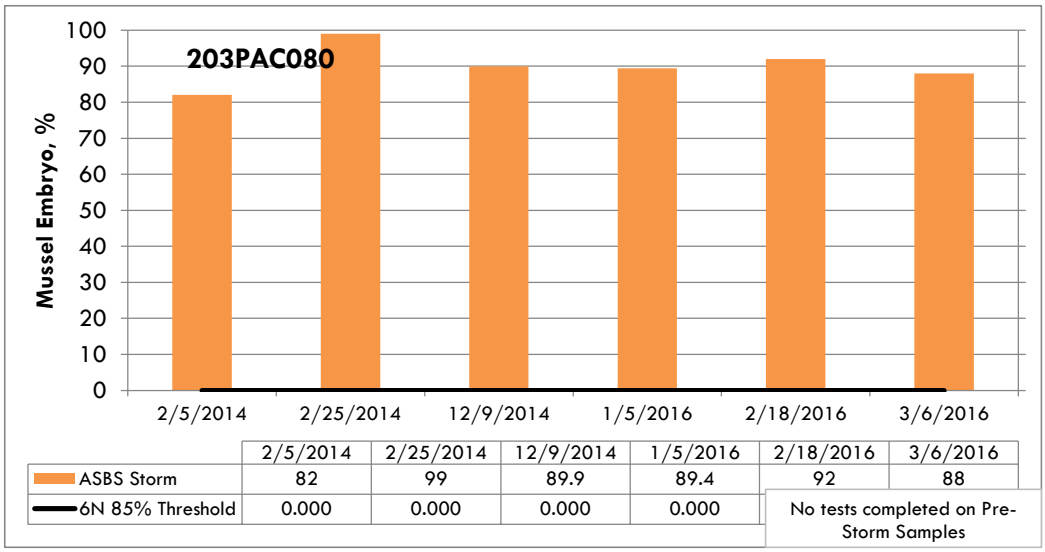


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	78	0	98.5	99.2	97.2	93.2
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

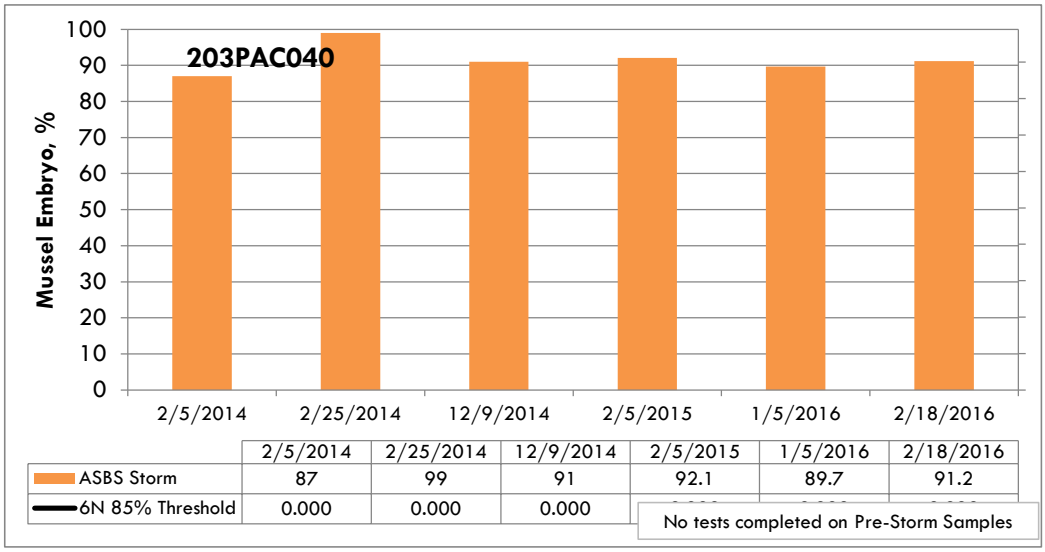
Mussel Embryo

= Consecutive sample where Chronic Toxicity Test Failed



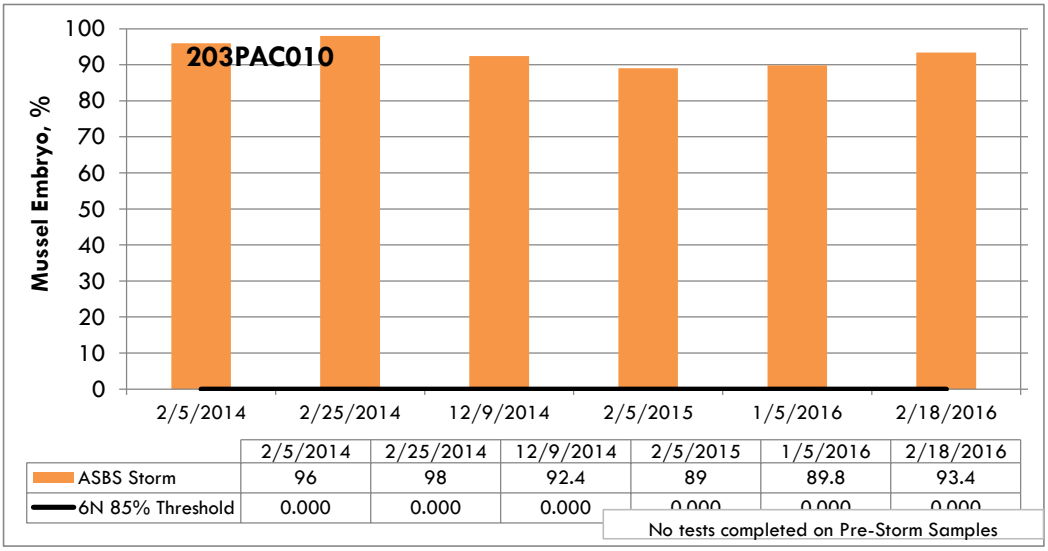
	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Storm	82	99	89.9	89.4	92	88
6N 85% Threshold	0.000	0.000	0.000	0.000		

No tests completed on Pre-Storm Samples



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	87	99	91	92.1	89.7	91.2
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

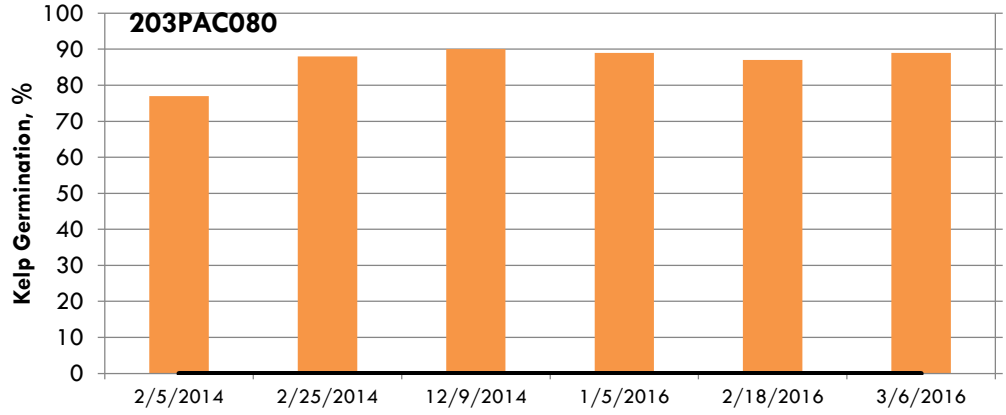


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	96	98	92.4	89	89.8	93.4
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

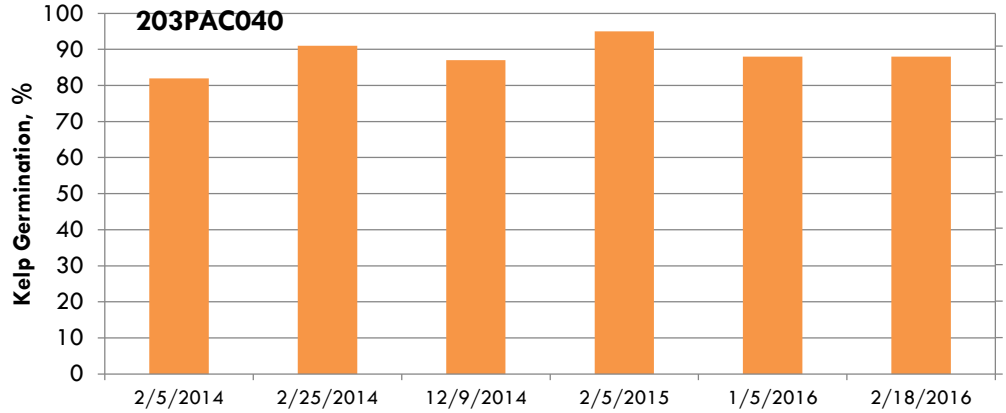
Kelp Growth

= Consecutive sample where Chronic Toxicity Test Failed



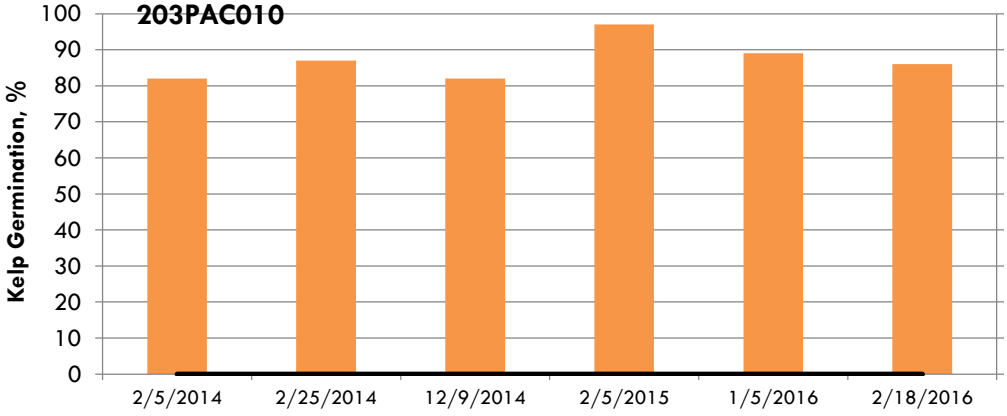
	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Storm	77	88	90	89	87	89
6N 85% Threshold	0.000	0.000	0.000	0.000		

No tests completed on Pre-Storm Samples



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	82	91	87	95	88	88
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

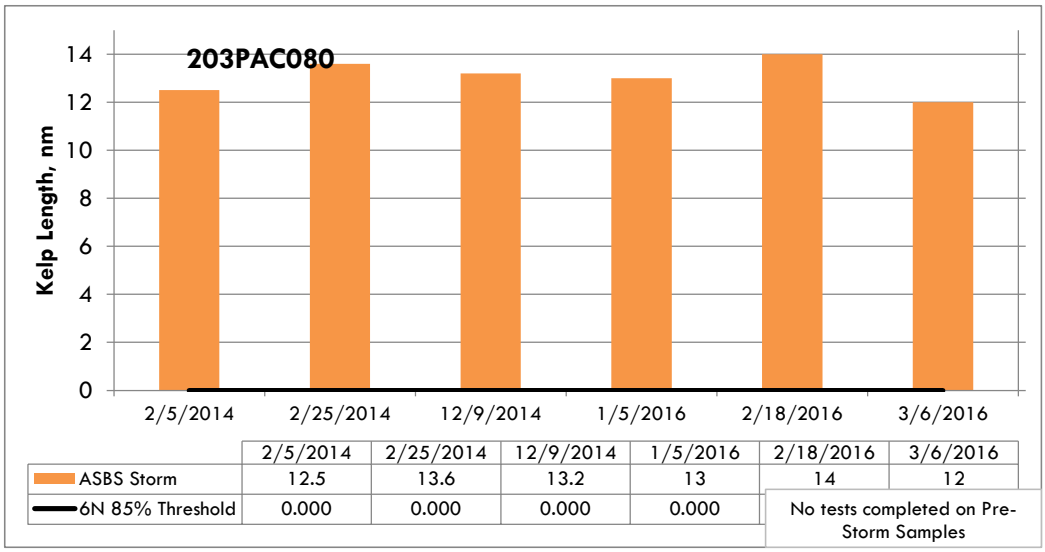


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	82	87	82	97	89	86
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

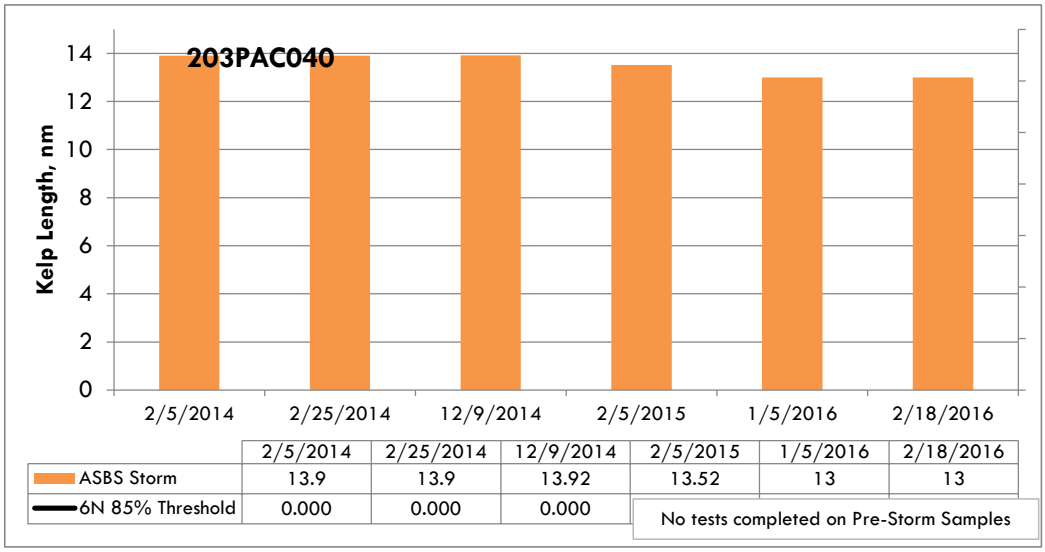
Kelp Length

= Consecutive sample where Chronic Toxicity Test Failed



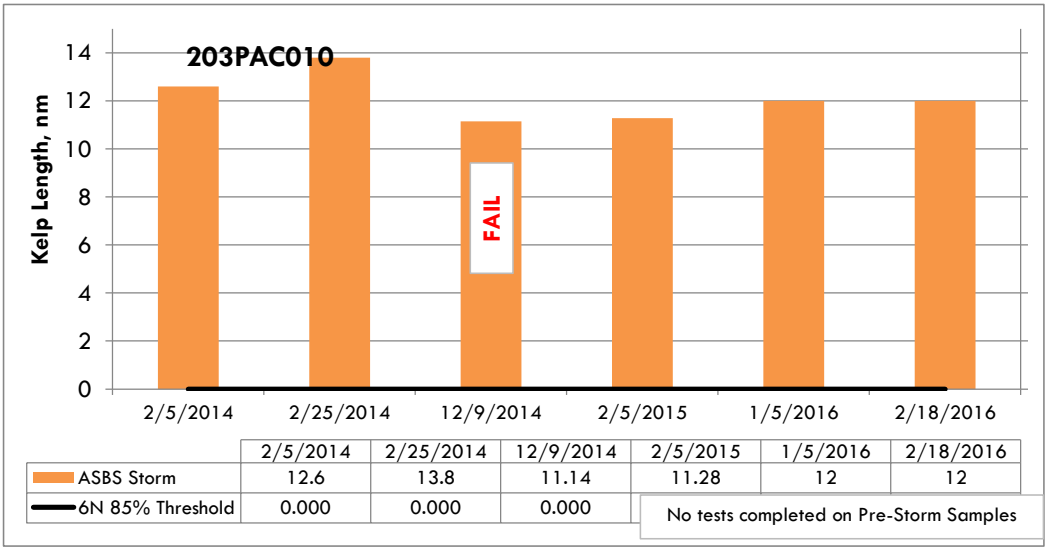
	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Storm	12.5	13.6	13.2	13	14	12
6N 85% Threshold	0.000	0.000	0.000	0.000		

No tests completed on Pre-Storm Samples



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	13.9	13.9	13.92	13.52	13	13
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples



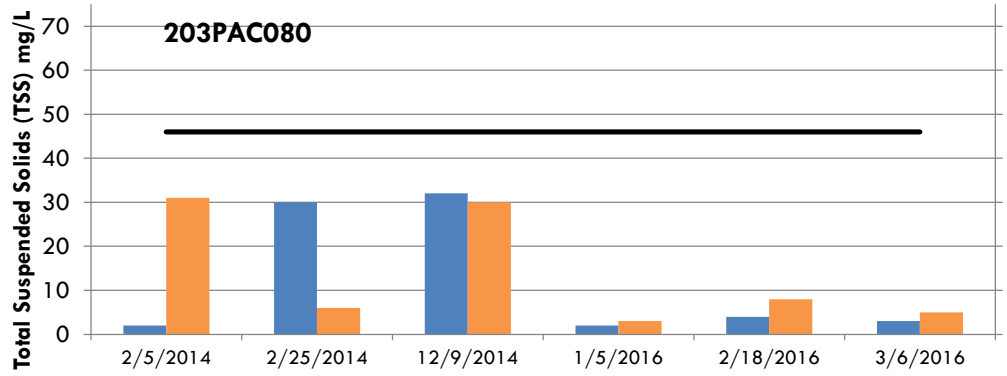
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Storm	12.6	13.8	11.14	11.28	12	12
6N 85% Threshold	0.000	0.000	0.000			

No tests completed on Pre-Storm Samples

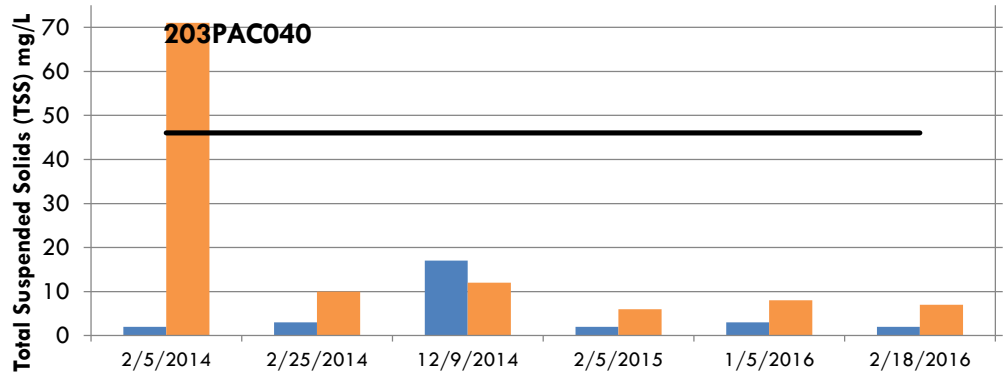
Attachment 5: Nutrients and Conventional Constituents

Total Suspended Solids (TSS)

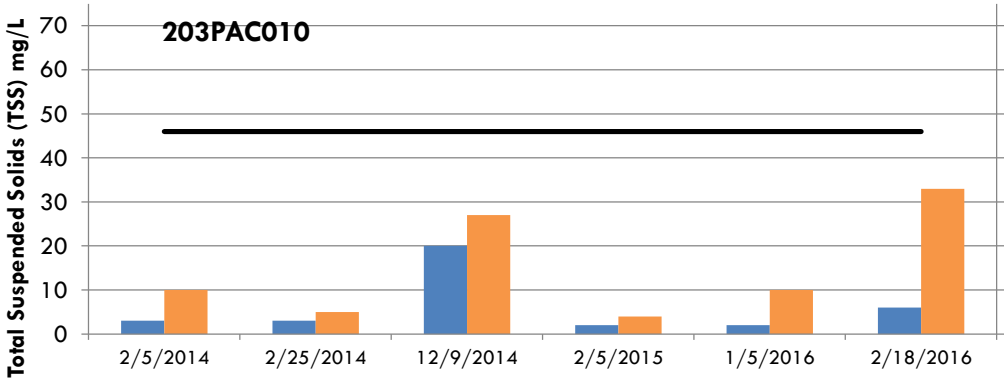
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	2	30	32	2	4	3
ASBS Storm	31	6	30	3	8	5
6N 85% Threshold	46.000	46.000	46.000	46.000	46.000	46.000



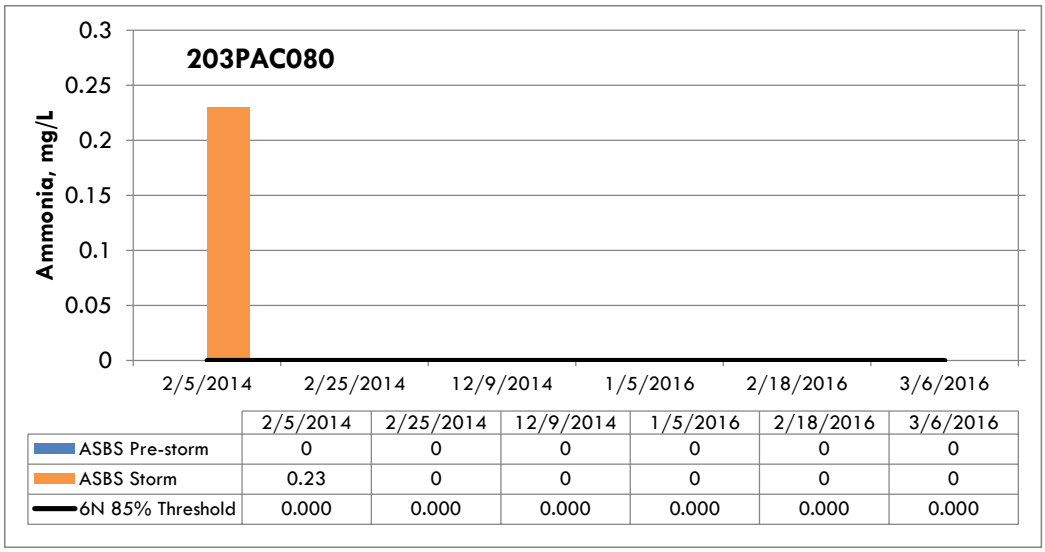
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	2	3	17	2	3	2
ASBS Storm	71	10	12	6	8	7
6N 85% Threshold	46.000	46.000	46.000	46.000	46.000	46.000



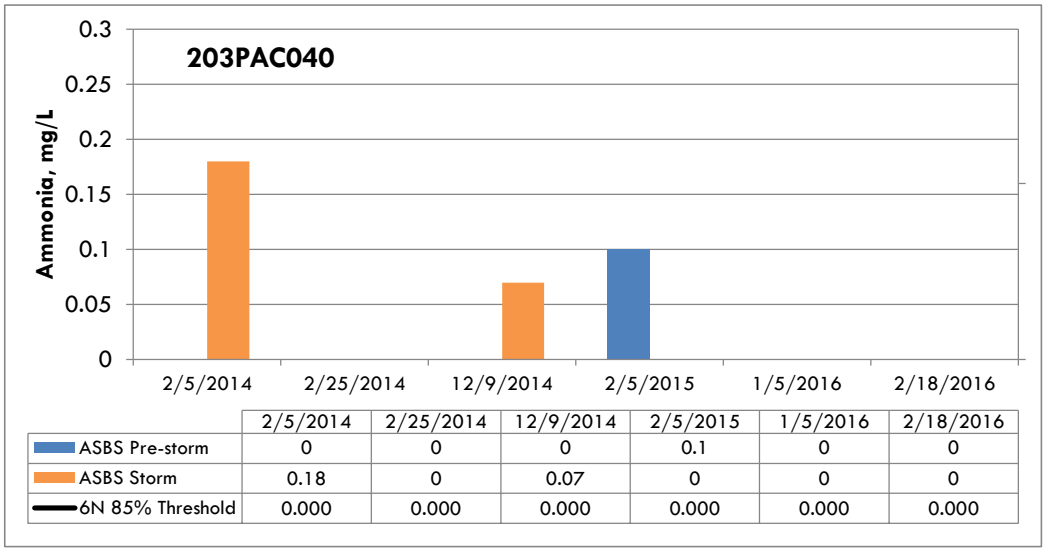
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	3	3	20	2	2	6
ASBS Storm	10	5	27	4	10	33
6N 85% Threshold	46.000	46.000	46.000	46.000	46.000	46.000

Ammonia as N

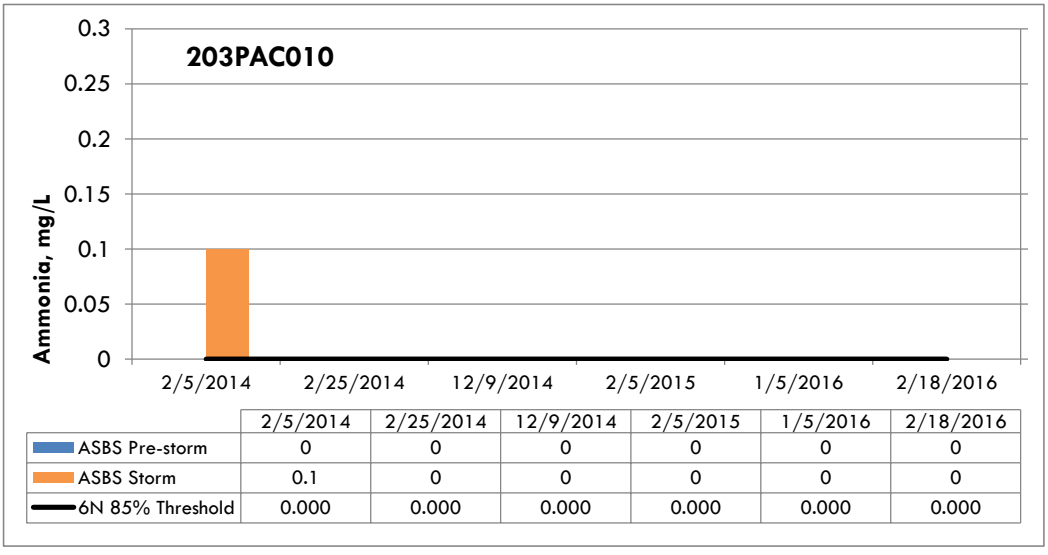
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.23	0	0	0	0	0
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



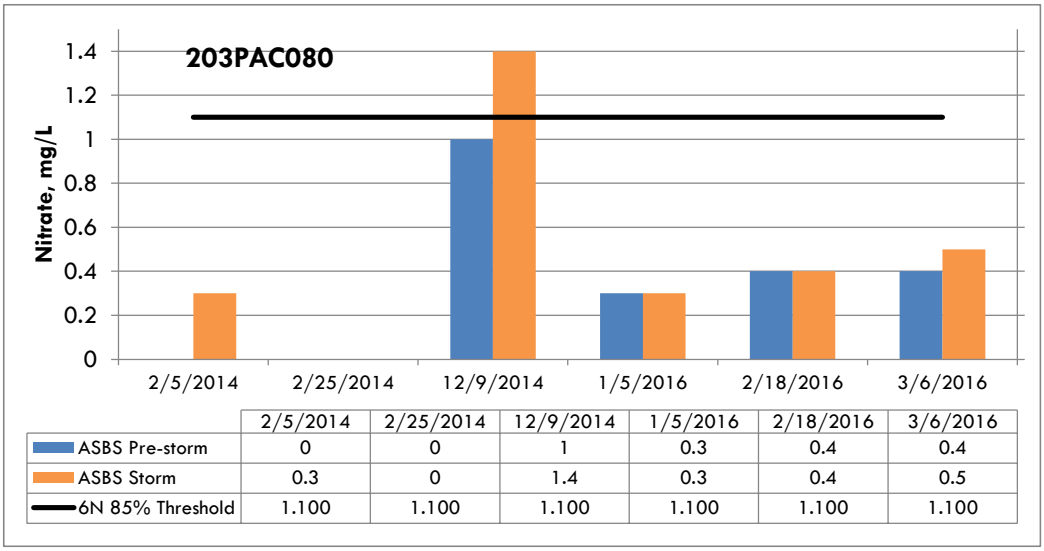
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0.1	0	0
ASBS Storm	0.18	0	0.07	0	0	0
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000



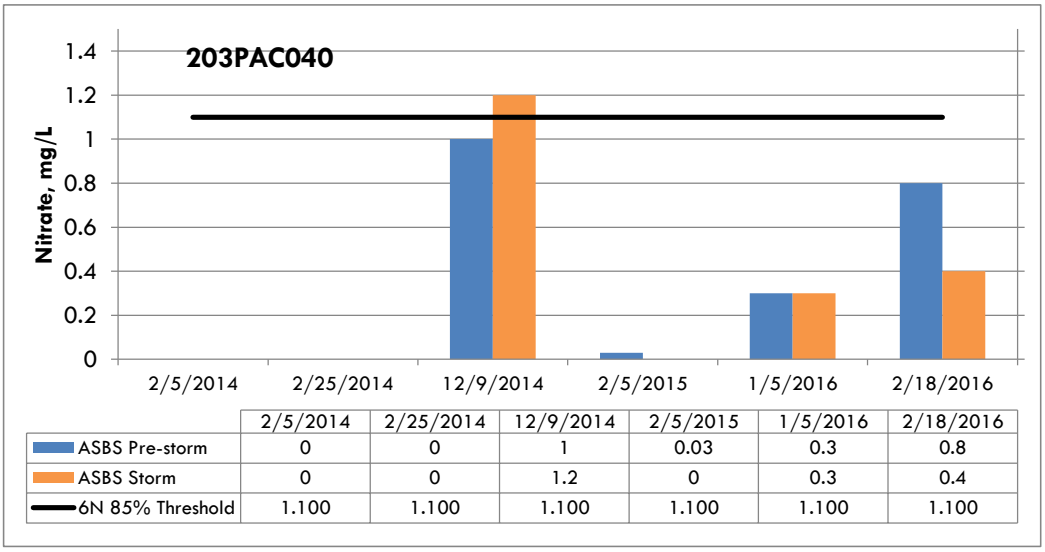
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0	0	0
ASBS Storm	0.1	0	0	0	0	0
6N 85% Threshold	0.000	0.000	0.000	0.000	0.000	0.000

Nitrate as N

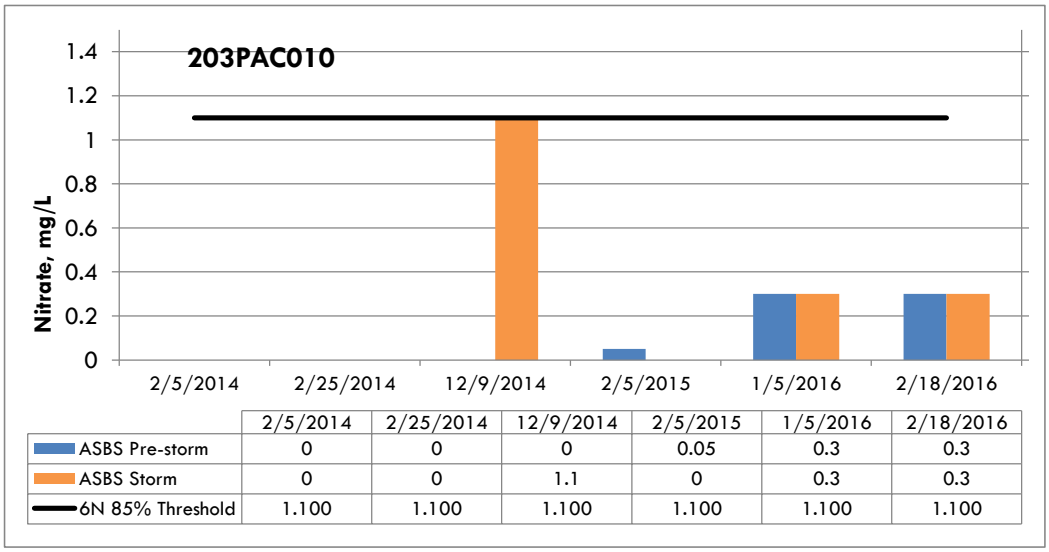
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	1	0.3	0.4	0.4
ASBS Storm	0.3	0	1.4	0.3	0.4	0.5
6N 85% Threshold	1.100	1.100	1.100	1.100	1.100	1.100



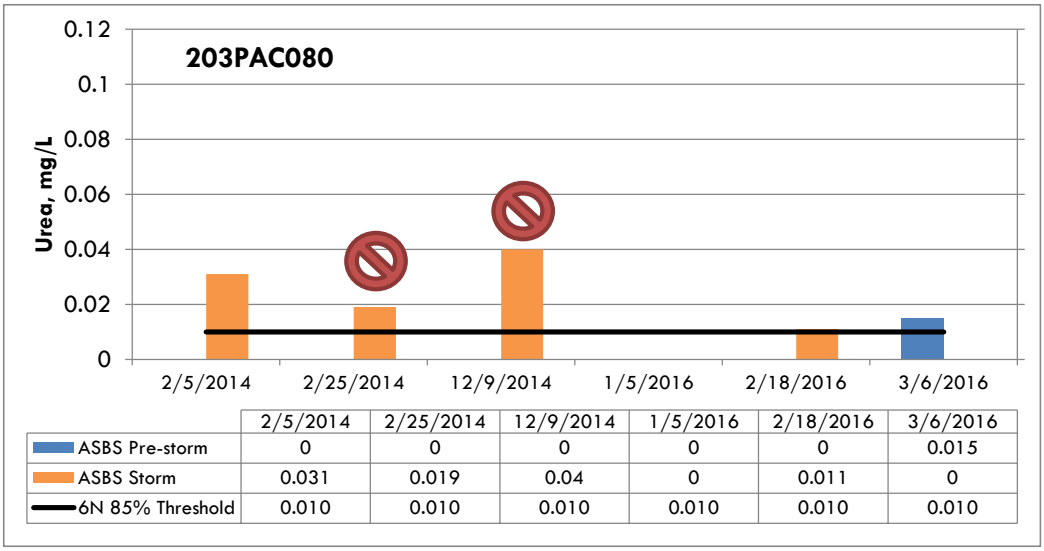
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	1	0.03	0.3	0.8
ASBS Storm	0	0	1.2	0	0.3	0.4
6N 85% Threshold	1.100	1.100	1.100	1.100	1.100	1.100



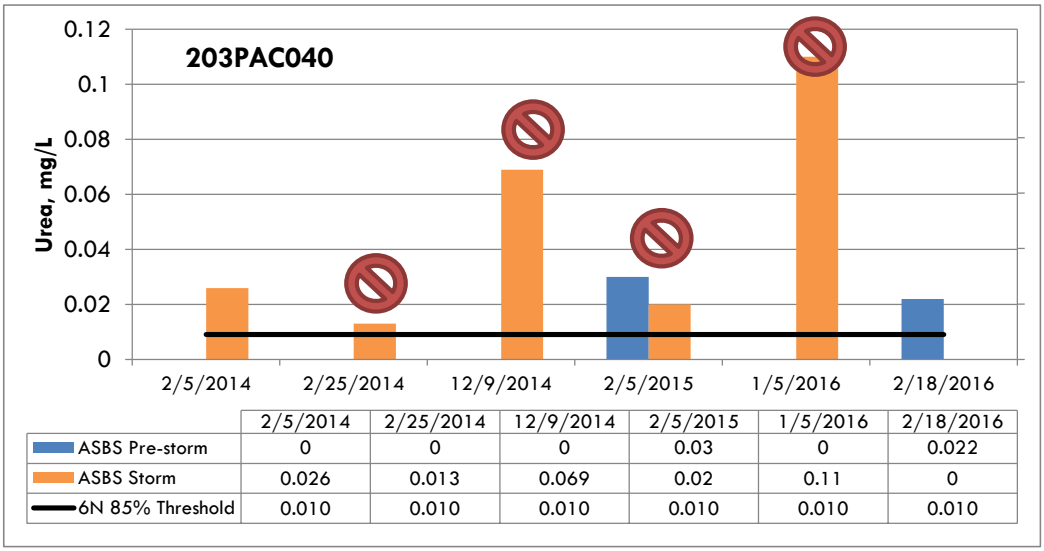
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0.05	0.3	0.3
ASBS Storm	0	0	1.1	0	0.3	0.3
6N 85% Threshold	1.100	1.100	1.100	1.100	1.100	1.100

Urea

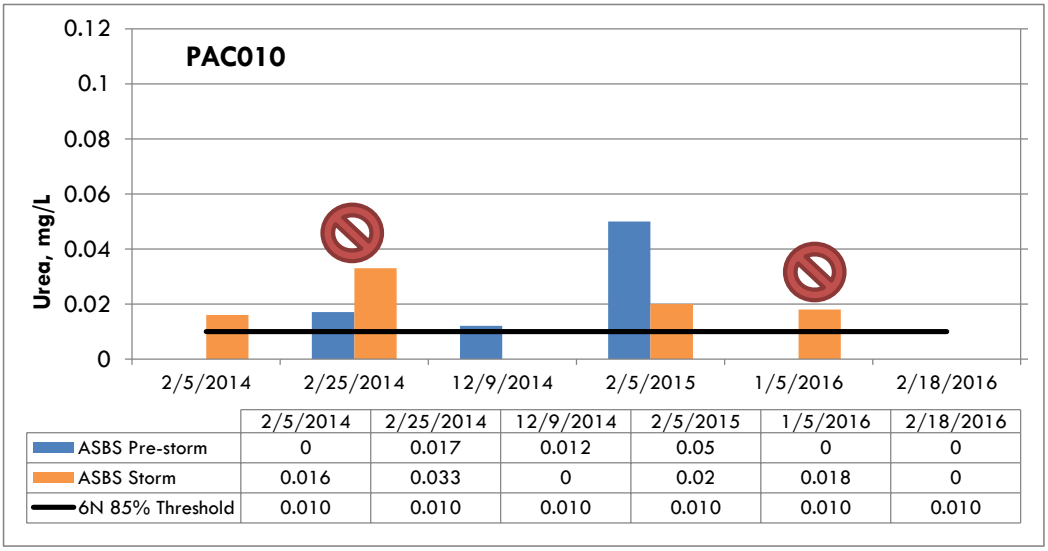
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0	0	0.015
ASBS Storm	0.031	0.019	0.04	0	0.011	0
6N 85% Threshold	0.010	0.010	0.010	0.010	0.010	0.010

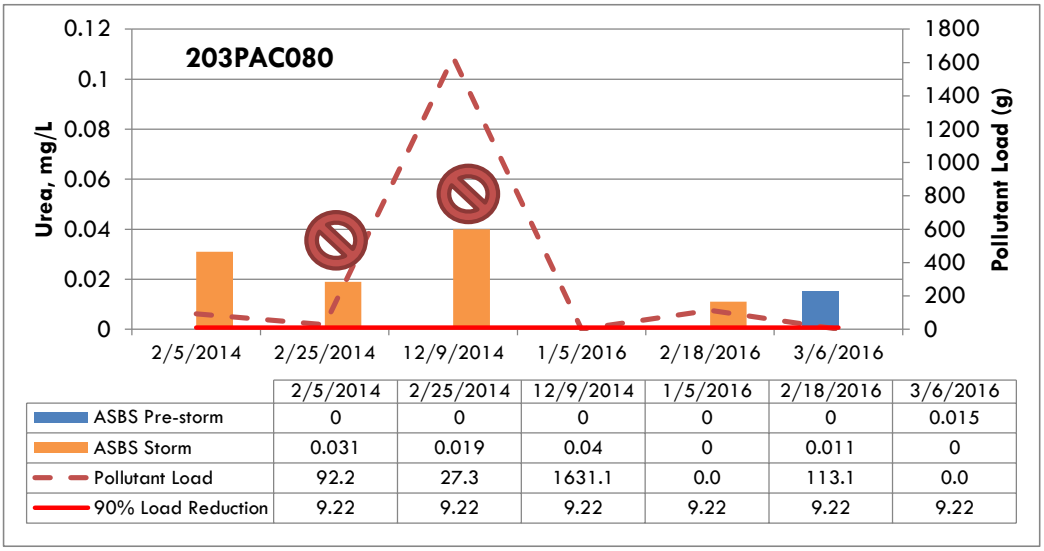


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0.03	0	0.022
ASBS Storm	0.026	0.013	0.069	0.02	0.11	0
6N 85% Threshold	0.010	0.010	0.010	0.010	0.010	0.010

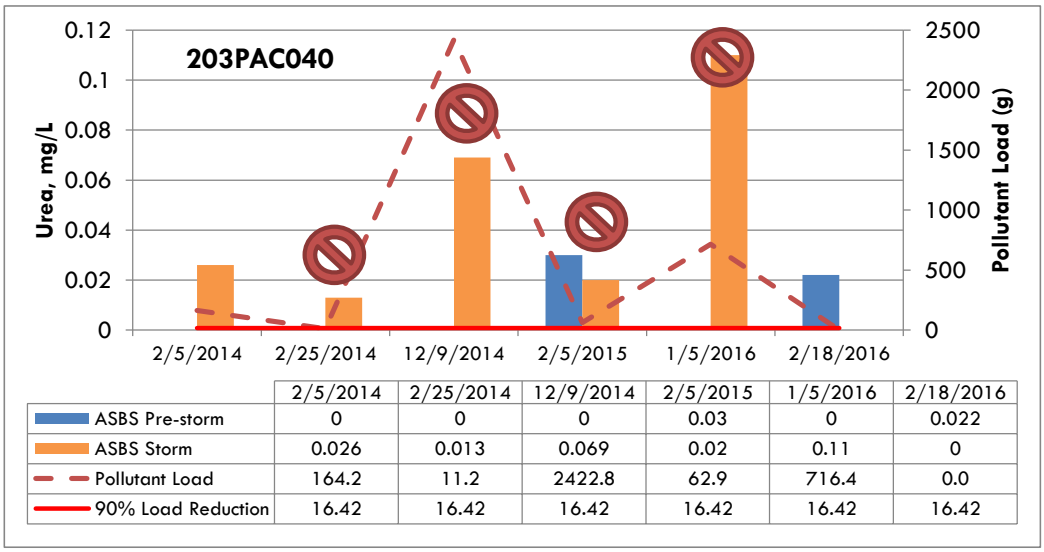


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0.017	0.012	0.05	0	0
ASBS Storm	0.016	0.033	0	0.02	0.018	0
6N 85% Threshold	0.010	0.010	0.010	0.010	0.010	0.010

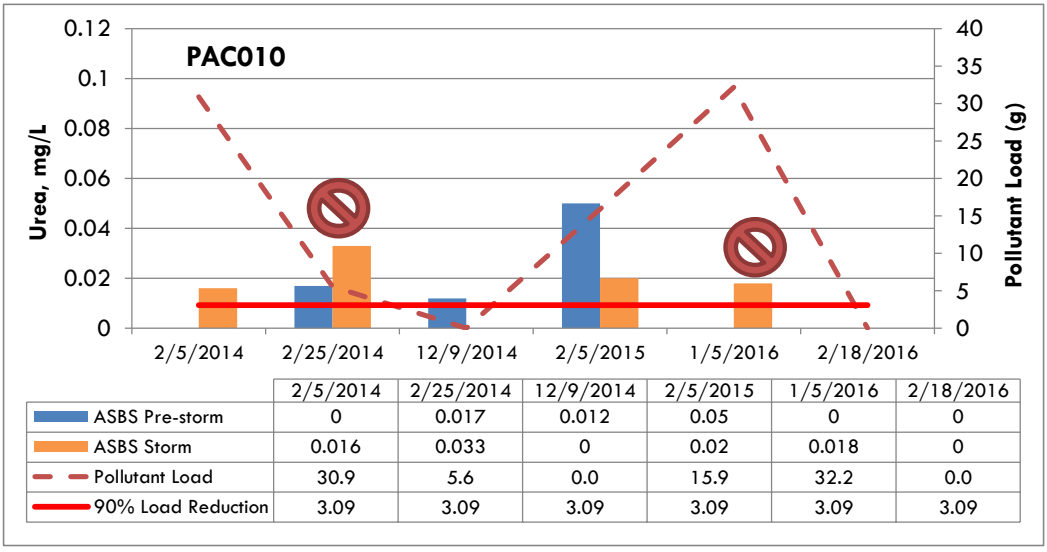
Urea - Compliance



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0	0	0	0	0	0.015
ASBS Storm	0.031	0.019	0.04	0	0.011	0
Pollutant Load	92.2	27.3	1631.1	0.0	113.1	0.0
90% Load Reduction	9.22	9.22	9.22	9.22	9.22	9.22



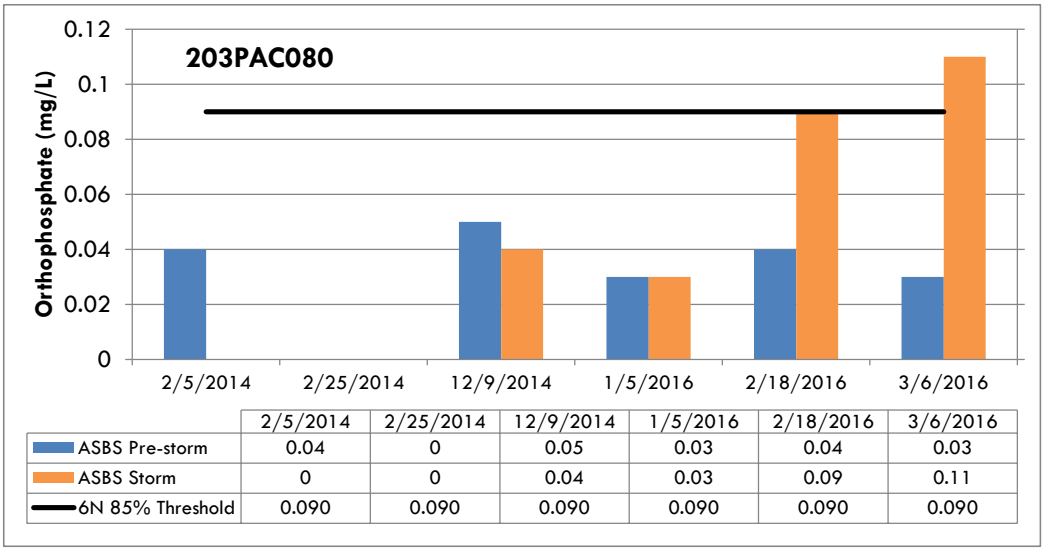
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0	0	0.03	0	0.022
ASBS Storm	0.026	0.013	0.069	0.02	0.11	0
Pollutant Load	164.2	11.2	2422.8	62.9	716.4	0.0
90% Load Reduction	16.42	16.42	16.42	16.42	16.42	16.42



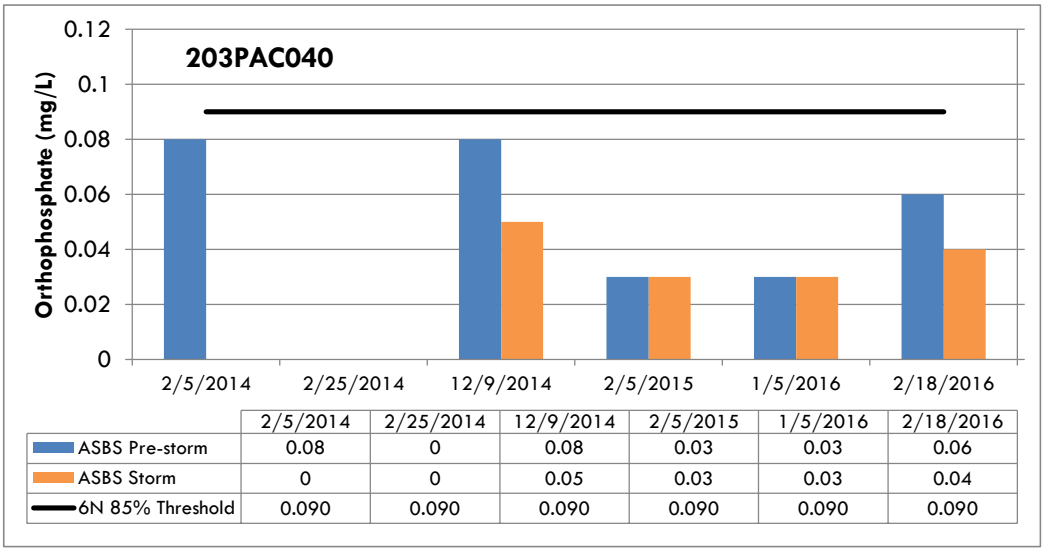
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0	0.017	0.012	0.05	0	0
ASBS Storm	0.016	0.033	0	0.02	0.018	0
Pollutant Load	30.9	5.6	0.0	15.9	32.2	0.0
90% Load Reduction	3.09	3.09	3.09	3.09	3.09	3.09

Orthophosphate as P

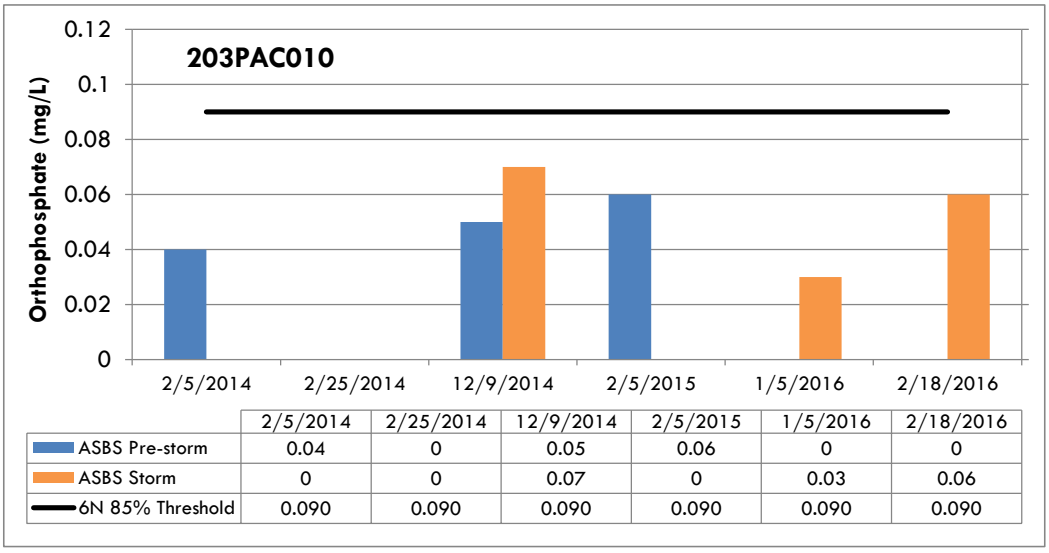
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	0.04	0	0.05	0.03	0.04	0.03
ASBS Storm	0	0	0.04	0.03	0.09	0.11
6N 85% Threshold	0.090	0.090	0.090	0.090	0.090	0.090



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.08	0	0.08	0.03	0.03	0.06
ASBS Storm	0	0	0.05	0.03	0.03	0.04
6N 85% Threshold	0.090	0.090	0.090	0.090	0.090	0.090

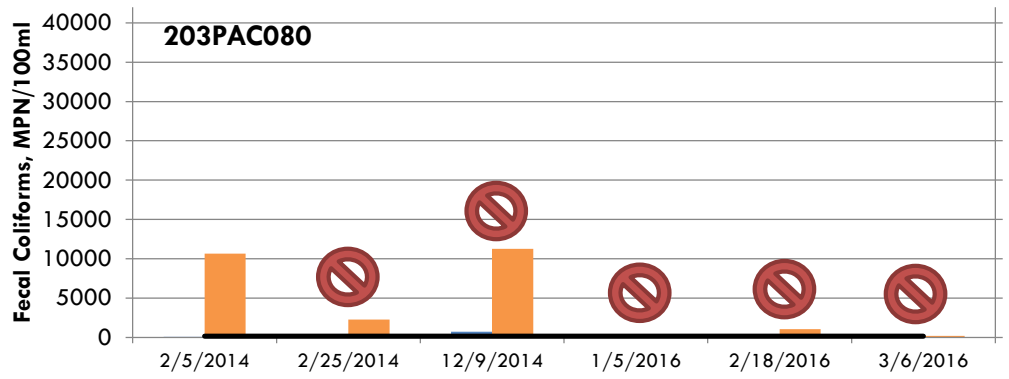


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	0.04	0	0.05	0.06	0	0
ASBS Storm	0	0	0.07	0	0.03	0.06
6N 85% Threshold	0.090	0.090	0.090	0.090	0.090	0.090

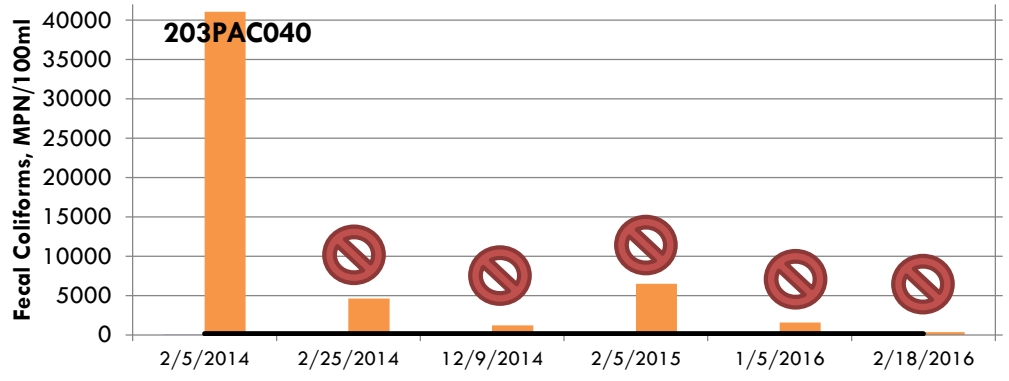
Attachment 6: Fecal Indicator Bacteria

Fecal Coliforms

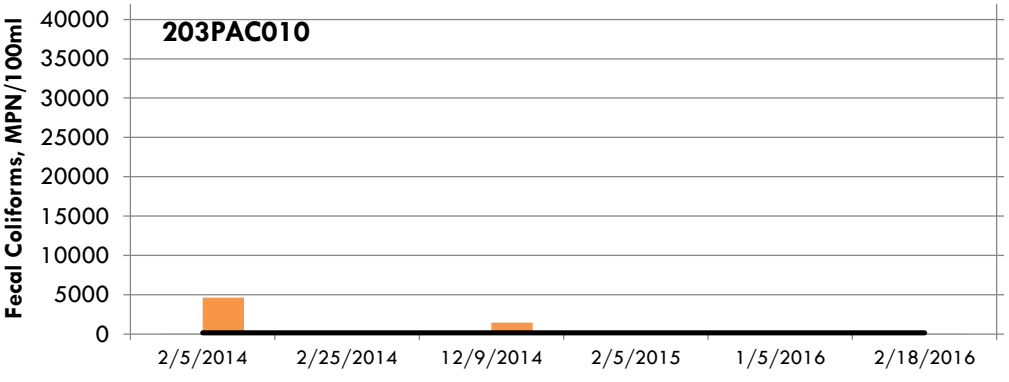
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	86	80	733	10	10	86
ASBS Storm	10630	2282	11264	300	1046	171
6N 85% Threshold	146.000	146.000	146.000	146.000	146.000	146.000

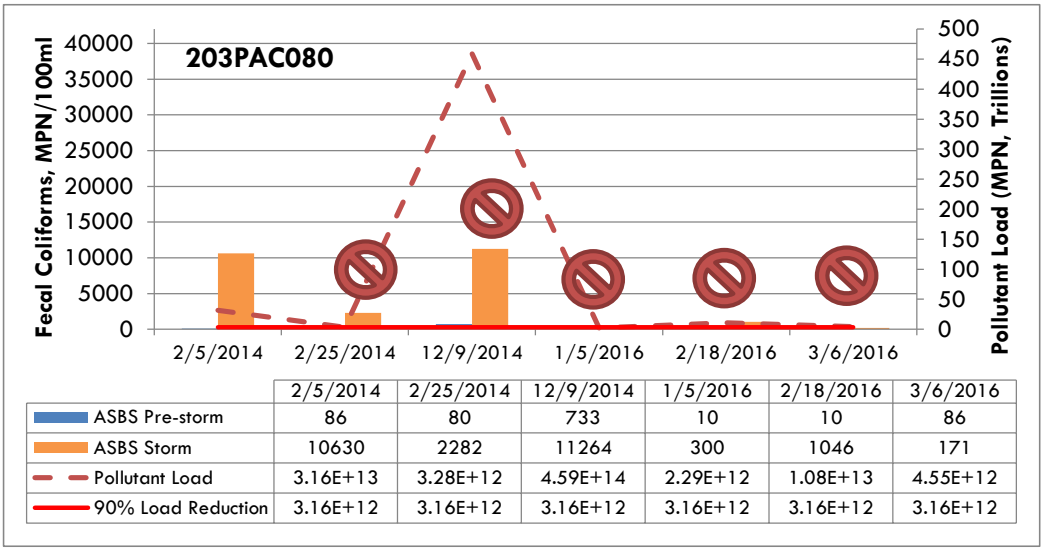


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	30	10	41	0	20	373
ASBS Storm	41060	4611	1199	6488	1600	379
6N 85% Threshold	146.000	146.000	146.000	146.000	146.000	146.000

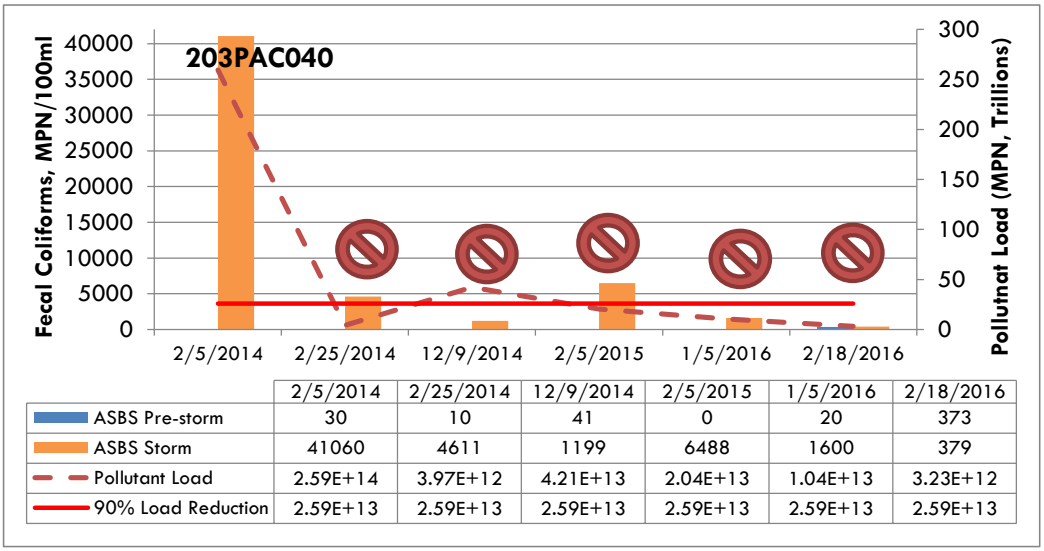


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	110	158	52	52	41
ASBS Storm	4611	109	1435	20	280	31
6N 85% Threshold	146.000	146.000	146.000	146.000	146.000	146.000

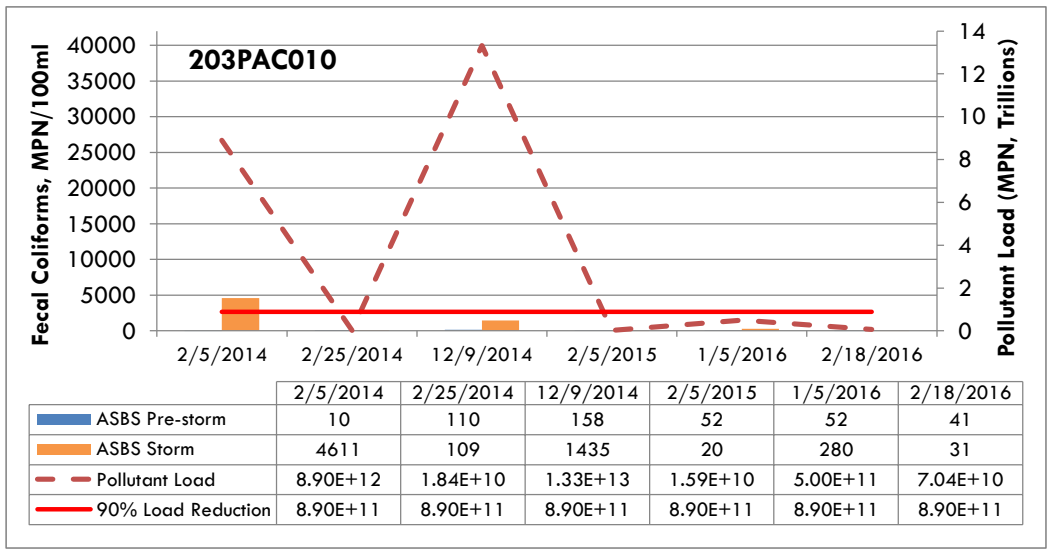
Fecal Coliforms - Compliance



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	86	80	733	10	10	86
ASBS Storm	10630	2282	11264	300	1046	171
Pollutant Load	3.16E+13	3.28E+12	4.59E+14	2.29E+12	1.08E+13	4.55E+12
90% Load Reduction	3.16E+12	3.16E+12	3.16E+12	3.16E+12	3.16E+12	3.16E+12



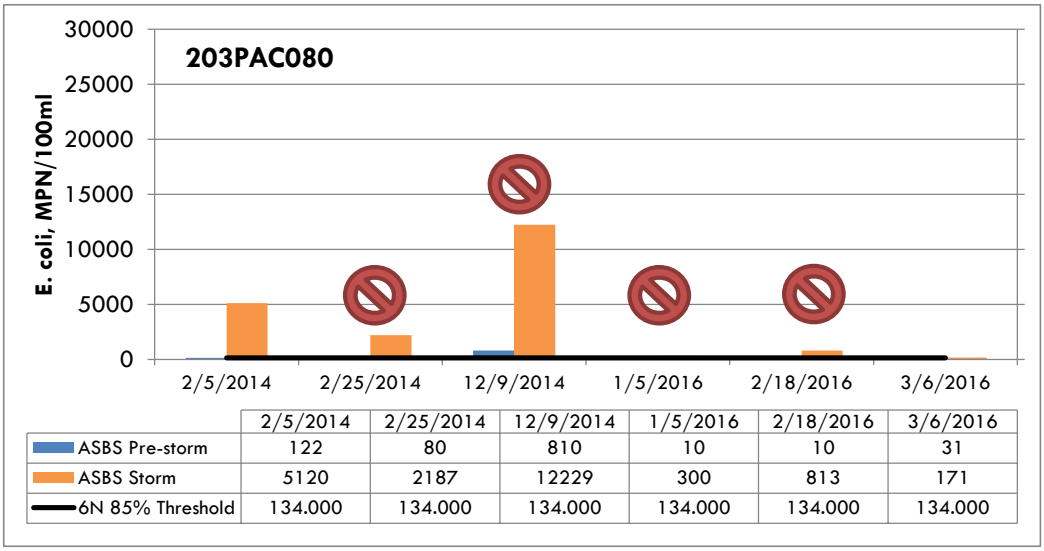
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	30	10	41	0	20	373
ASBS Storm	41060	4611	1199	6488	1600	379
Pollutant Load	2.59E+14	3.97E+12	4.21E+13	2.04E+13	1.04E+13	3.23E+12
90% Load Reduction	2.59E+13	2.59E+13	2.59E+13	2.59E+13	2.59E+13	2.59E+13



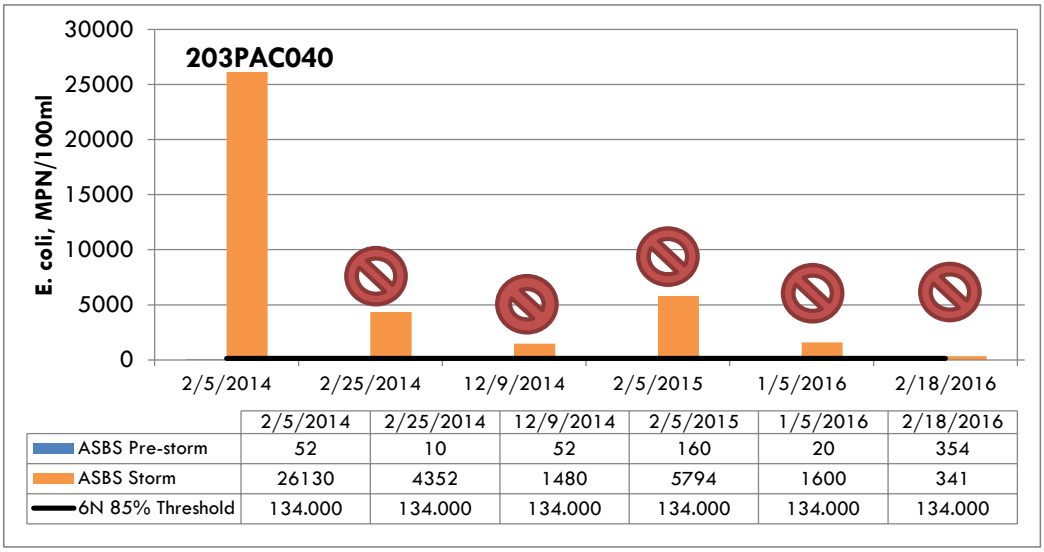
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	110	158	52	52	41
ASBS Storm	4611	109	1435	20	280	31
Pollutant Load	8.90E+12	1.84E+10	1.33E+13	1.59E+10	5.00E+11	7.04E+10
90% Load Reduction	8.90E+11	8.90E+11	8.90E+11	8.90E+11	8.90E+11	8.90E+11

E.coli

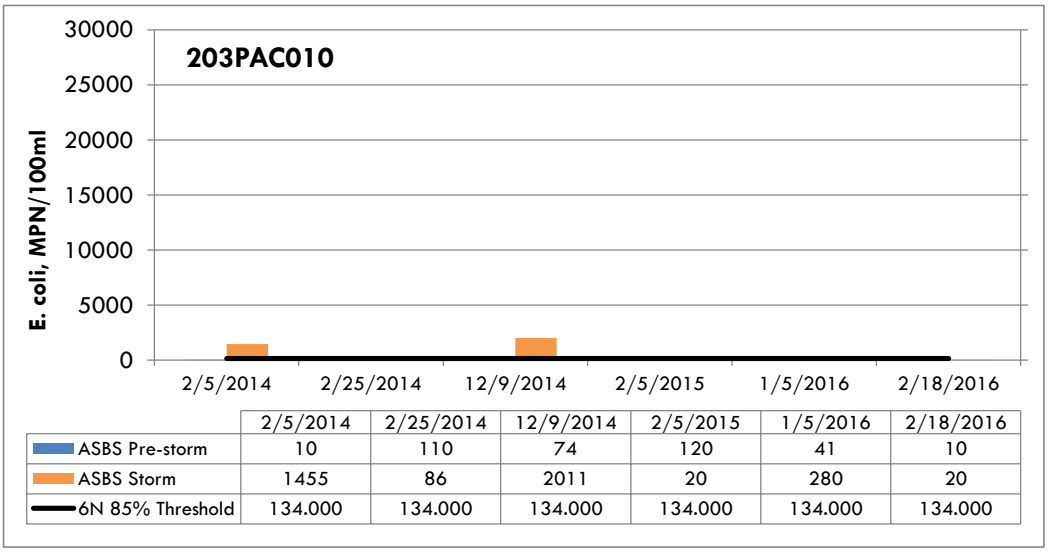
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	122	80	810	10	10	31
ASBS Storm	5120	2187	12229	300	813	171
6N 85% Threshold	134.000	134.000	134.000	134.000	134.000	134.000

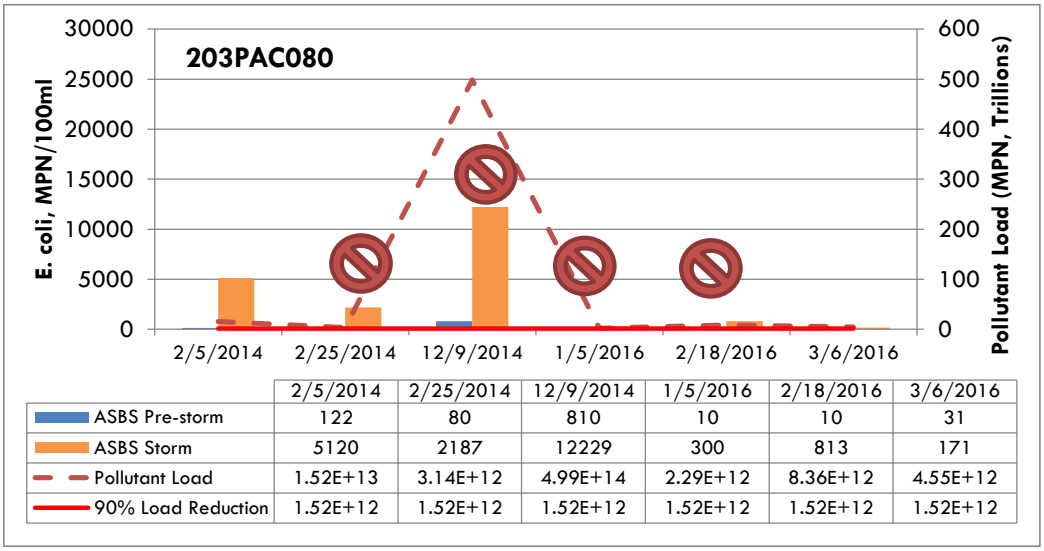


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	52	10	52	160	20	354
ASBS Storm	26130	4352	1480	5794	1600	341
6N 85% Threshold	134.000	134.000	134.000	134.000	134.000	134.000

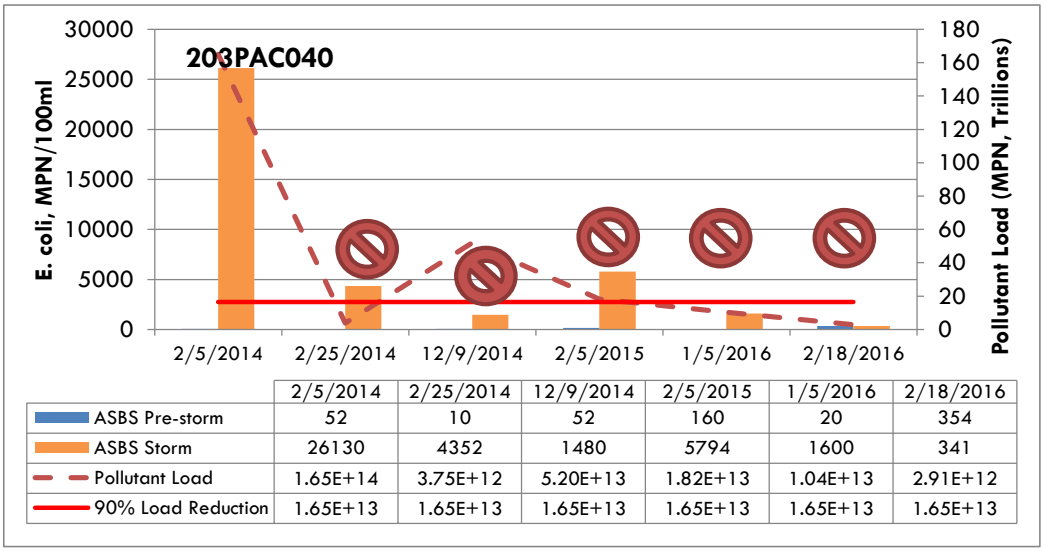


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	110	74	120	41	10
ASBS Storm	1455	86	2011	20	280	20
6N 85% Threshold	134.000	134.000	134.000	134.000	134.000	134.000

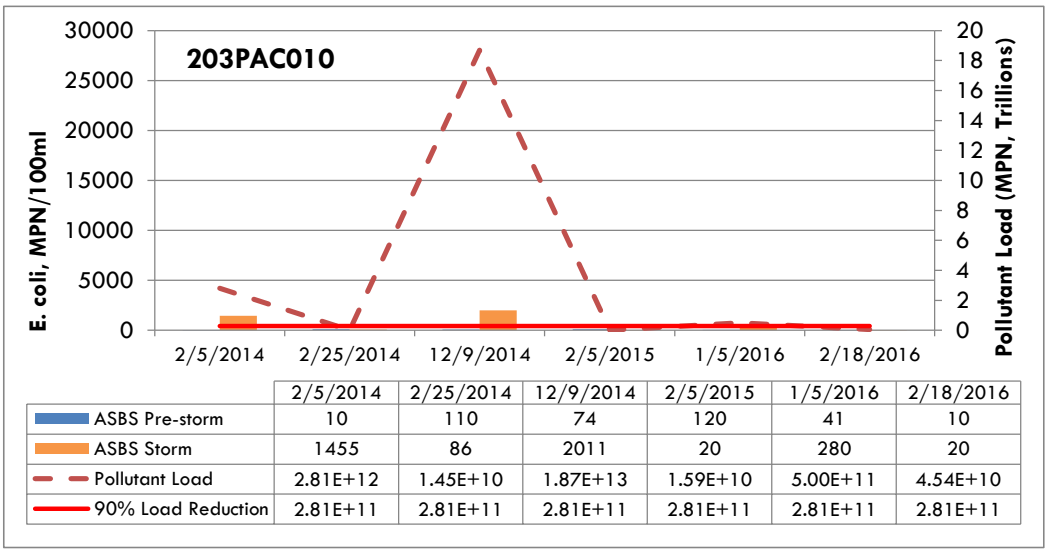
E.coli - Compliance



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	122	80	810	10	10	31
ASBS Storm	5120	2187	12229	300	813	171
Pollutant Load	1.52E+13	3.14E+12	4.99E+14	2.29E+12	8.36E+12	4.55E+12
90% Load Reduction	1.52E+12	1.52E+12	1.52E+12	1.52E+12	1.52E+12	1.52E+12



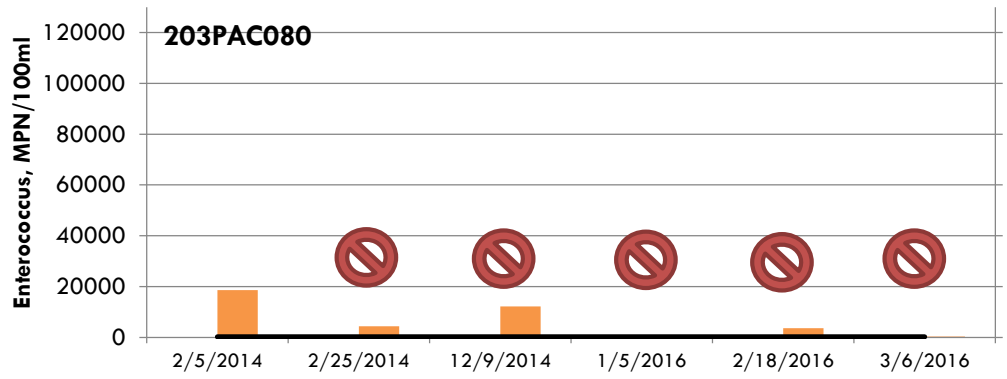
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	52	10	52	160	20	354
ASBS Storm	26130	4352	1480	5794	1600	341
Pollutant Load	1.65E+14	3.75E+12	5.20E+13	1.82E+13	1.04E+13	2.91E+12
90% Load Reduction	1.65E+13	1.65E+13	1.65E+13	1.65E+13	1.65E+13	1.65E+13



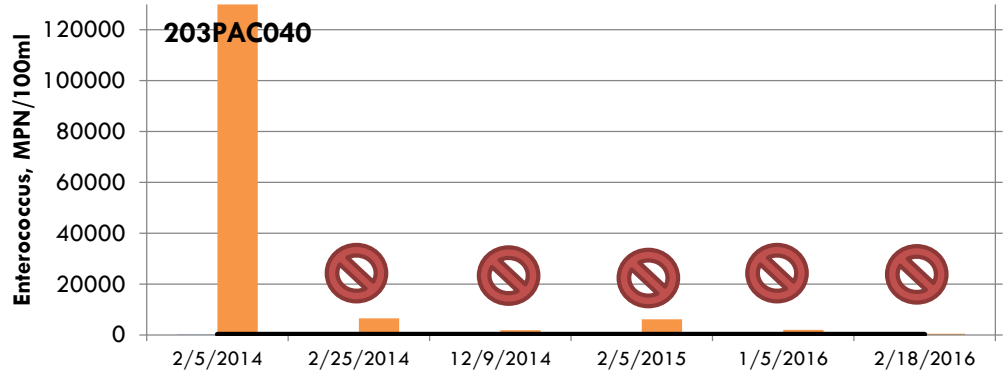
	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	110	74	120	41	10
ASBS Storm	1455	86	2011	20	280	20
Pollutant Load	2.81E+12	1.45E+10	1.87E+13	1.59E+10	5.00E+11	4.54E+10
90% Load Reduction	2.81E+11	2.81E+11	2.81E+11	2.81E+11	2.81E+11	2.81E+11

Enterococcus

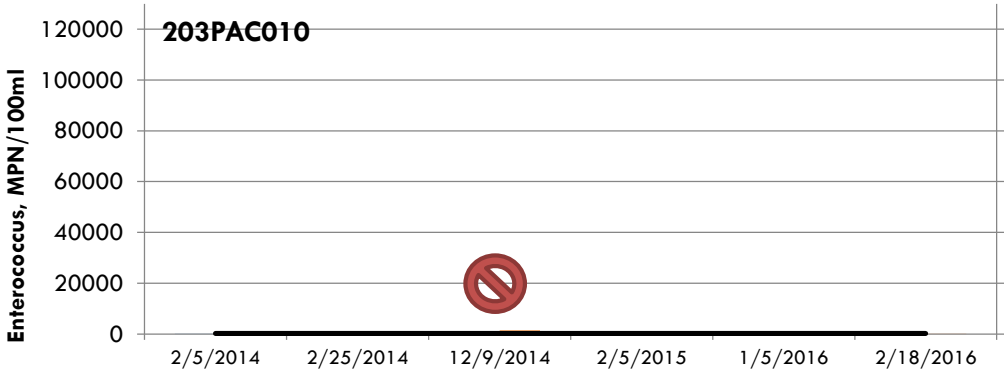
= Consecutive sample where Storm concentration > 85% threshold & Storm > Pre-storm



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	63	20	209	10	10	241
ASBS Storm	18600	4352	12229	613	3654	313
6N 85% Threshold	238.000	238.000	238.000	238.000	238.000	238.000

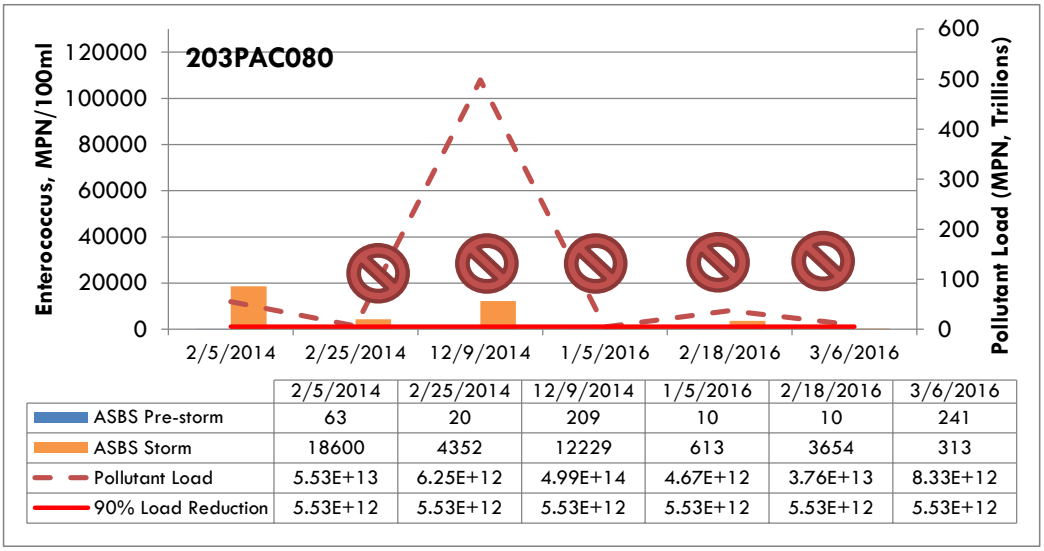


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	134	10	10	74	31	216
ASBS Storm	129970	6488	1869	6131	2014	512
6N 85% Threshold	238.000	238.000	238.000	238.000	238.000	238.000

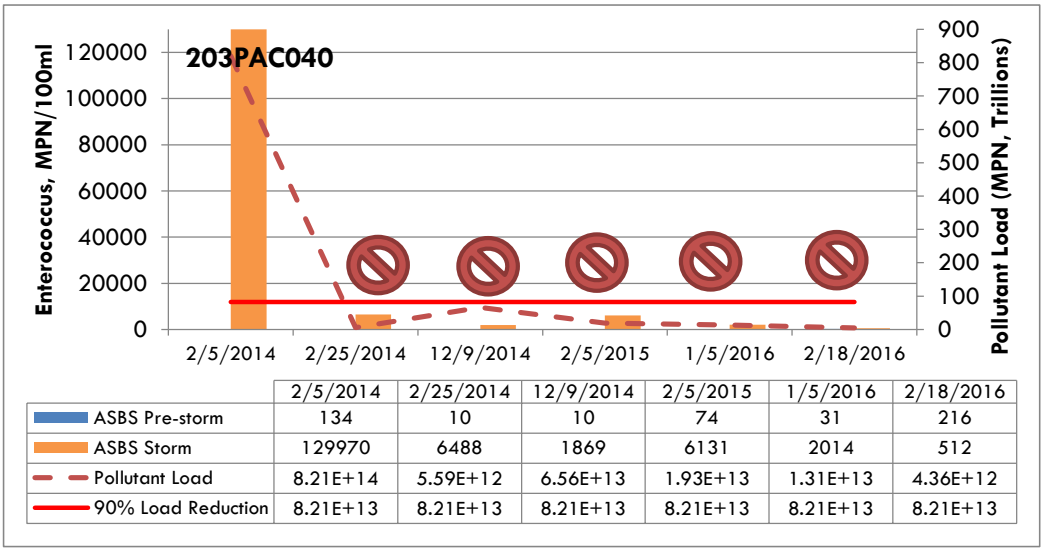


	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	10	20	10	31	10
ASBS Storm	158	428	1449	10	884	84
6N 85% Threshold	238.000	238.000	238.000	238.000	238.000	238.000

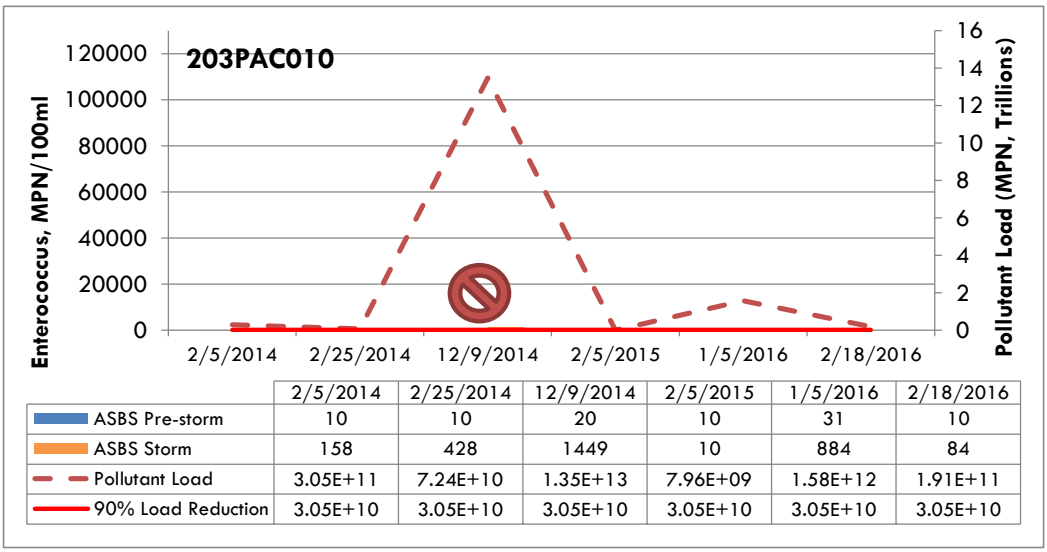
Enterococcus - Compliance



	2/5/2014	2/25/2014	12/9/2014	1/5/2016	2/18/2016	3/6/2016
ASBS Pre-storm	63	20	209	10	10	241
ASBS Storm	18600	4352	12229	613	3654	313
Pollutant Load	5.53E+13	6.25E+12	4.99E+14	4.67E+12	3.76E+13	8.33E+12
90% Load Reduction	5.53E+12	5.53E+12	5.53E+12	5.53E+12	5.53E+12	5.53E+12



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	134	10	10	74	31	216
ASBS Storm	129970	6488	1869	6131	2014	512
Pollutant Load	8.21E+14	5.59E+12	6.56E+13	1.93E+13	1.31E+13	4.36E+12
90% Load Reduction	8.21E+13	8.21E+13	8.21E+13	8.21E+13	8.21E+13	8.21E+13



	2/5/2014	2/25/2014	12/9/2014	2/5/2015	1/5/2016	2/18/2016
ASBS Pre-storm	10	10	20	10	31	10
ASBS Storm	158	428	1449	10	884	84
Pollutant Load	3.05E+11	7.24E+10	1.35E+13	7.96E+09	1.58E+12	1.91E+11
90% Load Reduction	3.05E+10	3.05E+10	3.05E+10	3.05E+10	3.05E+10	3.05E+10

Appendix D: Regulatory Correspondence between Central Coast ASBS CCRMP and State Water Resources Control Board regarding Compliance Plan Schedule

Central Coast ASBS Regional Monitoring Program
c/o Monterey Regional Water Pollution Control Agency,
Monterey Regional Stormwater Program
5 Harris Court, Building D
Monterey, CA 93940

July 16, 2013

Maria de la Paz Carpio-Obeso,
Ocean Unit Chief
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Re: Request for Time Adjustment to Draft ASBS Compliance Plan submittal

Dear Ms. Carpio-Obeso:

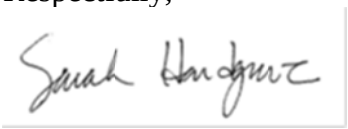
Thank you for your May 13, 2013 letter regarding the ASBS monitoring schedule, clarifying the timeline for meeting the regional monitoring requirements in the ASBS Special Protections. Over the last year, the Central Coast ASBS Regional Monitoring Program *(CC ASBS RMP)* member entities worked diligently to develop the CC ASBS RMP and to establish a formal structure for the program. All Central Coast ASBS dischargers subject to the General Exception/Special Protections, as well Stanford Hopkins Marine Station and Monterey Bay Aquarium, have signed on to a Memorandum of Agreement to implement the State's approved Central Coast ASBS Monitoring scope of work. The group has contracted with Applied Marine Sciences to implement the CC ASBS RMP, and is ready to proceed in this coming storm season.

As acknowledged in your letter, the CC ASBS RMP was unable to conduct sampling in the 2012-2013 storm season. Given that the primary purpose of the monitoring program is to determine if structural controls are necessary to protect ASBS water quality, the purpose of this letter is to respectfully request that the timeline for submittal of the draft ASBS Compliance Plans be similarly delayed to reflect the monitoring schedule, or at least the requirement for the draft ASBS Compliance Plans to include a description of and implementation schedule for structural controls.

The CC ASBS RMP member entities believe that the first year of monitoring data is requisite to determining the need for structural controls. At this time, the findings of the first year of monitoring are not available to make this assessment. We understand the time frame for making structural controls operational is within six years of the effective date of the General Exception. However, we respectfully request that the draft ASBS Compliance Plan timeline should continue to be coordinated and timed with the monitoring program and data collection to inform their content.

Given that the draft Compliance Plans would be submitted in October, we would appreciate if a response to this request could be provided within a few weeks. If you should have any questions and / or would like to discuss further please feel free to contact either myself *{Sarah Hardgrave at (831) 648-5722, ext 202}* or our Vice-Chair Sharon Friedrichsen *{(831) 620-2000}*.

Respectfully,



Sarah Hardgrave, City of Pacific Grove
Chair, CC ASBS RMP

Cc:

CC ASBS RMP Management Committee:
Sharon Friedrichsen, City of Carmel-By-The-Sea
Tom Reeves, City of Monterey
Tom Harty, County of Monterey
Julie Casagrande, County of San Mateo
Terri Fashing, County of Marin
Thomas Quattlebaum, Pebble Beach Company
Chris Patton, Hopkins Marine Station
Roger Phillips, Monterey Bay Aquarium
Bhaskar Joshi, California Department of Transportation
Doug Dowden, Monterey Regional Water Pollution Control Agency

State Water Resources Control Board:
Jonathan Bishop
Victoria A. Witney
Rik Rasmussen
Marleigh Wood

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

August 14, 2013

Ms. Sarah Hardgrave
Central Coast Areas of Special Biological Significance
Regional Monitoring Program
c/o Monterey Regional Water Pollution Control Agency
Monterey Regional Stormwater Program
5 Harris Court, Building D
Monterey, CA 93940

Dear Ms. Hardgrave:

RE: REQUEST FOR TIME ADJUSTMENT TO DRAFT AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE COMPLIANCE PLAN SUBMITTAL

Thank you for your letter dated July 16, 2013 requesting a time adjustment of the draft Areas of Special Biological Significance (ASBS) Compliance Plan as required under the General Exception to the California Ocean Plan for ASBS Waste Discharge Prohibition for Storm Water and Nonpoint Source Discharges, with Special Protections (General Exception).

Since the State Water Resources Control Board provided an extension of the first year monitoring from 2012-13 to 2013-14 due to the lack of storm events, we also will grant an extension of the draft ASBS Compliance Plan from September 20, 2013 to September 20, 2014.

To hear that all the Central Coast ASBS dischargers subject to the General Exception/Special Protection, as well as Stanford Hopkins Marine Station and Monterey Bay Aquarium signed a Memorandum of Agreement to implement the ASBS Regional Monitoring is a great accomplishment. We appreciate the great effort to form the Central Coast ASBS Regional Monitoring Program. Excellent!

If you have further questions, please feel free to contact, Dr. Maria de la Paz Carpio-Obeso, Ocean Unit Chief, at (916) 341-5858 (MarielaPaz.Carpio-Obeso@waterboards.ca.gov), or Ms. Johanna Weston, staff for matters involving ASBS, at (916) 327-8117 (jweston@waterboards.ca.gov).

Sincerely,

Victoria A. Whitney

Victoria A. Whitney, Deputy Director
Division of Water Quality

cc: Mr. Jonathan Bishop
Chief Deputy Director
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Ms. Marleigh Wood
Office of Chief Counsel
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

1085947/jweston

6-10 scan; orig to file U Stormwater ASBS
elec copies to @Jerrics @ Daniel

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GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

RECEIVED
CITY MANAGER'S OFFICE
2015 JUN 10 P 1:27

State Water Resources Control Board

Mr. Thomas Frutchey, City Manager
City of Pacific Grove
City Hall
300 Forest Avenue, 2nd Floor
Pacific Grove, CA 93950

Mr. Mike McCarthy, City Manager
City of Monterey
City Hall
580 Pacific Street
Monterey, CA 93940

Dear Mr. Frutchey and Mr. McCarthy:

COMMENTS ON DRAFT COMPLIANCE PLAN FOR PACIFIC GROVE (NO. 19) AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE FROM THE CITY OF PACIFIC GROVE AND THE CITY OF MONTEREY

The State Water Resources Control Board (State Water Board) received the Areas of Special Biological Significance (ASBS) draft Compliance Plan from the City of Pacific Grove and the City of Monterey (Cities) dated September 19, 2014. A draft Compliance Plan is required under Section I.A.3.b. of Attachment B of the State Water Board's Resolution No. 2012-0012 *Approving Exceptions to the California Ocean Plan for Selected Discharges into ASBS, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report* (General Exception). Attachment B in the General Exception contains the *Special Protections for ASBS, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges* (Special Protections), which describes special conditions required of the discharger.

State Water Board staff has reviewed the draft Compliance Plan and provides the following comments:

1. **Map of storm water runoff**: Section I.A.2.a. of the Special Protections requires a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritized discharges, and a description of any structural Best Management Practices (BMPs) already employed or to be employed. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map also shall show storm water conveyances in relation to other features.

   The maps in Figures 9 and 11 of the draft Compliance Plan do not include storm water conveyances in relation to other features, such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas. In sections 3.3 and 5.2.7, the draft Compliance Plan describes that there are no areas prone to erosion or landslides and no waste or hazardous material storage areas inside the ASBS drainage area. Furthermore, it explains that the regional sewage treatment facility is located in Marina. The list of features cited in the Special Protections is not inclusive; it is the responsibility of the Cities to determine the

features that should be depicted in relation to storm water conveyances. If applicable, for the maps in the final Compliance Plan, please include storm water conveyances in relation to service areas, sewage conveyances, or other relevant features.

Additionally, the maps in Figures 9 and 11 do not include priority discharges or structural BMPs. Section 6.0 of the draft Compliance Plan describes the City of Pacific Grove's structural BMP strategy for end-of-pipe locations prior to storm water discharge into ASBS. For the maps in the final Compliance Plan, please include these as well as any other structural BMPs that are in place or planned for the future. Finally, staff understands that the Cities are still in the process of performing and analyzing data from receiving water and core discharge monitoring and that these results may influence which discharges should be prioritized. Please identify priority discharges in the maps in the final Compliance Plan.

Because most of the figures that contain maps in the draft Compliance Plan were difficult to read, staff would appreciate higher resolution versions of these maps in the final Compliance Plan.

2. **Compliance and implementation schedule**: Section I.A.3.b. requires the final Compliance Plan to include a schedule for structural controls based on results from the runoff and receiving water monitoring. Also, Section I.A.3.d. stipulates that any structural controls identified in the final Compliance Plan shall be operational within six years of the effective date.

   After the Cities have completed monitoring, analysis of receiving water and core discharge monitoring may change which structural controls are necessary to comply with the Special Protections. Staff understands that BMPs outlined in the Monterey-Pacific Grove ASBS Stormwater Management Project certified environmental impact report and Fall Creek 40% Engineering report are dependent on results from monitoring and additional funding. In the final Compliance Plan, please provide an update if any progress is made on these BMPs. Also, in the final Compliance Plan, please include a description and schedule for any additional projects to be implemented and operational by the compliance deadline of March 20, 2018. If this deadline cannot be met, please submit the information required to support a request for an extension. Staff will evaluate the request, but please note that submitting a request does not guarantee an extension.

3. **Exceedances in natural water quality**: Section I.A.3.e. of the Special Protections requires that, if initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm.

   Section 8.1. of the draft Compliance Plan explains that the process for evaluating whether there are alterations of natural ocean water quality in the ASBS is still in development. However, this process is outlined in the Special Protections. Section I.A.3.e. of the Special Protections stipulates that "if the initial results of post-storm receiving water quality testing indicates levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must resample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water

quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded." Additionally, this process is outlined in Attachment 1 of the Special Protections. The County should follow this process to determine if the natural water quality is exceeded once the 85th percentile threshold is available. Finally, Section I.A.2.h. of the Special protections requires the County to submit an exceedance report to the State Water Board and Regional Water Resources Control Board within 30 days of receiving results that indicate the natural water quality has been exceeded. The core discharge monitoring data may be used to identify which of the core discharges may be contributing to the observed exceedances in natural ocean water quality. For questions regarding exceedances, please contact State Water Board staff whose contact information is provided below.

Staff appreciates the joint efforts of the City of Pacific Grove and the City of Monterey on the draft Compliance Plan and will continue to collaborate with the Cities to resolve the comments mentioned in this letter. Please submit the final Compliance Plan addressing these comments for approval by the State Water Board Executive Director by the deadline of September 20, 2015.

For further questions pertaining to this subject matter, please contact Dr. Kimberly Tenggardjaja at (916) 341-5473 or Kimberly.Tenggardjaja@waterboards.ca.gov, or Dr. Maria de la Paz Carpio-Obeso, Ocean Unit Chief, at (916) 341-5858 or MarielaPaz.Carpio-Obeso@waterboards.ca.gov.

Sincerely,

Paul Hann, Environmental Project Manager
Division of Water Quality

cc: Mr. Jonathan Bishop
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Ms. Marleigh Wood
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Mr. Ken Harris
Executive Officer
Central Coast Regional Water Quality Control Board
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San Luis Obispo, CA 93401

Central Coast Areas of Special Biological Significance Regional Dischargers Monitoring Program (ASBS RMP)

Member Entities

Caltrans

City of Carmel-by-the-Sea

City of Monterey

City of Pacific Grove

County of Marin

County of Monterey

County of San Mateo

Monterey Bay Aquarium

Pebble Beach Company

Stanford University Hopkins Marine Station

Program Manager

Monterey Regional Water Pollution Control Agency

5 Harris Court, Bldg. D
Monterey, CA 93940

Attn:
Jeff Condit
(831) 645-4621

May 19, 2015

Maria de la Paz Carpio-Obeso, Ph. D.
Ocean Unit Chief
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Re: Request for Time Adjustment to Final ASBS Compliance Plan Submittal

Dear Dr. Carpio-Obeso:

The Central Coast ASBS Regional Monitoring Program (CC ASBS RMP) member entities would like to thank you and your team for your engagement with our program throughout our process to date. As discussed during our recent meetings, the CC ASBS RMP is still in the process of performing receiving water and core discharge monitoring. Accordingly, we're recognizing a need to discuss the possibility of a deadline adjustment for the Final ASBS Compliance Plans with you.

The results and analyses of this pending monitoring effort will influence which discharges to ASBS should be prioritized and which BMPs may be necessary to comply with natural water quality standards developed as a part of the Special Protections.

Given the extraordinary drought conditions that have persisted through the entirety of the ASBS monitoring program, capturing the requisite number of storms, has been extremely challenging. As it now stands, our monitoring program effort has been unable to collect and analyze the required six (6) storms from their discharges, the receiving waters, and reference areas prior to the end of the 2014-15 rainfall season (ASBS Regional Monitoring Program 2014/15 Storm Sample Results spreadsheet enclosed). Given the limited amount of data available to the members and to support treatment control design, we feel it is premature and imprudent to make final determinations of the priority discharges and associated nature and location of structural controls which may be necessary to meet the final determined water quality standards.

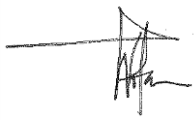
On this note, and given the complexity of the monitoring data, the evolving standard of "natural water quality", and the types of potential sources for exceedances, we feel careful consideration of the most appropriate controls is the responsible approach and in consideration of limited planning, design, and construction funds and resources locally.

For these reasons, the members of the CC ASBS RMP respectfully request an extension of at least one year be granted for the completion of all related scientific field studies and analytical reports to support the development and submission of the Final ASBS

Compliance Plans. This extension would enable us to complete our monitoring requirements, establish the "natural water quality" standard consistent with the protocols called out in the Special Protections, characterize priority discharges based on their constituents of concern to the ASBS, and more fully understand the receiving water conditions prior to planning, designing, and budgeting for potentially costly structural controls necessary to comply with the Special Protections and for inclusion in the Final ASBS Compliance Plans. In support of this requested extension, the Central Coast ASBS Management Committee is currently amending its own Memorandum of Agreement (MOA) to extend the collaboration through December 31, 2016 (Memorandum of Agreement Extension Amendment enclosed).

Please feel free to contact myself or Program Manager Jeff Condit to discuss this request further.

Sincerely,



Tricia Wotan, CC ASBS RMP Chair

Enclosure: Attachment A: ASBS Regional Monitoring Program 2014-15 Storm Sample Results Spreadsheet
Attachment B: Memorandum of Agreement Extension Amendment

Central Coast ASBS Regional Monitoring Program
2014-15 Storm Sample Results

Location Description	Station Name	Station Code	11/20/2014	2/6-2/7/14	2/26-2/27/14	3/26/2014	12/12-12/13/14	2/6-2/7/15	4/7-4/8/15	Storm Samples Year 1	Storm Samples Year 2	Total Storms sampled	Number Required	Number Needed
Outfall >18"	Maritime Walk	205SAN010-DIS-18	11/20/2013	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Juliana	205SAN020-DIS-18	11/20/2013	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Distillery	205SAN040-DIS-18	11/20/2013	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Madrone	205SAN050-DIS-18	11/20/2013	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Ocean View between Fountain Avenue and 15th Street	203PAC060-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Ocean View between Clyte Street and Naiad Street	203PAC100-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Northwest corner of Lover's Point Park at Ocean View Boulevard	203PAC090-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Grand Avenue at Ocean View	203PAC070-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	8th Street at Ocean View	203PAC030-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	At Ocean View between 7th Street and 5th Street	203PAC020-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Ocean Avenue	203CAR020-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	8th Avenue	203CAR040-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	10th Avenue	203CAR060-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	11th Avenue	203CAR070-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	13th Avenue	203CAR090-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Parking lot at Del Mar near Ocean Avenue	203CAR030-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	9th Avenue	203CAR050-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Scenic Road & Santa Lucia Avenue	203CAR100-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	12th Avenue	203CAR080-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	Stillwater Pier	203PEB030-DIS-18	2/26/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	*18th Fairway PBGL*	203PEB020-DIS-18	2/26/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	*18th Green PBGL / Lodge*	203PEB010-DIS-18	2/26/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >18"	*Ocean View at Hopkins Marine Station, Stanford University*	203PAC010-DIS-18	2/6/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	2	2	0
Outfall >36"	Trailhead at Agate Beach	402MAR010-DIS-36	11/20/2013	2/6/2014	2/26/2014			2/7/2015	4/7/2015	3	2	5	6	1
Outfall >36"	Weinke Way	205SAN030-DIS-36	11/20/2013		2/26/2014			2/6/2015	4/7/2015	2	2	4	6	2
Outfall >36"	Lover's at Ocean View	203PAC080-DIS-36	2/6/2014	2/26/2014			12/12/2014			2	1	3	6	3
Outfall >36"	Ocean View between 12th Street and 13th Street	203PAC040-DIS-36	2/6/2014	2/26/2014			12/12/2014	2/7/2015		2	2	4	6	2
Outfall >36"	*Ocean View at 15th Street*	*203PAC050-DIS-36**	2/6/2014	NA	NA	NA				1	0	1	2	1
Outfall >36"	Ocean View at Hopkins Marine Station, Stanford University	203PAC010-DIS-36	2/6/2014	2/26/2014			12/12/2014	2/7/2015		2	2	4	6	2

Central Coast ASBS Regional Monitoring Program
2014-15 Storm Sample Results

Outfall >36"	Scenic Way	203MON010-DIS-36	2/6/2014	2/26/2014			12/12/2014	2/7/2015		2	2	**4**	**6**	2
Outfall >36"	4th Avenue	203CAR010-DIS-36	2/6/2014	2/26/2014			12/12/2014			2	1	**3**	**6**	3
Outfall >36"	18th Green PBGL / Lodge	203PEB010-DIS-36	2/26/2014					2/7/2015	4/7/2015	1	2	**3**	**6**	3
Outfall >36"	*9th Green PBGL*	*203PEB040-DIS-36**	2/26/2014	NA	NA	NA	12/12/2014	NA	NA	1	1	**2**	**6**	4
Outfall >36"	Trailhead at Agate Beach	402MAR010-REC	11/20/2013	2/6/2014	2/26/2014			2/7/2015	4/7/2015	3	2	**5**	**6**	1
Outfall >36"	Weinke Way	205SAN030-REC	11/20/2013		2/26/2014			2/6/2015	4/7/2015	2	2	**4**	**6**	2
Outfall >36"	Lover's at Ocean View	203PAC080-REC	2/6/2014	2/26/2014			12/12/2014			2	1	**3**	**6**	3
Outfall >36"	Ocean View between 12th Street and 13th Street	203PAC040-REC	2/6/2014	2/26/2014			12/12/2014	2/7/2015		2	2	**4**	**6**	2
Outfall >36"	Ocean View at Hopkins Marine Station, Stanford University	203PAC010-REC	2/6/2014	2/26/2014			12/12/2014	2/7/2015		2	2	**4**	**6**	2
Outfall >36"	Scenic Way	203MON010-REC	2/6/2014	2/26/2014			12/12/2014			2	1	**3**	**6**	3
Outfall >36"	4th Avenue	203CAR010-REC	2/6/2014	2/26/2014			12/12/2014			2	1	**3**	**6**	3
Outfall >36"	18th Green PBGL / Lodge	203PEB010-REC	2/26/2014					2/7/2015	4/7/2015	1	2	**3**	**6**	3
Reference	Tunitas Creek	206SAN010-REF		2/6/2014	2/26/2014	3/26/2014	12/12/2014		4/7/2015	3	2	**5**	**6**	1
Reference	Gazos Creek	203SAN010-REF	11/20/2013	2/7/2014	2/27/2014		12/12/2014	2/7/2015	4/7/2015	3	3	**6**	**6**	**0**
Reference	Scott Creek	204ANO010-REF			2/27/2014	3/26/2014	12/12/2014	2/7/2015	4/7/2015	2	3	**5**	**6**	1
Reference	La Selva Beach	302MBY010-REF	11/20/2013	2/7/2014	2/27/2014		12/12/2014	2/7/2015	4/7/2015	3	3	**6**	**6**	**0**
Reference	Marina State Beach	202MBY010-REF	11/20/2013	2/7/2014	2/27/2014		12/12/2014	2/7/2015	4/7/2015	3	3	**6**	**6**	**0**
Reference	Malpaso Creek	203LOB010-REF	11/20/2013	2/6/2014	2/26/2014		12/12/2014	2/7/2015	4/7/2015	3	3	**6**	**6**	**0**
Reference	Soberanes Creek	203LOB020-REF	11/20/2013	2/6/2014	2/26/2014		12/12/2014	2/7/2015	4/7/2015	3	3	**6**	**6**	**0**
Reference	Doud Creek	203LOB030-REF		2/6/2014	2/27/2014	3/26/2014	12/13/2014	2/7/2015		3	2	**5**	**6**	1
Reference	Big Sur River	303BIG010-REF	11/20/2013	2/6/2014	2/27/2014				4/8/2015	3	1	**4**	**6**	2
Reference	Sycamore Creek	303BIG020-REF		3/26/2014				2/7/2015	4/8/2015	1	2	**3**	**6**	3
Reference	Big Creek	303BIG030-REF	11/20/2013	2/6/2014	2/27/2014			2/7/2015		3	1	**4**	**6**	2

JUL 29 2015

Tricia Wotan, Chair
CC ASBS RMP
5 Harris Court, Building D
Monterey, CA 93940

Dear Ms. Wotan:

GENERAL EXCEPTION COMPLIANCE DATE EXTENSION REQUEST FOR SUBMITTAL OF THE FINAL COMPLIANCE PLANS FOR THE CENTRAL COAST AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE REGIONAL MONITORING PROGRAM

The State Water Resources Control Board (State Water Board) staff received your letter regarding the Central Coast Areas of Special Biological Significance Regional Monitoring Program (CC ASBS RMP) on May 27, 2015. That letter includes a compliance date extension request of at least one year for the submittal of the final Compliance Plans, which are required pursuant to Attachment B of Resolution No. 2012-0012 *Approving Exceptions to the California Ocean Plan for Selected Discharges into Areas of Special Biological Significance, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report* (General Exception).

Your letter states that you are making this request because your monitoring program has been unable to collect and analyze the discharge from the required six storm events prior to the end of the 2014-15 rainfall season due to the worsening drought conditions. The CC ASBS RMP's Management Committee amended the Memorandum of Agreement (MOA) to extend regional collaboration through December 31, 2016. The amended MOA was adopted on May 25, 2015 by the Monterey Regional Water Pollution Control Agency Board. If the requested extension is approved by the State Water Board, it would provide the CC ASBS RMP with additional time to complete all related scientific studies and analytical reports necessary to develop the final Compliance Plans.

The State Water Board recognizes the reasons for your request and appreciates that you are planning to extend the regional collaboration to address the data needs. The General Exception requires the CC ASBS RMP members to submit the final Compliance Plans to the State Water Board and Regional Water Quality Control Board on or before the September 20, 2015 compliance date, per Section I.A.3.b. of Attachment B to the General Exception. The State Water Board, however, recognizes that there is insufficient water quality data at this time to determine with full certainty priority discharges and appropriate controls necessary to achieve natural water quality in ASBS. Consequently, the State Water Board will allow the CC ASBS

RMP members to submit amended final Compliance Plans on or before September 20, 2016. The amended final Compliance Plan shall include the additional information gathered and determinations made during the period that the CC ASBS RMP's MOA is extended. Please include a statement in the final Compliance Plan that an amended final Compliance Plan will be submitted by this date.

By March 20, 2018, the CC ASBS RMP members are required to have fully operational all structural controls identified in the Compliance Plan that are necessary to comply with the conditions of Section I.A.3.d of Attachment B to the General Exception. In addition, the CC ASBS RMP members shall comply with the requirement that their discharges into the affected ASBS maintain natural water quality by March 20, 2018, per Section I.A.3.e. of Attachment B to the General Exception. Section I.A.3.f. of Attachment B to the General Exception states that the Executive Director of the State Water Board or Executive Officer of the Regional Water Quality Control Board may authorize additional time to comply with Sections I.A.3.d. and I.A.3.e. if good cause exists to do so. If necessary, please refer to Section I.A.3.f. of Attachment B to the General Exception for the requirements to request this extension.

For further questions pertaining to this subject matter, please contact Katherine Faick at (916) 445-2317 or Katherine.Faick@waterboards.ca.gov or Dr. Maria de la Paz Carpio-Obeso at (916) 341-5858 or MarielaPaz.Carpio-Obeso@waterboards.ca.gov.

Sincerely,

Tomas Howard
Executive Director

cc: Mr. Jonathan Bishop
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State Water Resources Control Board
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Ms. Marleigh Wood
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cc: Continued on next page.

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