James V. Fitzgerald Area of Special Biological Significance (ASBS) Updated Final Compliance Plan

Submitted in Compliance with State Water Resources Control Board Resolution No. 2012-0031 (Ocean Plan Special Protections for ASBS)

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EXECUTIVE SUMMARY

In 1972, the California State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) as the State's water quality control plan for ocean waters. It has since been reviewed every three years and updated as necessary. The Ocean Plan provides the basis for regulation of waste discharges to ocean waters and applies to both point and nonpoint source discharges. It identifies Beneficial Uses of California's ocean waters, establishes Water Quality Objectives (WQOs), and sets forth a program of implementation to protect the Beneficial Uses and achieve the WQOs.

The Ocean Plan prohibits waste discharges, including stormwater runoff, to Areas of Special Biological Significance (ASBS). This absolute waste discharge prohibition applies unless an "exception" is granted. On March 20, 2012, the State Water Board adopted a General Exception to the Ocean Plan waste discharge prohibition to ASBS. The General Exception (State Water Board Resolution No. 2012-0012, as amended by 2012-0031) governs point and nonpoint source waste discharges to ASBS, including stormwater runoff. It includes Special Protections for Beneficial Uses of ASBS and requires development of ASBS Compliance Plans by permitted point source dischargers or ASBS Pollution Prevention Plans by nonpoint source dischargers. Twenty-seven applicants, including the County of San Mateo (County) for the James V. Fitzgerald (Fitzgerald) ASBS, were granted coverage under the General Exception.

The Fitzgerald ASBS is located in unincorporated San Mateo County approximately 7 miles north of the City of Half Moon Bay. The Fitzgerald Marine Reserve (Reserve) with its 3 miles of shoreline is located entirely within the boundary of the ASBS. The Reserve was created in 1969 to protect the mosaic of habitats and tremendous diversity of marine life that exists in the area. The Reserve receives over 150,000 visitors annually and is one of the most frequently visited rocky shorelines in California. The watershed draining to the ASBS covers approximately 4.5 square miles of which more than two thirds is unincorporated rural lands. Three unincorporated residential communities are located in the watershed: Montara, Moss Beach, and Seal Cove. The State Water Board has identified thirty-nine natural and anthropogenic drainages to Fitzgerald ASBS. The County has confirmed that eleven of the drainages are storm drain discharges from County-maintained roadways. The remaining drainages are natural creeks, seeps, and gullies, or private storm drain discharges.

This Final Fitzgerald ASBS Compliance Plan describes how the County will comply with the Special Protections for areas under its jurisdiction. It was updated on September 20, 2016 to include results of the Central Coast Regional Monitoring Program (CCRMP) and requirements of the San Vicente Creek Bacteria Water Quality Improvement Plan (WQIP). As a participant in the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), County stormwater discharges are permitted under the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049; referred to as the MRP). The MRP prohibits most non-stormwater discharges and specifies actions necessary to reduce the discharge of pollutants in stormwater to the Maximum Extent Practicable. Non-structural Best Management Practices (BMPs) required by the MRP include public education and outreach, BMPs related to municipal operations, inspections of businesses and construction sites to ensure proper implementation of stormwater BMPs, investigation and abatement of illicit discharges, and associated reporting to the Regional Water Quality Control Board (Regional Water Board). Structural BMPs include post-construction stormwater management at development sites consisting of site design measures, source control measures, Low Impact Development (LID) design standards, and hydromodification management measures. The MRP also requires non-structural and/or structural BMPs to address certain water quality pollutants of concern (e.g., pesticides and trash).

The Ocean Plan Special Protections requirements are primarily being met through existing programs and measures, such as MRP compliance activities, the San Vicente Creek Bacteria Water Quality Improvement Plan (WQIP), Local Coastal Program policies, County zoning regulations, and the County Code of Ordinances. However, to fully comply with the Special Protections, the County is implementing additional actions in the ASBS watershed beyond the requirements of these programs.

- An enhanced inspection program has been implemented by the County to comply with requirements in the Special Protections to inspect storm drain outlet pipes into the ASBS and to conduct more frequent inspections of industrial, commercial, and construction sites.
- The County is also implementing enhanced non-stormwater discharge elimination measures within the Fitzgerald ASBS watershed.
- Through the planning and building permit review process enhanced on-site source control, BMPs, and stormwater treatment for development project sites are required.
- Furthermore, in June 2011 as part of the Proposition 84 James V. Fitzgerald ASBS Pollution Reduction Program (Fitzgerald Pollution Reduction Program), the County began implementing an education and outreach campaign that targets residences and businesses in the ASBS watershed.
- As part of the Fitzgerald Pollution Reduction Program, the County installed a total of 21 structural stormwater treatment BMPs, including storm drain filtration devices, vegetated swales, grassy swales, and bioretention features at 18 locations.
- In addition, the San Mateo County Resource Conservation District conducted outreach related to residential LID. Outreach included conducting sustainable landscaping assessments at residential properties throughout the ASBS watershed. LID measures and landscape plans were then prepared for seven properties based on the assessment results. Construction and installation of the LID measures was completed in December 2015. The LID measures include features such as rain gardens, drainage swales, rainwater storage tanks, driveway drainage and runoff/erosion control improvements, and permeable driveways.

The ASBS Special Protections contain monitoring requirements for identified discharges to an ASBS. These mandatory requirements include the Core Discharge Monitoring Program and the Ocean Receiving Water and Reference Area Monitoring Program. In order to meet the monitoring requirements, the County signed a Memorandum of Agreement for participation in the Central Coast ASBS Regional Monitoring Program (CCRMP). The monitoring program focused on storm events during the 2013-2014, 2014-2015, and 2015-2016 wet seasons.[1] Final results for discharge and receiving water monitoring at ten ASBS (including Fitzgerald), and nine reference areas along the central coast were published in the CCRMP Final Report (AMS 2016). Based upon the results of the monitoring, there were no exceedances of natural water quality for most potential pollutants monitored (i.e., metals and pesticides). For pollutants that did exceed the natural water quality threshold (i.e., PAHs, urea, toxicity), it could either not be determined whether stormwater runoff from the County's discharge points caused or contributed, or the exceedances were not observed in subsequent sampling events. Recently installed BMPs are improving the quality of stormwater discharges and plans to improve public outreach targeting pet waste (as a result of WQIP implementation) are expected to reduce exceedances of bacteria WQOs.

[1]The monitoring program was originally scheduled to begin in the 2012-13 wet weather season but was postponed by one year due to a lack of rainfall that season. It was extended into the 2015-2016 wet season in response to continued drought conditions.

The County will implement all Special Protections requirements consistent with the schedule set forth in the State Water Board Resolution. Compliance measures will be reported each year in the County's MRP-required Annual Report.

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ABAG	Association of Bay Area Governments
AMS	Applied Marine Services
ASBS	Area(s) of Special Biological Significance
BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practice
C/CAG	City/County Association of Governments
CCA	Critical Coastal Area
CCLEAN	Central California Long-term Environmental Assessment Program
CCRMP	Central Coast Regional Monitoring Program
CEQA	California Environmental Quality Act
CII	Commercial, Industrial and Illicit
CPS	Connector Pipe Screen
CWA	Clean Water Act
DPW	Department of Public Works
EIR	Environmental Impact Report
ERP	Enforcement Response Plan
FIB	Fecal Indicator Bacteria
FMR	Fitzgerald Marine Reserve
GGNRA	Golden Gate National Recreation Area
GI	Green Infrastructure
HHW	Household Hazardous Waste
IPM	Integrated Pest Management
LCP	Local Coastal Program
LID	Low Impact Development
MEP	Maximum Extent Practicable
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
MST	Microbial Source Tracking
MWSD	Montara Water and Sanitary District
NPDES	National Pollution Discharge Elimination System
NPS	Nonpoint Source
OWTS	Onsite Wastewater Treatment Systems
PAHs	Polycyclic Aromatic Hydrocarbons
PIP	Public Information and Participation
POPs	Persistent Organic Pollutants

QAPP	Quality Assurance Project Plan
RCD	Resource Conservation District
SAM	Sewer Authority Mid-Coastside
SCCWRP	Southern California Coastal Water Research Project
SFEI	San Francisco Estuary Institute
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan
SWQPA	State Water Quality Protection Area
TMDL	Total Maximum Daily Load
UCD	University of California, Davis
USEPA	United States Environmental Protection Agency
WQIP	Water Quality Improvement Plan for Bacteria in San Vicente Creek
WQO	Water Quality Objective

1.0 INTRODUCTION

On March 20, 2012, the California State Water Resources Control Board (State Water Board) adopted a General Exception to the California Ocean Plan waste discharge prohibition to Areas of Special Biological Significance (ASBS). The General Exception (State Water Board Resolution No. 2012-0012, as amended by 2012-0031) governs point and nonpoint source waste discharges to ASBS, including storm water runoff. It includes Special Protections for Beneficial Uses of ASBS and requires development of ASBS Compliance Plans by permitted point source dischargers or ASBS Pollution Prevention Plans by nonpoint source dischargers. Twenty-seven applicants, including the County of San Mateo (County) for the James V. Fitzgerald ASBS (Fitzgerald ASBS), were granted coverage under the General Exception. This ASBS Compliance Plan describes how the County, a National Pollutant Discharge Elimination System (NPDES) permitted point source stormwater discharger, will comply with the Special Protections.

The content and organization of this ASBS Compliance Plan follow the requirements described in Provision I.A.2 of Attachment B (Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges) to the General Exception Resolution. Following this introduction, Section 2.0 provides a regulatory background and describes fundamental provisions of the Special Protections. Section 3.0 describes the Fitzgerald ASBS watershed. Section 4.0 describes the existing regulatory programs that address water quality in the ASBS. Section 5.0 describes the structural and non-structural Best Management Practices (BMPs) currently employed or planned in the future. Section 6.0 describes implementation of requirements at parks and recreation facilities. Section 7.0 summarizes the County's ASBS monitoring program. Section 8.0 includes the compliance and implementation schedule. References used in the development of this ASBS Compliance Plan are cited in Section 9.0.

2.0 ASBS REGULATORY BACKGROUND

In 1972, the State Water Board adopted the California Ocean Plan (Ocean Plan) as the State's water quality control plan for ocean waters. The Ocean Plan provides the basis for regulation of waste discharges to coastal waters and applies to both point and nonpoint sources discharges. It is implemented by the State Water Board and the six coastal Regional Water Quality Control Boards (Regional Water Boards). In San Mateo County, the San Francisco Bay Regional Water Board participates in Ocean Plan implementation.

The Ocean Plan identifies Beneficial Uses of California's ocean waters, establishes narrative and numerical Water Quality Objectives (WQOs) protective of those Beneficial Uses, identifies areas where discharges are prohibited, and sets forth a program of implementation to ensure that WQOs are achieved and Beneficial Uses are protected. The California Water Code requires review of the Ocean Plan at least every three years to ensure that current standards are adequate and continue to protect indigenous marine species and human health. The current 2012 Ocean Plan was adopted by the State Water Board with Resolution No. 2012-0562 and is in effect as of August 19, 2013.

Shortly after adoption of the 1972 Ocean Plan, the State Water Board designated thirty-four ASBS, comprising approximately one-third of the State's coastline, including the Fitzgerald ASBS. ASBS support an unusual variety of aquatic life, and often host unique individual species. They are considered the basic building blocks for a sustainable, resilient coastal environment and economy. Since 1983 the Ocean Plan has prohibited waste discharges to ASBS and states that "discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas." This absolute waste discharge prohibition applies unless an "exception" is granted.

As of January 2005, ASBS areas were re-designated as a subset of "State Water Quality Protection Areas" (SWQPAs) that require special protection. Section 36700(f) of the Public Resources Code defines a state water quality protection area as "a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration of natural water quality, including but not limited to, areas of special biological significance that have been designated by the State Water Board through its water quality control planning process." The section further states that "In a state water quality protection area, point source waste and thermal discharges shall be prohibited or limited by special conditions. Nonpoint source pollution shall be controlled to the extent practicable."

Recognizing that point and nonpoint source discharges into ASBS were occurring, despite the Ocean Plan prohibition, the State Water Board contracted with the Southern California Coastal Water Research Project (SCCWRP) to survey by foot or boat all discharges into ASBS in California. SCCWRP (2003) identified 1,658 drainages into ASBS statewide, many of which were stormwater outfalls permitted under the NPDES program through Municipal Separate Storm Sewer System (MS4) permits to local governments (State Water Board 2012).

On October 18, 2004, following the SCCWRP study, the State Water Board notified the County that they must cease stormwater and non-stormwater waste discharges into the Fitzgerald ASBS or apply for an exception to the Ocean Plan. The County was one of twenty-seven applicants requesting an exception to discharge to various ASBS throughout California. The exception was approved by the State Water Board as part of a General Exception in Resolution No. 2012-0012 titled, "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." The exception is a special permission, granted by the State Water Board, to discharge into the ASBS. It is not a discharge permit and only applies to point and nonpoint source discharges (e.g., stormwater runoff, which can be either a point or nonpoint discharge) provided they are covered under an appropriate authorization, such as an NPDES permit. Stringent Special Protections were adopted by the State Water Board as conditions for the Ocean Plan Exception. State Water Board Resolution No. 2012-0031 revised the deadline for compliance with natural ocean water quality from four years to six years after adoption of the Special Protections. Potential environmental effects of the General Exception and Special Protections were evaluated in an Environmental Impact Report in accordance with the requirements of the California Environmental Quality Act (CEQA) (State Water Board 2012).

2.1. Special Protections

This ASBS Compliance Plan describes how the County, a point source (storm drain system) discharger permitted under the NPDES program, will comply with the Special Protections.

2.1.1. Permitted Point Source Stormwater Discharges

Permitted point source stormwater discharges into an ASBS are only allowed under the conditions set forth in Provision I.A.1.a of the Special Protections, which include:

(1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;
(2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in the Special Protections; and
(3) The discharges:
    (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;
    (ii) Are designed to prevent soil erosion;
    (iii) Are composed of only stormwater runoff.

In addition, discharges composed of stormwater runoff shall not alter natural ocean water quality in an ASBS, the discharge of trash is prohibited and only discharges from existing stormwater outfalls are allowed.

2.1.2. Permitted Point Source Non-Stormwater Discharges

Non-stormwater discharges into an ASBS are prohibited except as provided in the Special Protections. "Non-storm water discharges" are defined in two similar ways in the Special Protections. The first definition is as "any waste discharges from an MS4 or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water" (p. 2), and the second definition is as "any runoff that is not the result of a precipitation event. This type of runoff is often referred to as 'dry weather flow'" (p. 20).

Several types of non-stormwater discharges are allowed under Provision I.A.1.e.(2) of the Special Protections, "provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally." These include:

(a) Discharges associated with emergency firefighting operations.
(b) Foundation and footing drains.
(c) Water from crawl space or basement pumps.
(d) Hillside dewatering.

(e) Naturally occurring groundwater seepage via a storm drain.
(f) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

In addition, an NPDES permitting authority (i.e., State or Regional Water Board) "may authorize non-storm water 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-storm water 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."

2.2. Water Quality Objectives

Chapter II of the Ocean plan sets forth narrative and numeric limits or levels of water quality characteristics for ocean waters to protect Beneficial Uses. They include 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." For surface discharges, such as the discharges to the Fitzgerald ASBS, initial dilution is "considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution."

2.2.1. Natural Water Quality Definition

In response to regulatory concerns about ASBS, the State Water Board empaneled eight experts from different scientific disciplines to develop a functional definition of "natural water quality." Recognizing that natural ocean water would be expected to vary noticeably from place to place and from time to time, and that there are naturally occurring large-scale ocean cycles that dramatically influence water quality characteristics, and that truly natural water quality probably does not now exist in California's coastal ocean, the Natural Water Quality Committee set up criteria that could be used to define *operational natural water quality for an ASBS*. The definition must satisfy the following (SCCWRP 2010):

- It should be possible to identify 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, and
- Any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes.

The Natural Water Quality Committee recommended that ocean concentrations of a pollutant at a stormwater discharge in an ASBS would be considered to have altered natural water quality if it exceeded the 85th percentile of measurements of that pollutant in all reference site samples. Two reference sites for the Fitzgerald ASBS were selected as part of the Central Coast ASBS Regional Monitoring Program. They were selected based on watershed characteristics with greater than 90 percent open space and no listed water quality impairments (AMS 2014). The locations are in the surf zone at the mouths of the Tunitas Creek and Gazos Creek watersheds in San Mateo County. Natural water quality for the Fitzgerald ASBS is based on monitoring results for these stations from six storm events between November 2013 and January 2016. Monitoring data are provided in Appendix A.

2.2.2. Process for Exceedances

Provision IV of the Special Protections contains monitoring requirements for identified discharges to ASBS. These mandatory requirements include the Core Discharge Monitoring Program and the Ocean Receiving Water and Reference Area Monitoring Program. In order to meet the monitoring requirements, the County signed a Memorandum of Agreement for participation in the Central Coast ASBS Regional Monitoring Program (CCRMP).

The Core Discharge Monitoring Program includes collection of runoff samples from outfalls during storm events. Outfalls equal to or greater than 18 inches in diameter must be sampled for conventional parameters (oil and grease, total suspended solids, fecal indicator bacteria) and toxicity. Outfalls equal to or greater than 36 inches in diameter must also be sampled for metals, polynuclear aromatic hydrocarbons, pesticides and nutrients. Runoff flow rates must be measured or calculated.

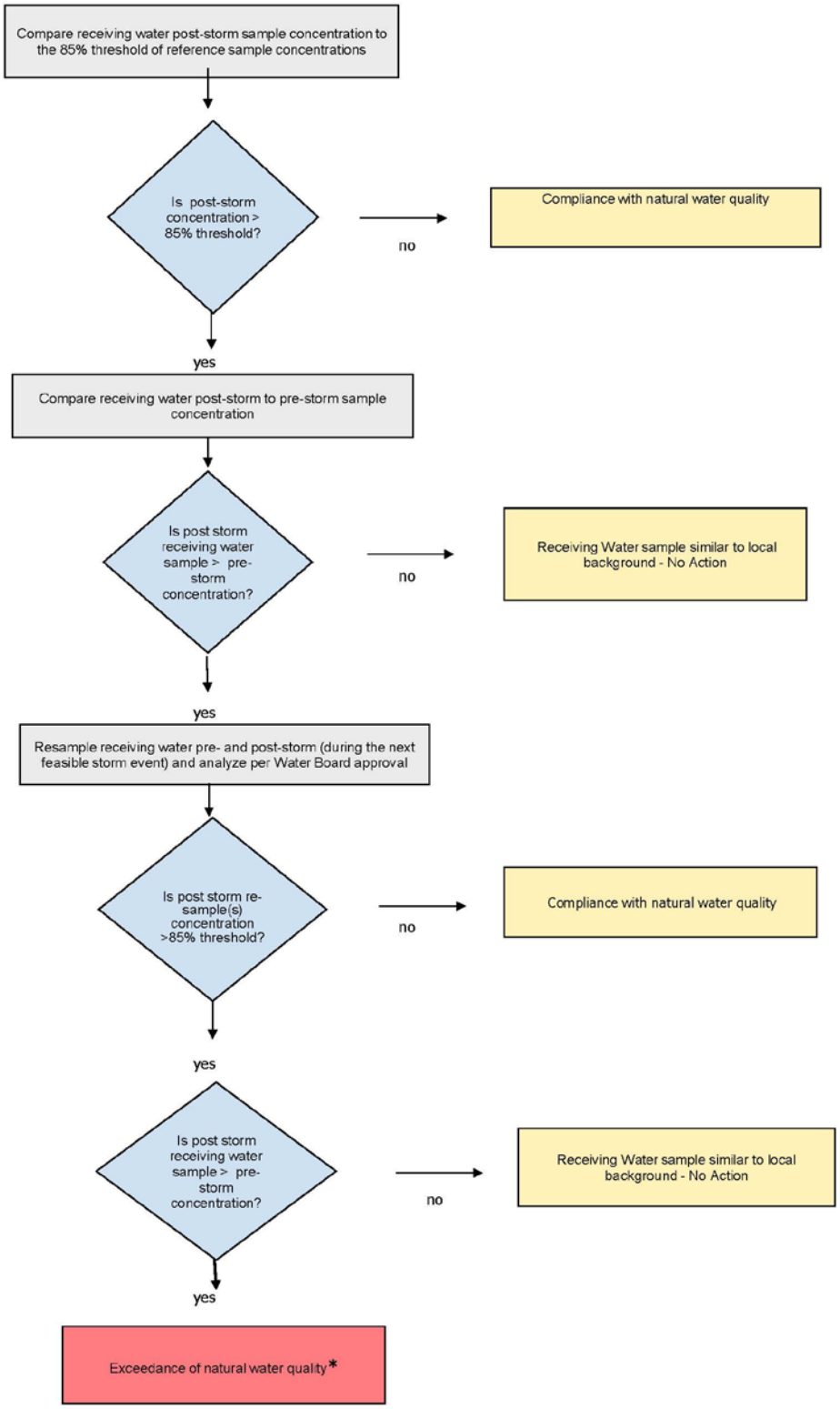
The Ocean Receiving Water and Reference Area Monitoring Program for ASBS participating in a regional integrated monitoring program (such as the CCRMP) includes storm monitoring in reference areas and pre- and post-storm monitoring in ASBS ocean receiving water (sampled in the surf zone). Samples must be analyzed for the same suite of constituents required by the Core Discharge Monitoring Program. Benthic marine aquatic life and bioaccumulation components must also be monitored.

The **process** for evaluating whether alterations of natural ocean water quality are the result of discharges from an ASBS is described in Attachment 1 to the Special Protections (included here as Figure 2.1) and summarized below. Concentrations of potential pollutants measured in post-storm receiving water samples collected in the surf zone are compared to the 85th percentile of reference site sample concentrations. Fitzgerald ASBS monitoring **results** from the CCRMP are described in Section 7.3 of this Updated Final Compliance Plan.

- If receiving water concentrations do not exceed the 85th percentile, then it is in compliance with natural water quality and no action is required.
- If receiving water concentrations exceed the 85th percentile, then the results are compared to pre-storm concentrations.
    - If the pre-storm concentration in the receiving water equal to or greater than the post-storm concentration, then no action is required.
    - If the pre-storm concentration is less than the post-storm concentration, then the receiving water should be resampled (pre- and post-storm) during the next feasible storm event.
        - If the post-storm receiving water concentrations in the next storm event do not exceed the 85th percentile than it is in compliance with natural water quality and no action is required.
        - If the post-storm receiving water concentrations in the next storm event exceed the 85th percentile but do not exceed the pre-storm concentration, then no action is required.
        - If the post-storm receiving water concentrations in the next storm event exceed the 85th percentile and not exceed the pre-storm concentration, then there is an **exceedance of natural water quality**.

According to the Special Protections, if results of the receiving water monitoring indicate that stormwater runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger must report to the State Water Board and Regional Water Board within thirty days. The report must identify which constituents were indicated and what BMPs are being implemented or planned to address the alteration of natural water quality. Upon approval by the State Water Board, such a report may also trigger an update of the County's ASBS Compliance Plan to incorporate new or modified BMPs, a new implementation schedule, and any additional monitoring required.

Decisions to develop new or modified BMPs or to conduct additional monitoring will be made with consideration of the potential uncertainties resulting from the sampling methods required by the Special Protections and implemented by the CCRMP. For example, samples collected in the surf zone may be more or less characteristic of receiving water and reference water conditions depending on factors that drive mixing and dilution, such as surf swell, surf period, wind speed, ocean currents/littoral cells, and discharge rate. Furthermore, resuspension of sediments (of unknown source) in receiving water as a result of stormy weather could be responsible for differences between pre-storm and post-storm receiving water concentrations. Establishing a link between the stormwater discharge and water quality in the ASBS may be challenging for a number of reasons, including the high variability in stormwater monitoring results and the multitude of factors that may impact water quality in the ASBS receiving water, such as discharges to the ASBS from lands not under County jurisdiction, proximity to San Francisco Bay, and the influence of other Ocean waters.



* 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 nonpoint sources., Note, when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.

Figure 2.1. Attachment 1 from the Special Protections: Flowchart to determine compliance with natural water quality

2.3. Compliance Plan

The Special Protections require development of a Compliance Plan that describes the measures by which the Special Protections will be achieved. The County of San Mateo, with jurisdiction throughout the unincorporated areas of San Mateo County including areas draining to the Fitzgerald ASBS, the San Mateo County Flood Control District, and the 20 municipalities in San Mateo County are covered under the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049; referred to as the MRP). This ASBS Compliance Plan addresses the portion of the Fitzgerald ASBS watershed that is drained by the County-owned and operated MS4 and is covered under the MRP. This area includes parks and recreation facilities and therefore, this ASBS Compliance Plan addresses stormwater runoff from those facilities per Provision II of the Special Protections (see Section 6.0). Stormwater and non-stormwater discharges from rural land (that drain directly to natural water bodies and not the County-maintained MS4 system) and the United States Air Force facilities located within the watershed are not covered under the MRP and are not specifically addressed in this ASBS Compliance Plan. However, many of the countywide measures, plans, and existing ordinances described in this plan are likely to prevent pollution and improve water quality from areas not covered by the MRP.

This Updated Final ASBS Compliance Plan is due by September 20, 2016 and is subject to approval by the Executive Officer of the San Francisco Bay Regional Water Board. It updates the Draft ASBS Compliance Plan that was submitted on September 20, 2014 and the Final ASBS Compliance Plan that was submitted September 20, 2015. This Updated Final ASBS Compliance Plan incorporates and reflects water quality monitoring results and findings of the Central Coast ASBS Regional Monitoring Program (AMS 2016) (see Section 7.0). It also adds the San Vicente Creek Water Quality Improvement Plan which was adopted by the Regional Water Board on May 11, 2016 (Resolution No. R2-2016-0024) (see Section 4.2). Implementation of the ASBS Compliance Plan is reported in the County's MRP Annual Reports.

3.0 FITZGERALD ASBS DESCRIPTION

The Fitzgerald ASBS is located in unincorporated San Mateo County approximately 7 miles north of the City of Half Moon Bay. It extends from 4th Street in Montara south to the Pillar Point breakwater (Figure 3.1). The Fitzgerald ASBS is located approximately 20 miles south of Golden Gate and the confluence of the Sacramento River Basin (27,000 square mile drainage basin) with the Pacific Ocean. Coastal San Mateo County is rural in nature and presents a stark contrast to the densely urbanized areas located only 10 miles to the east along the San Francisco Bay peninsula on the opposite side of the Santa Cruz Mountains. The area is drained by relatively small creeks originating on the steep and forested west-facing slopes of the Santa Cruz Mountains and pollutant loadings via stormwater runoff are expected to be low relative to more densely urbanized areas.

The Fitzgerald Marine Reserve (Reserve) with its 3 miles of shoreline is located within the boundary of the ASBS. The Reserve was created in 1969 to protect the mosaic of habitats and tremendous diversity of marine life that exist in the area. The Reserve is currently designated as a Marine Protected Area and is jointly managed by the California Department of Fish and Wildlife and the County. A 5.5-mile band of shoreline including the Reserve was designated as an ASBS due to the diversity of habitat and biological assemblages, dense stands of bull kelp found along with red algae, the diverse array of invertebrates that inhabit the broad reef, and the three types of subtidal habitat that are present at this location. Past studies and monitoring efforts have recorded 164 species (or taxa) of invertebrates, 134 species of algae and marine flora, many bird species, and several mammals including harbor seals, sea lions and sea otters (State Water Board 1979, Harding Lawson and Associates 1993, Tenera Environmental 2004). The Reserve receives over 100,000 visitors annually and is one of the most frequently visited rocky shorelines in California.

The watershed draining to the Fitzgerald ASBS is approximately 4.5 square miles (sq.mi.) or 2,880 acres. The dominant land uses are park/open space, ranching and equestrian facilities, small-scale agriculture, residential, light commercial/industrial, and a military facility, (Figure 3.2). More than two thirds of the watershed is unincorporated rural lands. Three unincorporated residential communities are located in the watershed: Montara, Moss Beach, and Seal Cove. The urbanized areas are primarily very-low to medium density residential. As of 2010, the combined population of Montara and Moss Beach was approximately 6,000. The southern half of the watershed is less populated with the bluffs just north of Pillar Point being occupied by a United States Air Force radar station and Peninsula Open Space Trust and County park lands. A municipal airport (Half Moon Bay Airport) is located in the vicinity; however, the majority of runoff from this facility flows to Pillar Point Harbor which is located outside of the ASBS boundary to the south. The community of El Granada is also located in the vicinity, but drains to Pillar Point Harbor.

A relatively limited network of storm drains and culverts directs runoff from some of the developed areas to receiving waters, including the ASBS. Engineered storm drain features are mapped in Figures 3.1 and 3.3 and are shown for reference in Figures 3.4, 3.7, 3.8, 5.1, and 5.3[2]. Areas that drain directly to the ASBS via sheet runoff are mapped in Figure 3.3. Sheet runoff areas total approximately 95 acres and consist primarily of the coastal bluffs along the Reserve and parts of the bluff tops. The area is served by the Montara Water and Sanitary District (MWSD) which is part of the Sewer Authority Mid-

[2] Figures showing the storm drain system will be updated if and when changes to the storm drain system are made; updates will be documented in the County's MRP Annual Report.

Coastside (SAM), a regional agency responsible for wastewater treatment. SAM operates the Wastewater Treatment Plant located in Half-Moon Bay. The sewer system pipelines shown in the Figure 3.4 are a combination of infrastructure owned and operated by MWSD and SAM. Figure 3.4 also shows properties with private septic systems which are generally located higher up in the watershed.

Three creeks drain directly into the ASBS: Montara Creek, with a watershed of approximately 1,100 acres (1.7 sq.mi.); Dean Creek (also known as Sunshine Valley), with a watershed of approximately 360 acres (0.6 sq.mi.); and San Vicente Creek, with a watershed of approximately 1,200 acres (1.8 sq.mi.). A portion of the runoff from the community of Montara is within the Kanoff Creek watershed (approximately 350 acres; 0.5 sq.mi.), which discharges to the ocean just north of the ASBS boundary. The Seal Cove area, located along the southern bluffs, drains directly to the ASBS. The Pillar Point Marsh watershed (approximately 800 acres) is adjacent to the ASBS watershed but drains into Pillar Point Harbor, which is located outside of the ASBS boundary. A map showing the Fitzgerald ASBS watershed is included as Figure 3.1.

Impervious cover area in each watershed draining to the ASBS and vicinity was estimated as part of the Critical Coastal Areas Program Pilot Project. Based on established relationships between impervious area and aquatic degradation, percent impervious area has been identified as a predictor of stream health. Degradation, including channel erosion, reduced groundwater discharge, and increased flooding, has been observed in watersheds with as little as 10 percent impervious area. Watersheds with 10 to 25 percent impervious area may experience major alterations in stream morphology. Watersheds with over 25 percent impervious area suffer from loss of habitat, lack of floodplain connectivity, bank instability, and decreased water quality. Current impervious area in the San Vicente, Dean, and Montara watersheds was estimated at 7 percent, which is below the threshold for stream health degradation. Future development in the watersheds will increase impervious area but will be constrained by Local Coastal Plan restrictions (San Mateo Countywide Stormwater Pollution Prevention Program 2002, California Coastal Commission 2008).

The coast along the Fitzgerald ASBS is generally characterized by steep bluffs. Bluffs along the southern portion of the ASBS are mapped by Wilson and Keep (1985) as having relatively high landslide susceptibility (Figure 3.5). Most of the bluff tops are traversed by recreational trails or public and private roads. The Bluff Trail traverses approximately one half mile of windswept bluff top between the Reserve parking lot (near San Vicente Creek) and Seal Cove to the south. The Jean Lauer Trail, which is part of Pillar Point Bluff County Park, traverses another half mile of bluff top farther south. These unpaved foot paths, which include sections of the California Coastal Trail, are maintained by the County of San Mateo Parks Department (County Parks). An informal trail is also present to the north of Juliana Avenue, but it is not maintained by County Parks.

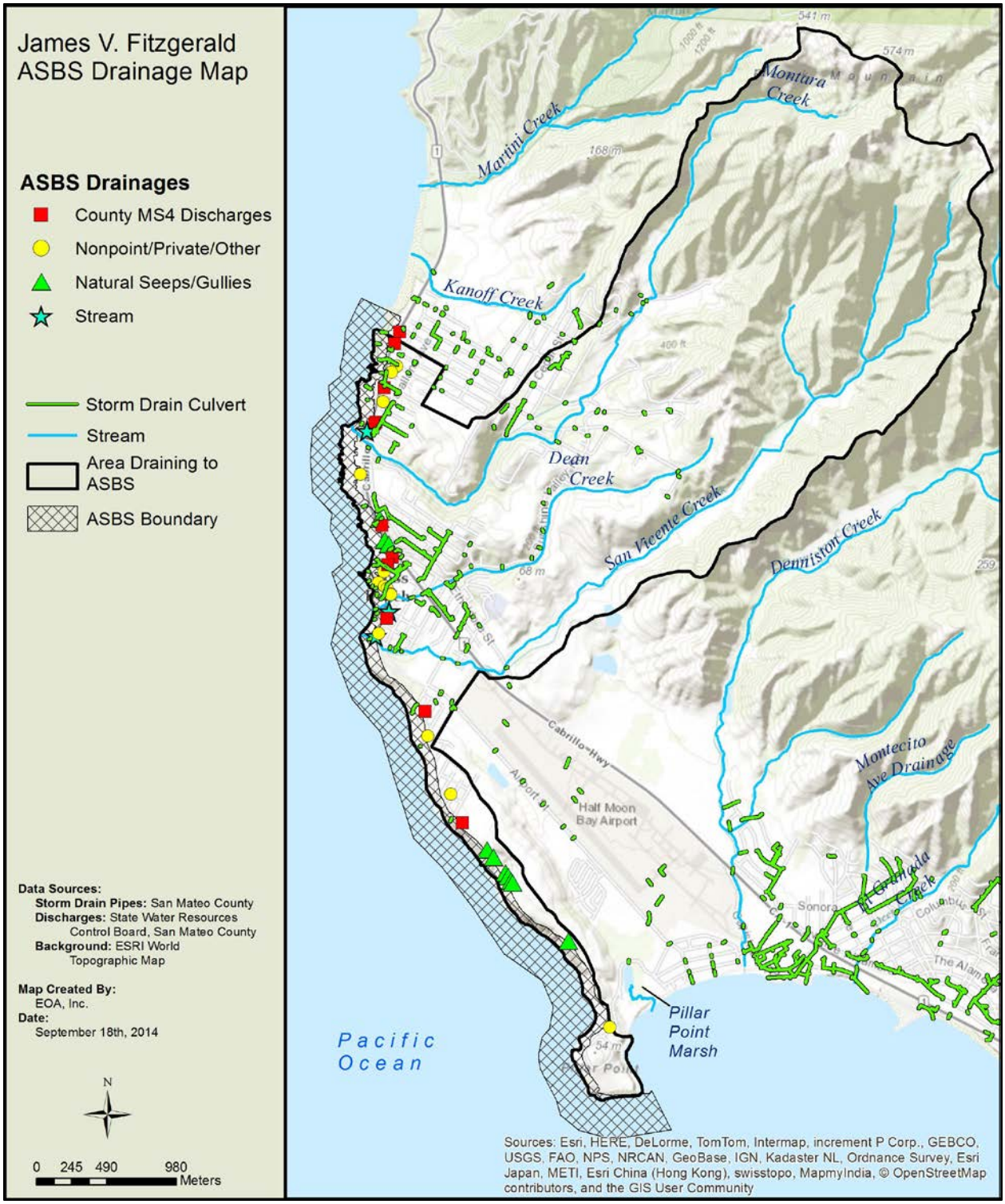


Figure 3.1. Fitzgerald ASBS Watershed.

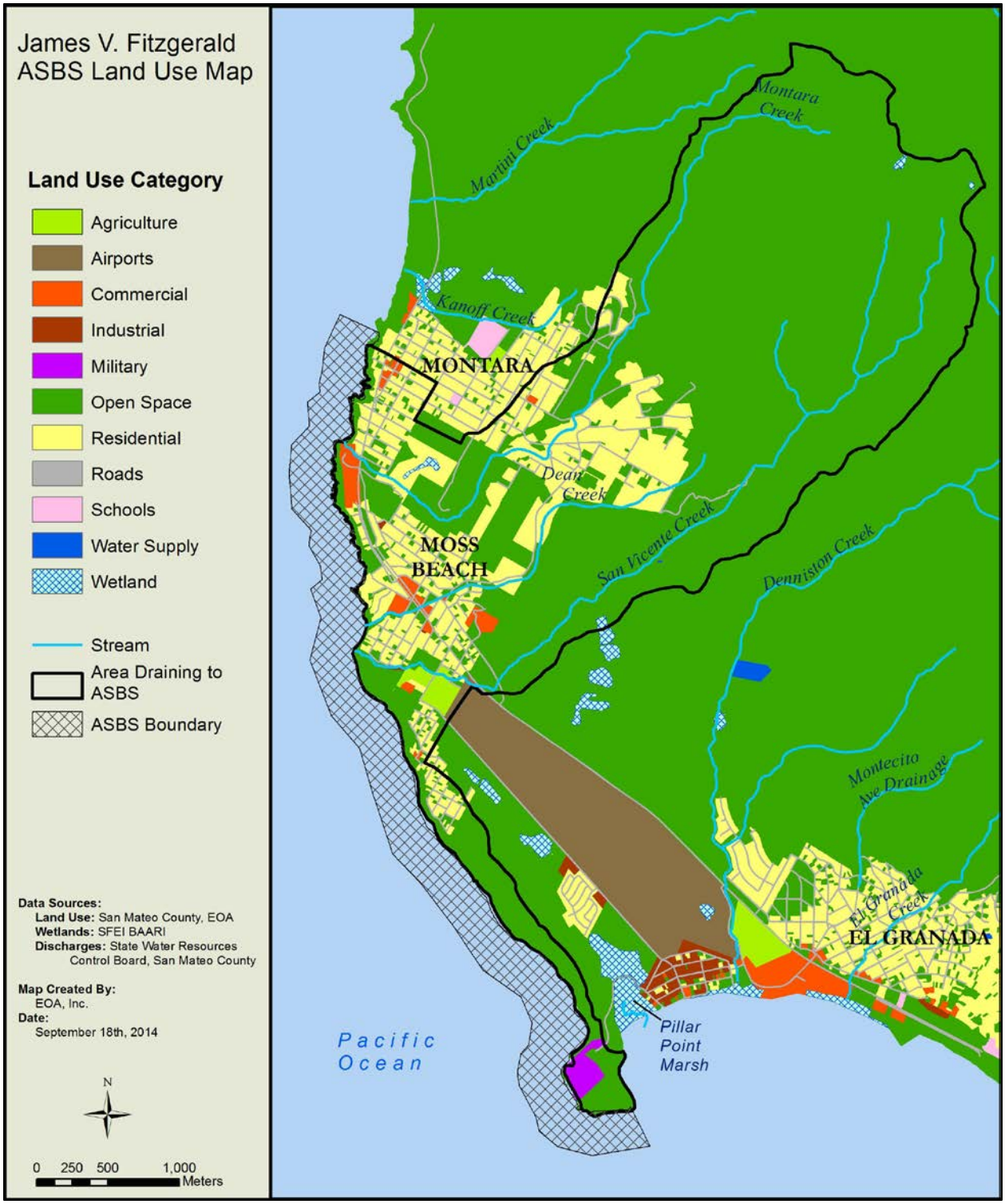


Figure 3.2. Land Use in the Fitzgerald ASBS Watershed

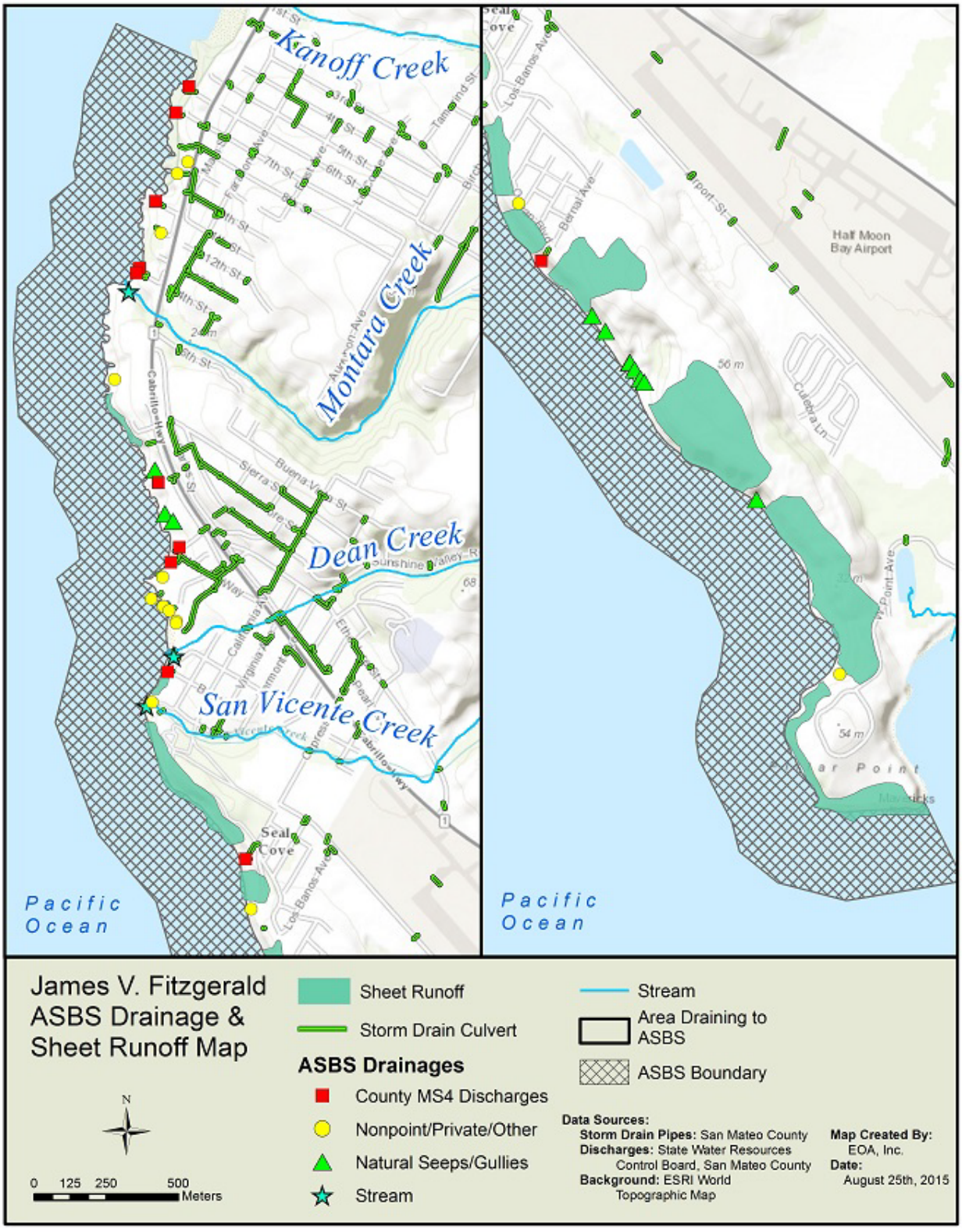


Figure 3.3. Engineered Storm Drain Features and Sheet Runoff in Fitzgerald ASBS Watershed.

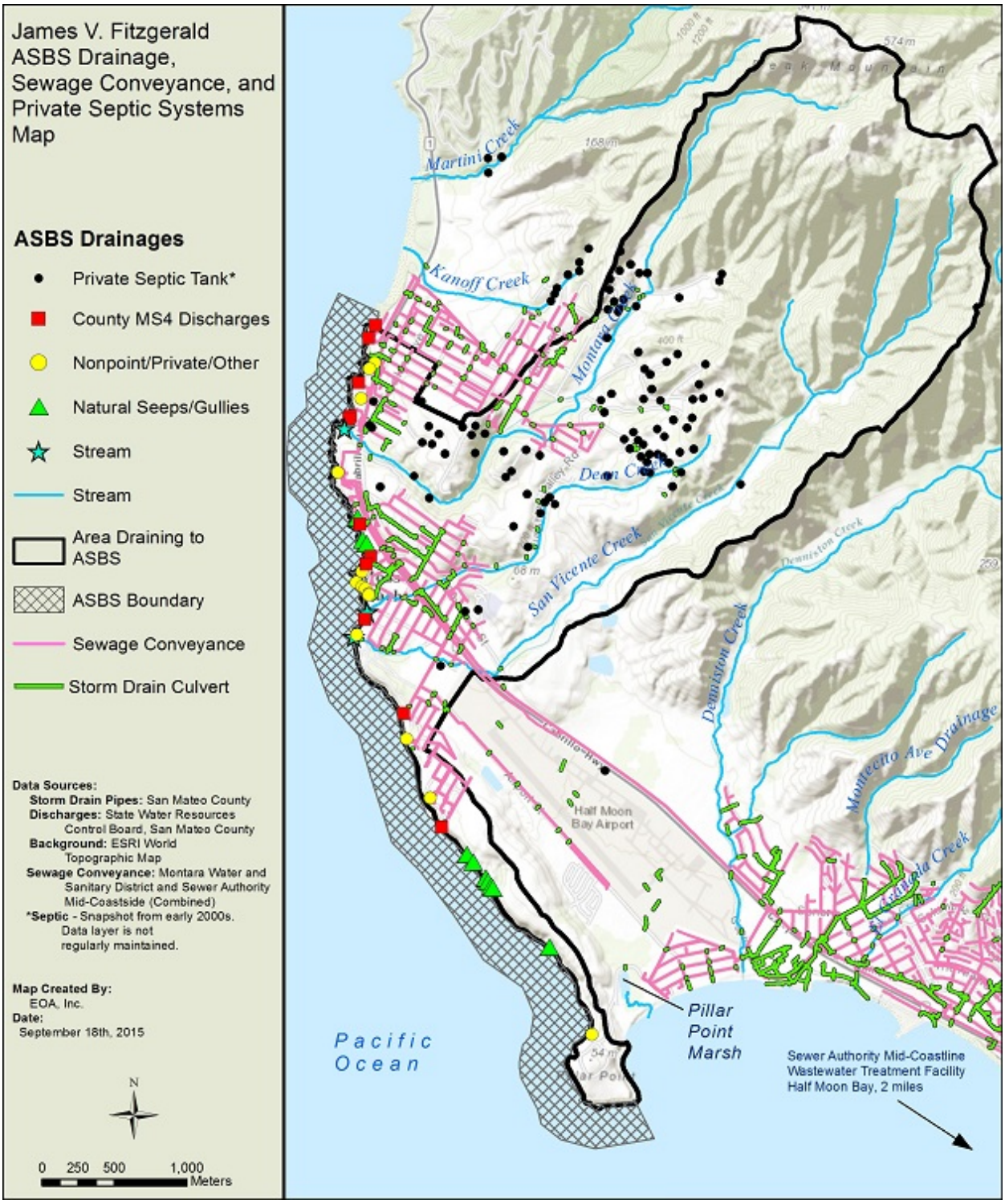


Figure 3.4. Sewage Conveyance, Private Septic Systems, and Storm Water Drainage in Fitzgerald ASBS Watershed.

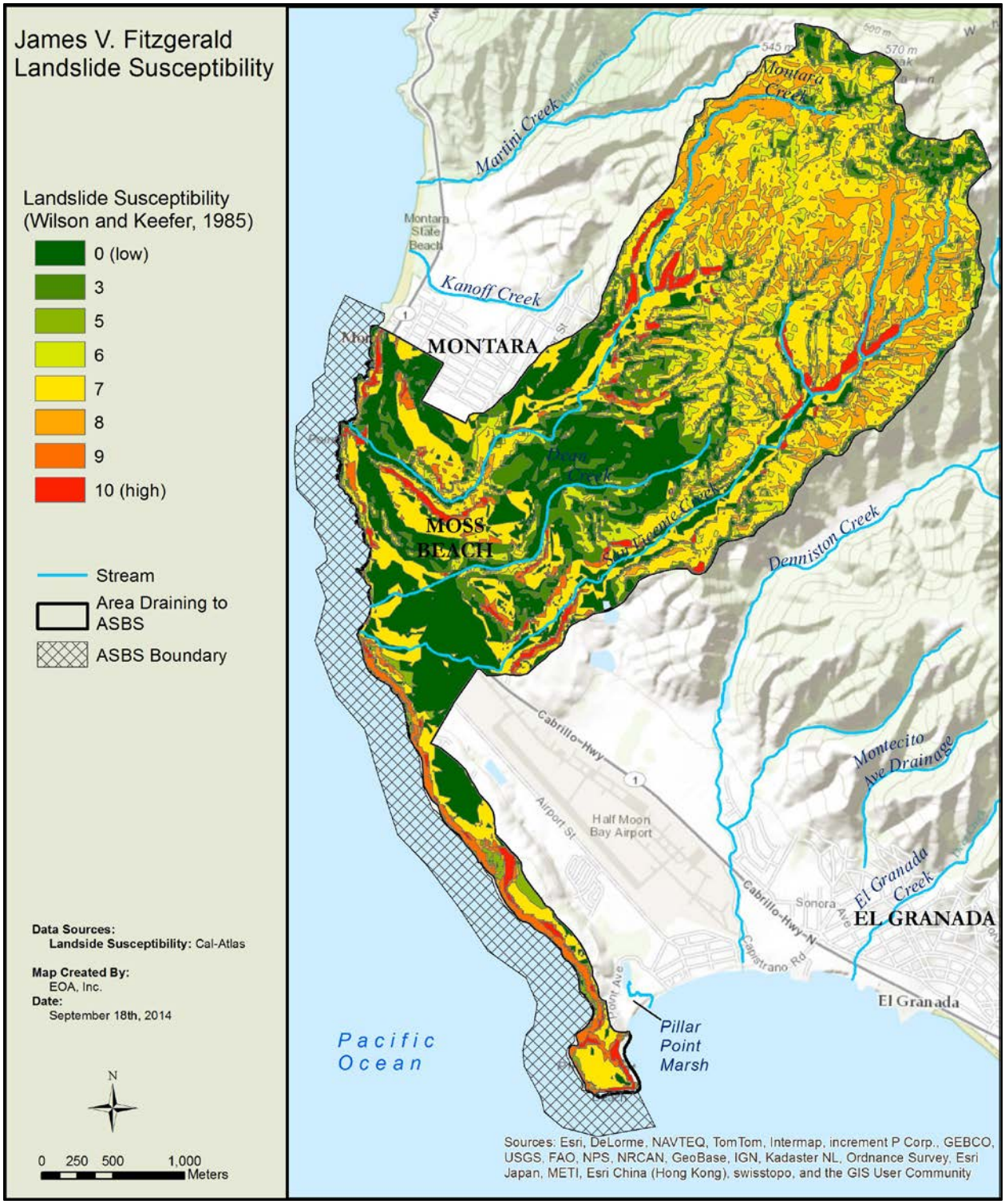


Figure 3.5. Landslide Susceptibility in the Fitzgerald ASBS Watershed

3.1. Drainages to Fitzgerald ASBS

The 2003 SCCWRP discharge survey, conducted on December 18, 2002, mapped thirty-eight "drainages" into the Fitzgerald ASBS (identified as FIT002 through FIT039). These drainages were listed in Appendix 5 of the Program Draft and Final Environmental Impact Reports (EIR) (State Water Board 2011 and 2012) which also included an additional drainage (FIT040). Each drainage was described according to several characteristics including, but not limited to, location, stream name, type (e.g., non-porous, earthen, perennial stream), material that comprises the discharge channel or outlet (e.g., metal, PVC, concrete, earthen), shape, width, flow, and responsible party (e.g., owner of property at discharge point). The State Water Board assigned a threat level (high, medium, low) to each drainage based on the data from the 2003 SCCWRP study. Nineteen of the drainages were originally identified as high threat discharges due to the potential for sewage spills or runoff from residential, parking, and highway land uses[3].

Drainages identified by SCCWRP (2003) were categorized according to one of three source types: discharge, outlet, or spring/seep. The term "outlet" was used to describe natural streams and gullies, which themselves may be impacted by upstream pollutants, but are regulated under the Water Quality Control Plan for the San Francisco Bay Basin (commonly referred to as the Basin Plan; Regional Water Board 2015) rather than the Ocean Plan (and are therefore the responsibility of the State). Based on the SCCWRP (2003) definition, spring/seeps fall into the "outlet" category. The Special Protections requirements apply only to drainages categorized as "discharges" which are defined as 'an anthropogenic source or location of a discernible volume of water that flows or is released directly into or immediately adjacent to the marine environment of a SWQPA.' In Fitzgerald ASBS, discharge sources include municipal/industrial storm drains, small storm drains, and nonpoint. The original list of drainages included:

- Discharges to which the Special Protections apply:
    - 17 municipal storm discharges from County-maintained or related facilities
    - 9 private storm drain discharges
    - 1 discharge from the Pillar Point Air Force Station (FIT038)

- Outlets regulated under the Basin Plan:
    - 8 natural seeps and gullies
    - 3 creek outlets

County staff reviewed the drainage information from the SCCWRP study and conducted field reconnaissance to verify the data and responsibility assignments. A total of thirty-nine discharges into the Fitzgerald ASBS were confirmed, including removal of FIT023 and FIT039 (abandoned/removed pipes) from the list, and addition of three discharges (FITNEW1, FITNEW2, and FIT040):

- 11 storm drain discharges from County-maintained roadways (FIT002, FIT003, FIT006, FIT008, FIT009, FIT012, FIT015, FIT024, FIT027, FIT029, FITNEW1),
- 1 nonpoint discharge from County-maintained Reserve access trail (FIT026)[4],
- 11 private storm drain discharges for which the County does not have jurisdiction (FIT004, FIT005, FIT007, FIT016, FIT017, FIT018, FIT019, FIT020, FIT021, FIT028, FITNEW2),

[3] Threat level designations were later changed based on updated information provided by the County.
[4] This trail was recently improved with the addition of stairs that terminate in the sand.

- 11 natural seeps and gullies (FIT011, FIT013, FIT014, FIT030, FIT031, FIT032, FIT033, FIT034, FIT035, FIT036, FIT037),
- 3 creeks (FIT010, FIT022, FIT025),
- 1 discharge from the Pillar Point Air Force Station (FIT038),
- 1 nonpoint discharge from the Montara Water and Sanitary District (MWSD) wastewater treatment facility (FIT040).

Drainages confirmed through County field reconnaissance are mapped in Figure 3.6 and listed in Table 3.1 along with drainage size, type, source, and other details. Of the eleven County-maintained discharges, eight primarily drain small bluff top areas west of Highway 1. The eight bluff top discharges consist of informal roadside ditches or shoulder drainages leading to single pipes at the end of the roadways that deliver runoff over the bluff. Three of the eight bluff top drainage catchment areas are two to five acres in size, and the remaining five are less than one acre in size. Only three of the eleven County-maintained discharges have larger catchment areas (15 to 30 acres) and drain areas east of Highway 1. Six of the eleven discharges receive runoff from Highway 1. In general, pollutant loadings are expected to be low relative to more densely urbanized areas on the Bayside of San Mateo County, and this is especially true for small drainages due to their limited flow volumes. Drainage points are mapped in Figure 3.6.

Five discharges are part of the County's inspection program and the Central Coast ASBS Regional Monitoring Program (CCRMP) required by the Special Protections (see Section 5.1.1 for a discussion of the inspection program and Section 6.1 for a discussion of the CCRMP). Three of the eleven storm drain discharge pipes with full or partial County responsibility are greater than 18 inches in diameter (FIT012, FIT015, and FITNEW1), and therefore are in included in the County's inspection program and the CCRMP. The largest County-maintained discharge is a 36-inch storm drain pipe that receives flow from Highway 1 and the surrounding residential areas (FITNEW1). At the request of the Regional Water Board, the County also included two discharges that are located on private property (Moss Beach Distillery Restaurant outfall [FIT028] and Ocean Boulevard/Madrone Avenue outfall [FITNEW2]) in the County's inspection program and the CCRMP because they receive runoff from County-maintained roads.

3.1.1. Prioritized Discharges

Four County discharges were prioritized as potentially posing the greatest threat to water quality based on relatively large catchment area and the presence of CalTrans facilities within the catchment. Priority discharges include FIT003 (7th Street), FIT012 (Maritime Walk), FIT015 (Juliana Avenue), and FITNEW1 (Wienke Way). As part of the Proposition 84-funded Fitzgerald Pollution Reduction Program, structural BMPs and LID measures have been installed within the catchment areas of three of the priority discharges (FIT003, FIT015, and FITNEW1). The Fitzgerald Pollution Reduction Program also targeted FIT002, FIT006, FIT008, FIT009, FIT010, FIT015, FIT024, FIT022, FIT025, FIT027, and FIT029. Targeted drainages are identified in Table 3.1 with an asterisk. BMP and LID measure locations for the Fitzgerald Pollution Reduction Program were selected based on opportunity and feasibility for retrofit within the right-of-way. Details of the Fitzgerald Pollution Reduction Program (including maps and descriptions of the BMP and LID measures) are included in Section 5.2.1 of this ASBS Compliance Plan. Although FIT012 (Maritime Walk) is a priority discharge and is included in the County inspection program and the CCRMP it was not targeted for implementation of structural BMP as part of the grant-funded Program due to the lack of feasible retrofit opportunities with the grant timeframe. The County's focus to date for

FIT012 has been non-structural BMPs and existing programs. The County is also considering future collaboration with CalTrans regarding retrofit opportunities within the FIT012 catchment.

Table 3.1. Fitzgerald ASBS Drainages. Drainages in **bold** are included in the County inspection program and Central Coast Regional Monitoring Program.

Drainage ID	Location	Responsible Party(ies)	Source Type	Approx. Size	Material	Threat Level[3]	Source
FIT002*	Seacliff Ct. -- 6th St.	**County**	Discharge	15 in	CMP	H	Municipal/industrial storm drain
FIT003[P]*	7th St.	**County** & Caltrans	Discharge	15 in	CMP	--	Municipal/industrial storm drain
FIT004	8450 Hwy 1 near 9th St	Private	Discharge	16 in	metal	--	Small storm drain
FIT005	8520 Hwy 1 near 9th St	Private	Discharge	8 in	metal	--	Small storm drain
FIT006*	11th St.	**County**	Discharge	12 in	CMP	MH	Municipal/industrial storm drain
FIT007	12th St.	Private	Discharge	16 in	CMP	MH	Small storm drain
FIT008*	14th St. north	**County** & Caltrans	Discharge	12 in	CMP	MH	Municipal/industrial storm drain
FIT009*	14th St. south	**County** & Caltrans	Discharge	15 in	ADS	MH	Municipal/industrial storm drain
FIT010*	Montara Creek	State	Outlet	2.5 m	earthen	--	Stream
FIT011	coastal bluff (The Strand)	natural gully	Discharge	20 in	earthen	--	Natural coastal bluff erosion
FIT012[P1]	**Maritime Walk**	**County** & Caltrans	Discharge	24 in	A/C swale below 24" RCP	L	Municipal/industrial storm drain; Not maintained by County
FIT013[2]	coastal bluff (The Strand)	natural gully	Discharge	39 in	earthen	L	Natural coastal bluff erosion
FIT014	coastal bluff (The Strand)	natural gully	Discharge	16 in	earthen	L	Natural coastal bluff erosion
FIT015[P*1]	**Juliana Avenue**	**County** & Caltrans	Discharge	20 in	earthen ditch below 12" CMP	L	Municipal/industrial storm drain
FIT016	185 Reef Pt Rd	Private	Discharge	8 in	PVC	L	Small storm drain
FIT017	near 150 and 165 Reef Pt Rd	Private	Discharge	16 in	metal	MH	Small storm drain
FIT018	near 150 and 165 Reef Pt Rd	Private	Discharge	16 in	metal	MH	Small storm drain
FIT019	near 150 and 165 Reef Pt Rd	Private	Discharge	16 in	metal	MH	Small storm drain
FIT020	near 198 Arbor Lane	Private	Discharge	8 in	PVC	L	Small storm drain
FIT021	near 198 Arbor Lane	Private	Discharge	8 in	PVC	L	Small storm drain
FIT022*	Dean Creek	State	Discharge	31 in	metal	H	Stream
FIT023	abandoned pipe on South Laguna						
FIT024*	Beach St.	**County**	Discharge	15 in	ADS	MH	Municipal/industrial storm drain
FIT025*	San Vicente Creek	State	Outlet	4 m	earthen	--	Stream

Drainage ID	Location	Responsible Party(ies)	Source Type	Approx. Size	Material	Threat Level[3]	Source
FIT026[2]	FMR access trail	**County**	Discharge	4 m	dirt/gravel	L	Nonpoint; runoff from dirt/gravel trail
FIT027*	Cypress & Beach Way	**County**	Discharge	15 in	CMP	MH	Municipal/industrial storm drain
FIT028[1]	**Beach Way/Ocean Blvd @ Distillery Restaurant**	Private (flow from **County**)	Discharge	20 in	A/C swale below 15" PVC	H	Small storm drain
FIT029*	Ocean Blvd & Bernal Ave	**County**	Discharge	15 in	CMP	MH	Municipal/industrial storm drain
FIT030 - FIT037	natural spring/seeps and gullies (i.e., "outlets") along the coastal bluff						
FIT038	US Air Force	US Air Force	Discharge	39 in	earthen	--	Municipal/industrial storm drain
FIT039	pipe removed from FMR						
FIT040	wastewater treatment facility	MWSD	Discharge	--	--	H	Sewage facility
FITNEW1*[1]	**Wienke Way**	**County** & Caltrans	Discharge	36 in	RCP	--	Municipal/industrial storm drain
FITNEW2[1]	**Ocean Blvd & Madrone Ave**	Private (flow from **County**)	Discharge	24 in	A/C swale into bluff gully	--	Small storm drain

Notes:
A/C = asphalt/concrete, ADS = advanced drainage system, CMP = corrugated metal pipe, FMR = Fitzgerald Marine Reserve, in = inches, m = meters, MWSD = Montara Water and Sanitary District, PVC = polyvinyl chloride pipe, RCP = reinforced concrete pipe
[P] Indicates priority discharge (based on size of catchment and presence of CalTrans runoff in catchment)
* Indicates presence of BMP or LID measure under the Proposition 84-funded Fitzgerald ASBS Pollution Reduction Program.
[1] Indicates inclusion in County inspection program and CCRMP.
[2] FIT013 (natural bluff erosion) and FIT026 (FMR access trail) ≥ 18 inches but are not storm water outfalls and therefore are not included in the inspection or monitoring programs.
[3] Threat level assigned by State Water Board: L = low, M = medium, MH = medium high, H = high

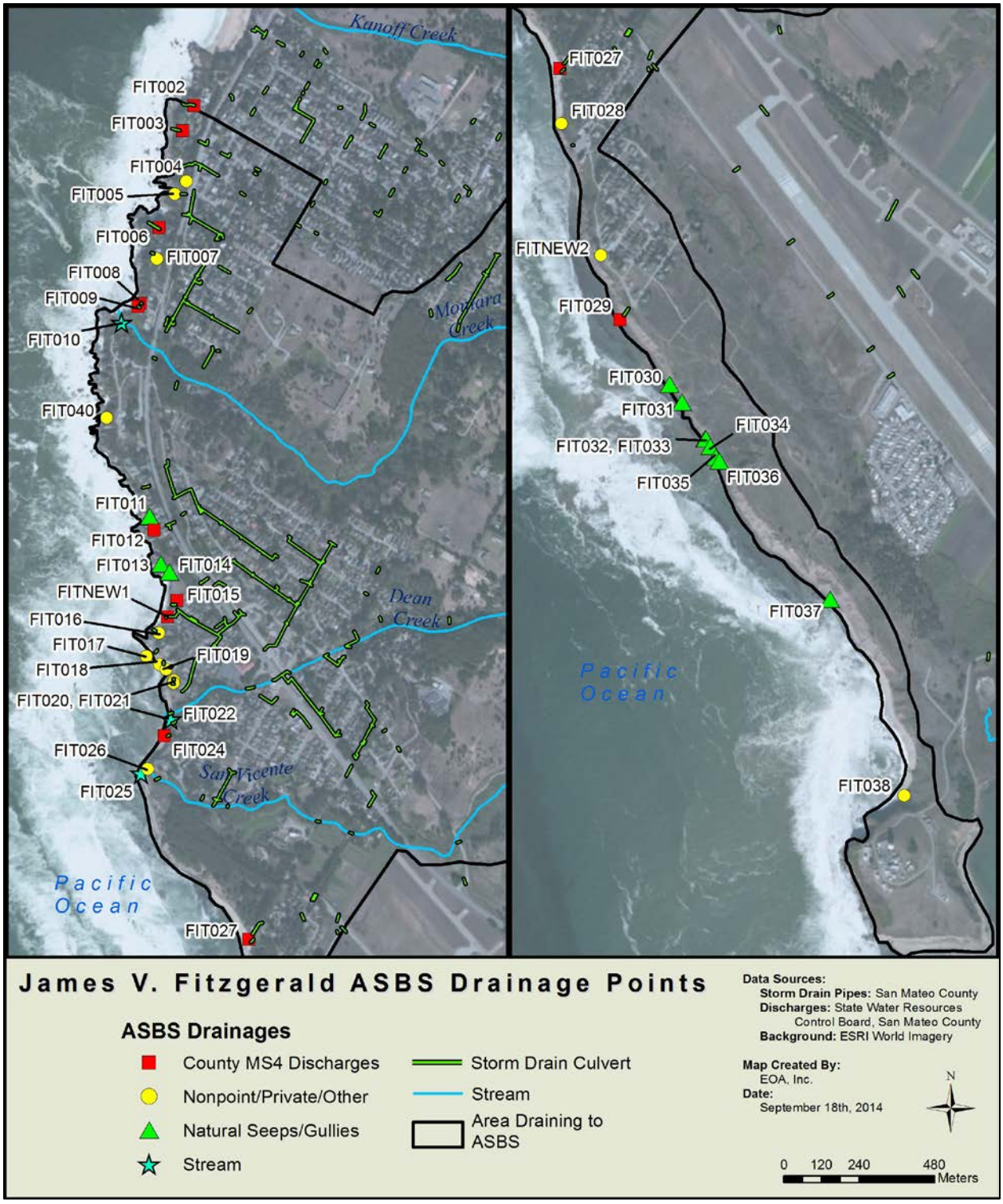


Figure 3.6. Fitzgerald ASBS Drainage Points

3.2. Existing and Potential Water Quality Impacts

Existing and potential water quality impacts to the Fitzgerald ASBS are typical of those common to rural (e.g., open space, equestrian facilities, and small-scale agriculture), park, residential, transportation, and commercial land uses. These include bacteria, sediment, trash, metals, pesticides/herbicides, nutrients, and oil and grease. Although data are currently limited, recent and ongoing monitoring efforts are expected to better characterize the extent of existing and potential water quality impacts. Countywide efforts to reduce pollutant sources and transport are described in Section 4.0. Additional actions specific to the ASBS are described in Section 5.0.

San Vicente Creek drains a mixed-use watershed with large open space areas and considerable wildlife habitat. It has been documented for coliform bacteria contamination and, prior to restoration activities targeted at reducing fecal contamination, a sign warning visitors that creek water is contaminated and not suitable for contact was a prominent feature near the main Reserve access point. Montara and Dean Creek watersheds have similar land uses and their respective beaches have also been periodically posted for high bacteria levels. A Microbial Source Tracking study conducted in 2012 concluded that both controllable (e.g., human, pet waste, horses) and uncontrollable (e.g., wildlife) sources of bacteria are present in the watershed. Reduction of controllable bacteria through education and public demonstration of residential LID measures and livestock BMPs were identified as priority BMPs for the Fitzgerald Pollution Prevention Program and future efforts.

The annual Mavericks surfing competition formerly brought thousands of spectators to cliffs and beaches near Pillar Point resulting in minor bluff erosion, littering, and wildlife disturbances. Since 2010, after a rogue wave caused several injuries, spectating has been relegated to giant screens set up away from the beach, resulting in fewer threats to water quality as a result of the Mavericks event.

A major source of sediment to the ASBS originates from the erosion prone areas identified in Figure 3.7. These areas were mapped based on topographic and elevation analysis of the watershed, with slopes greater than 10° defined as areas prone to erosion. The majority of the identified areas are located in the upper watersheds of Montara Creek and San Vicente Creek. Other areas prone to erosion are the coastal bluffs along the Fitzgerald Marine Reserve.

Commercial and Industrial facilities in the ASBS watershed are not considered pollutant sources because of the inspection program discussed in Section 5.1.1 of this Compliance Plan. Within the ASBS watershed, there are 30 facilities, one of which stores hazardous waste (a gas station). Some of the facilities may store trash and other non-hazardous waste in outdoor areas; however, this activity is not currently tracked unless problems are noted during inspections. See Figure 3.8 for a map of all commercial and industrial facilities in relation to stormwater conveyances and ASBS drainage points.

3.2.1. Clean Water Act 303(d) Listings

The Reserve and San Vicente Creek were added to the Clean Water Act (CWA) 303(d) list for fecal indicator bacteria (FIB) in 2002 with nonpoint sources identified as the potential source. On May 11, 2016, the San Francisco Bay Regional Water Board approved a proposed revision to remove the Reserve from the list based on weekly monitoring data from 2001 to 2015 that show that the Reserve is no longer impaired. Conversely, data from the same period collected at the mouth San Vicente Creek show continued impairment due to FIB. On May 11, 2016, the Regional Water Board adopted a Resolution to support the Water Quality Improvement Plan (WQIP) for bacteria in San Vicente Creek (Resolution No. R2-2016-0024). The WQIP is an alternative to a Total Maximum Daily Load (TMDL). The WQIP allows for adaptive management and flexibility in addressing the bacteria impairments in San Vicente Creek. The WQIP is described in greater detail in Section 4.2.

There are two additional 303(d) listings in the area. The Pacific Ocean at Pillar Point Beach, located outside of the ASBS to the southeast is listed for FIB with nonpoint sources identified as the potential source. The TMDL for FIB at Pillar Point Beach is scheduled to be completed by 2019. The Pacific Ocean at Pillar Point, near the south end of the ASBS, is 303(d) listed for mercury based on fish tissue samples collected in 2000, with the TMDL scheduled for 2019. The source of the mercury has not been identified.

3.2.2. Fitzgerald Critical Coastal Areas Program Watershed Assessment

The Fitzgerald Critical Coastal Areas Program Watershed Assessment (2008) provided a characterization of the subwatersheds, review of existing water quality data, and recommendations for an Action Plan to remediate water quality in the watersheds and to gather more monitoring data (see Section 4.10 for more details). The Fitzgerald Marine Reserve Critical Coastal Area (CCA) is comprised of the Fitzgerald ASBS watershed and several watersheds to the north and south, including Pillar Point Harbor. Data sources summarized in the Watershed Assessment included the Clean Water Act 303(d) list, Surfrider, County Environmental Health Recreational Water Quality Program, Monterey Bay National Marine Sanctuary Snapshot Day, Caltrans, Montara Water and Sanitary District, Coastside County Water District, and County Parks. Consistent with the 303(d) listing for San Vicente Creek and the Pacific Ocean, coliform bacteria was identified in the CCA Watershed Assessment as the primary pollutant of concern in the study area. Other constituents and issues of concern in the ASBS watersheds that were identified in the CCA Watershed Assessment include (California Coastal Commission 2008):

- pH (exceedance of pH water quality objective measured in Montara Creek on 2005 Snapshot Day),
- MTBE (plume identified in groundwater near MWSD pumping well),
- Flooding (due to inadequate storm drain infrastructure throughout the residential area),
- Parameters associated with Caltrans facilities (possible oil, grease, nutrients, and metals),
- Nitrates, ammonia, sediments (speculative assessment of pollutants associated with ranching and equestrian operations), and
- Legacy chemicals (elevated concentrations of DDT and PCBs in bivalve tissues).

3.2.3. Fitzgerald Pollution Reduction Program Monitoring

The Proposition 84-funded Fitzgerald Pollution Reduction Program was developed to address many of the tasks identified in the CCA Action Plan (e.g., water quality monitoring, targeted BMP implementation, targeted education and outreach). A microbial source tracking study to identify sources of bacteria was recently completed as part of the Fitzgerald Pollution Reduction Program which began in 2011. In addition, water samples were collected to assess BMP effectiveness and were analyzed for urban runoff constituents including metals, polycyclic aromatic hydrocarbons (PAHs), pyrethroid pesticides, suspended sediment, nutrients, and fecal indicator bacteria. All of these constituents were detected in the samples. See Section 5.1.2 for more details.

3.2.4. Ocean Plan Exception Monitoring

In order to meet the State Water Board's requirements to apply for the Ocean Plan General Exception, the County performed water quality monitoring at representative ASBS outfalls (FIT015, FIT022, FIT025) and ocean receiving water stations in December 2007. Elevated levels of vehicle-derived pollutants, such as copper, PAHs, and oil and grease, as well as bacteria were detected. Observations during the sampling event indicated the source to be localized from runoff from nearby roadways, driveways, and

roofs. Two of these locations (FIT015 and FIT025) have been targeted for BMP implementation as part of the Fitzgerald ASBS Pollution Reduction Program.

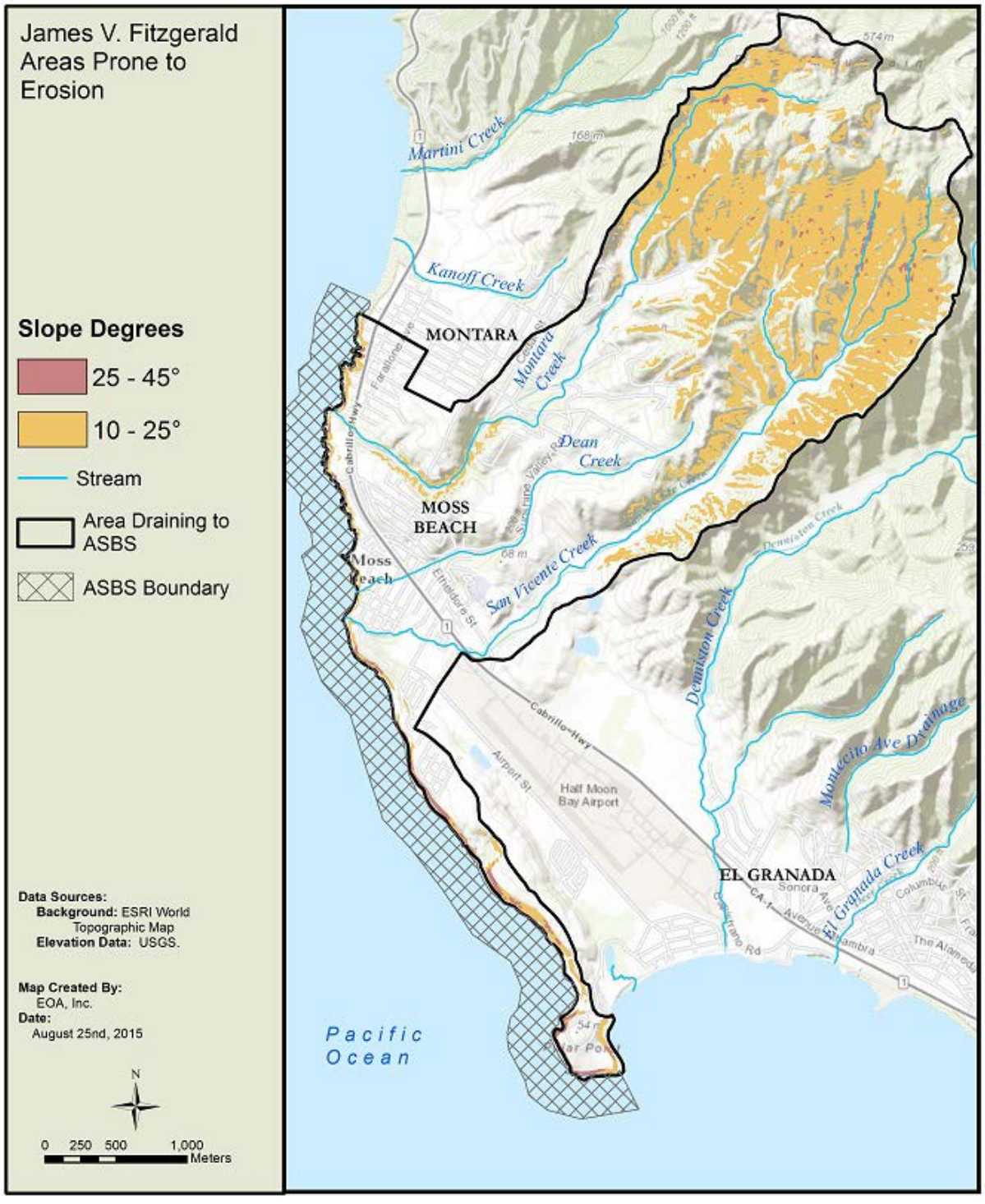


Figure 3.7. Areas Prone to Erosion in Fitzgerald ASBS Watershed.

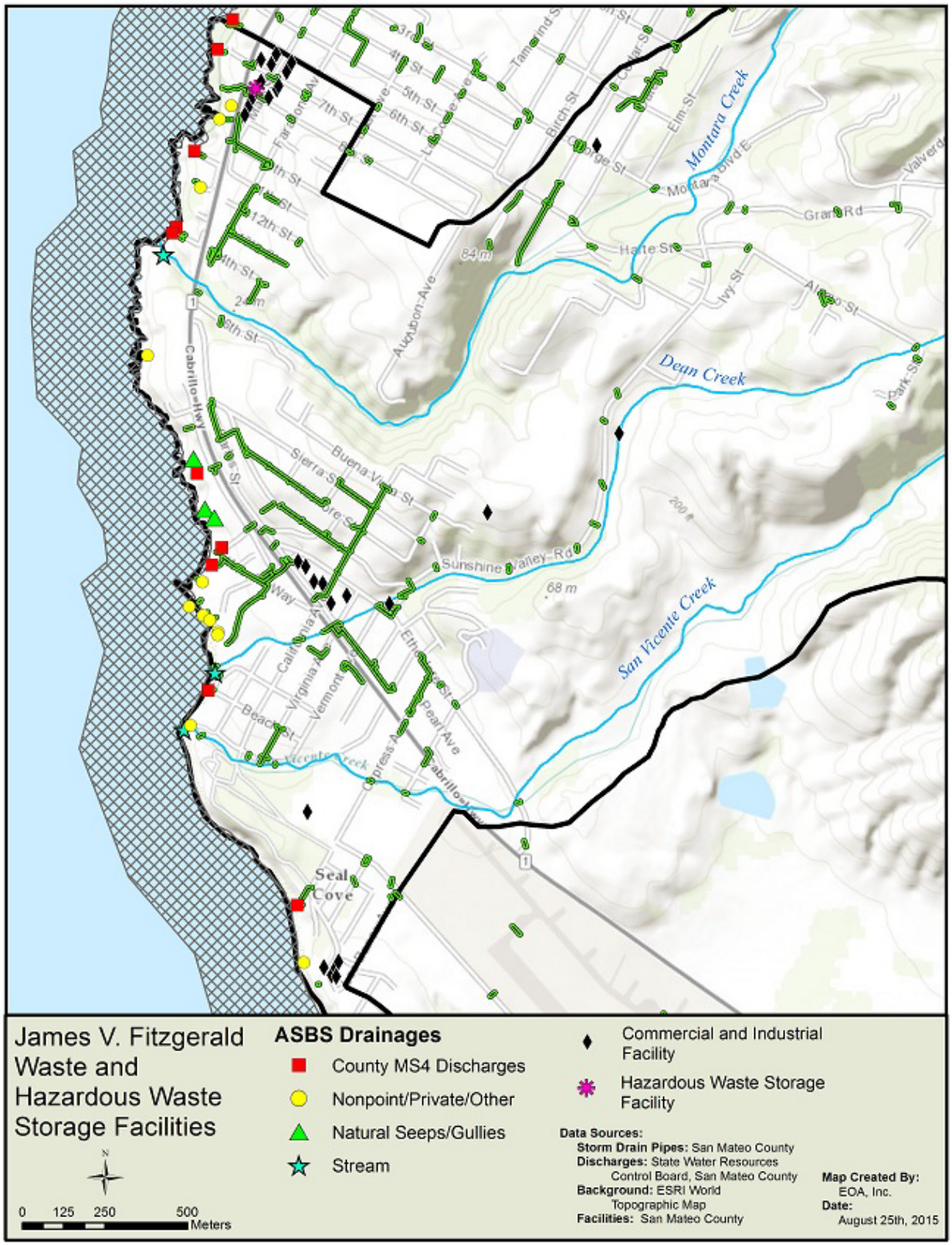


Figure 3.8. Waste and Hazardous Storage in Fitzgerald ASBS Watershed.

4.0 EXISTING PROGRAMS ADDRESSING WATER QUALITY IN THE ASBS

Several plans, policies, and ordinances exist that have been developed to protect natural resources throughout the County and the Beneficial Uses of the ocean and other water bodies. The MRP and several other overarching plans and programs are described in this section. A more comprehensive list is provided in Table 4.2. The requirements and compliance schedules of these programs are generally consistent with the requirements of the Special Protections. Additional programs being implemented (or planned) to meet requirements of the Special Protections that go beyond existing plans are described in Section 5.0 of this Compliance Plan. A review of the key policies and programs that the County implements to help protect and enhance water quality in the ASBS was conducted in March 2015 (EOA 2015). The report summarizes existing policies and programs, describes revisions implemented to facilitate compliance with the Special Protections, and recommends improvements for the future. It is included with this Compliance Plan as Appendix B.

4.1. Municipal Regional Permit

County stormwater discharges are permitted under the MRP. The MRP outlines requirements for municipal agencies in much of the San Francisco Bay Area (including the County and other San Mateo County agencies) to address the water quality and flow-related impacts of stormwater runoff, and effectively prohibits most non-stormwater discharges. The San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), a program of the City/County Association of Governments of San Mateo County (C/CAG), assists member agencies to comply with the MRP.

Some MRP requirements are implemented directly by the County and other San Mateo County Permittees. SMCWPPP assists with these requirements by providing education and training. Many related materials are available on SMCWPPP's website at www.flowstobay.org. Other MRP requirements are directly implemented by SMCWPPP on behalf of all of its members (e.g., water quality monitoring). In addition, the Bay Area Stormwater Management Agencies Association (BASMAA), a consortium of SMCWPPP and other countywide Bay Area municipal stormwater programs, promotes regional consistency in implementation of the MRP and implements certain MRP requirements on behalf of all MRP Permittees. Each year, SMCWPPP and the County develop separate Annual Reports summarizing stormwater management activities and accomplishments implemented in compliance with the MRP.

The MRP permit term is five years; the first version of the MPR (Order No. R2-2009-0074) became effective on December 1, 2009. It was replaced with the current MRP (Order No. R2-2015-0049) on November 19, 2015. The current MRP references the Ocean Plan Special Protections for ASBS Discharges in Provision C.16.

MRP requirements are organized into the fifteen major provisions described below. Additional details about County and SMCWPPP programs are available in the Annual Reports which can be downloaded from the Regional Water Board website.

C.1. Compliance with Discharge Prohibitions and Receiving Water Limitations

Provision C.1 of the MRP sets up an iterative process to meet receiving water limitations. If discharges are determined to be causing or contributing to an exceedance of an applicable water quality standard or objective, the Permittee notifies the Regional Water Board and implements additional BMPs (if necessary) to reduce the discharge of pollutants.

C.2. Municipal Operations

MRP Provision C.2, Municipal Operations, requires appropriate BMP implementation during operation, inspection, and routine repair and maintenance of municipal facilities and infrastructure (e.g., roads, bridges, stormwater pump stations, and corporation yards).

SMCWPPP assists the County in meeting these requirements by providing education and training (e.g., subcommittee meetings and municipal maintenance workshops) and tools (e.g., stormwater pollution prevention plan [SWPPP] template, inspection checklists).

The County implements municipal operation BMPs per MRP requirements, conducts and logs routine street sweeping, and follows the County of San Mateo Watershed Protection Maintenance Standards (2004) during all rural roads construction and maintenance activities. The Watershed Protection Maintenance Standards document describes standard operating procedures designed to minimize impacts to water quality and fish and wildlife habitat. County maintenance workers attend erosion control and BMP workshops to learn about new products and techniques.

For maintenance projects involving construction with fill or potential impacts to water quality, creeks, wetlands, and/or special status species (i.e., culvert replacements, slip-out repairs, sediment removal), environmental permits are obtained from the appropriate regulatory agencies (i.e., Department of Fish and Wildlife Streambed Alteration Agreement, Water Board 401 Water Quality certification, Army Corps Permit, Section 7 consultations, Coastal Development Permit, CEQA compliance). Many of the obtained permits for County of San Mateo Department of Public Works (DPW) and County Parks projects require additional BMPs and protective measures, which are implemented by DPW. For DPW projects requiring environmental permits, County biologists prepare and submit memos to the Roads Manager and Construction Supervisors containing copies of all applicable permits and detailing specific BMP requirements. A monitoring biologist is typically onsite for DPW projects at high priority sites (i.e., coastal zone and/or sensitive habitat).

C.3. New Development and Redevelopment

MRP Provision C.3, New Development and Redevelopment, requires that all regulated projects include source control, site design, and stormwater treatment measures, primarily through the implementation of Low Impact Development (LID) measures. Provision C.3.d specifies numeric sizing criteria for stormwater treatment systems and Provision C.3.g specifies hydromodification standards and control requirements. Regulated projects are described in the MRP and typically include those altering more than 50 percent or creating 5,000 square feet of impervious area. Furthermore, Green Infrastructure (GI) planning is now required for all municipal projects, including opportunistic retrofitting of existing roadways. SMCWPPP assists the County in meeting MRP requirements by providing education and training (e.g., subcommittee meetings, outreach products, workshops, stormwater checklists, and a C.3 Technical Guidance Manual).

The County requires implementation of LID treatment measures for all regulated projects through the building permit application and inspection process. The County is also educating local residents and implementing BMPs and LID practices in the Fitzgerald ASBS watershed as part of a Proposition 84 grant. This grant-funded project is described in greater detail in Section 5.2.1 of this Compliance Plan. See Appendix B for a detailed discussion of public and private GI approaches in the County.

C.4. Industrial and Commercial Site Controls

Provision C.4 of the MRP, Industrial and Commercial Site Controls, requires implementation of an industrial and commercial site control program consisting of an Inspection Plan, an Enforcement

Response Plan (ERP), and staff training. The Inspection Plan catalogs and prioritizes industrial and commercial facilities, and establishes appropriate inspection frequencies. The ERP provides guidance for inspections, effective follow-up, and enforcement to abate actual or potential pollution sources.

Through its Commercial, Industrial and Illicit Discharge (CII) component, SMCWPPP provides educational materials, templates, reporting forms, and training workshops to assist the County in implementing C.4 provisions.

The County maintains an Industrial and Commercial Business Inspection Plan that lists facilities that potentially discharge to the MS4 and their priority level. Routine stormwater inspections are conducted by County staff and enforcement actions are taken if necessary according to the ERP. The May 17, 2013 update of the Industrial and Commercial Business Inspection Plan includes 17 medium priority businesses (inspected biennially) and 31 low priority businesses (inspected at least once every five years) in Montara and Moss Beach. Most of these are within the Fitzgerald ASBS watershed; however, some (such as the Half Moon Bay Airport) drain to Pillar Point Marsh which is outside of the ASBS. The Moss Beach Distillery Restaurant which is located at discharge point FIT028 is a medium priority business.

An additional 27 low priority facilities within the ASBS were inspected in FY 2013/14 based solely on commercial/retail zoning. Some of these properties are zoned commercial/mixed use and consist of retail shops at the street level with residential above. These facilities would not be inspected if they were outside the ASBS; however, they were included to ensure protection of the receiving water and to meet the spirit of the Special Protections. The efficacy of continuing inspections for these facilities will continue to be assessed and may be modified over time. The Industrial and Commercial Business Inspection Plan is being updated to include ASBS priority businesses and the more frequent inspections required by the Special Protections.

C.5. Illicit Discharge Detection and Elimination

MRP Provision C.5, Illicit Discharge Detection and Elimination, targets non-stormwater and other illicit discharges through active surveillance and complaint response. Provision C.5.3 requires oversight and control of pollutants associated with mobile businesses. Provision C.5 of the previous MRP required annual dry weather inspections at strategic collection system check points within suburban and urban areas and key major outfalls draining industrial areas.

Through its CII component, SMCWPPP provides educational materials, templates, reporting forms, and training workshops to assist the County with implementation of C.5 provisions. Businesses that clean surfaces (i.e., sidewalks, parking areas, building exteriors) are referred to the BASMAA website at www.basmaa.org for annual training and recognition.

The County is responsible for documenting and responding to complaints regarding any type of potential illicit discharge within unincorporated areas. The County maintains an illicit discharge complaint tracking system. In addition, collection system screening continues to be performed consistent with Provision C.5 of the previous MRP. A minimum of one screening point per square mile is inspected annually during the dry season for illicit discharge detection and elimination. Additionally, catch basins, v-ditches, curbs, and pipes, including those located in the ASBS watershed, are typically inspected and cleaned as needed prior to the start of the rainy season and during significant storm events.

C.6. Construction Site Control

MRP Provision C.6, Construction Site Control, requires implementation of a construction site inspection and control program at all construction sites, with follow-up enforcement consistent with the ERP. All construction sites must have site-specific effective BMPs for erosion control, run-on and run-off control, sediment control, active treatment systems (as necessary), good site management, and non-stormwater management. Erosion control plans for all construction sites must be reviewed for consistency with local requirements, and sites disturbing one acre or more must file a Notice of Intent for coverage under the NPDES Construction General Permit (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ) which requires development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). Provision C.6.e requires that inspections are conducted monthly during the wet season at all sites disturbing one or more acres, at high priority sites, and at hillside projects disturbing ≥ 5,000 square feet. Inspection activities must be tracked and summarized in Annual Reports.

SMCWPPP assists the County in meeting the requirements of Provision C.6 by providing construction site inspection report forms and tracking tables. SMCWPPP also conducts construction site inspector workshops.

The County Planning and Building Department has formed a focused Erosion Control Review Team that reviews erosion control plans for adequacy and consistency through the grading and building permit application process. Inspections are conducted and tracked consistent with MRP C.6 requirements.

C.7. Public Information and Outreach

MRP Provision C.7, Public Information and Outreach, requires that the County and other San Mateo County Permittees a) educate target audiences about the causes of stormwater pollution and its adverse effects on water quality in receiving waters, and b) encourage residents to adopt less polluting and more environmentally beneficial practices. Subsections of Provision C.7 require specific activities (with various compliance deadlines) designed to meet these goals, including: storm drain inlet marking, advertising campaigns, media relations, stormwater point of contact, public outreach events, watershed stewardship collaborative efforts, citizen involvement events, school-age children outreach, and outreach to municipal officials. SMCWPPP assists with these activities through an extensive countywide Public Information and Participation (PIP) program performed on behalf of the County and other San Mateo County Permittees in coordination with BASMAA outreach programs. In 2016, SMCWPPP developed a Five-Year Public Education and Outreach Strategic Plan that is designed to meet MRP requirements, increase public support for GI, and establish program reputation (SGA 2016). Other activities consistent with the MRP cover topics such as reusable bag ordinances, household toxics disposal, car care, coastal cleanup days, litter, and integrated pest management (IPM). Most related educational materials are made available on the SMCWPPP website (www.flowstobay.org).

The County implements several additional countywide stormwater-related education and outreach programs, such as the Department of Public Works' RecycleWorks Program (www.recycleworks.org), the County Environmental Health's Toxics and Household Hazardous Waste program, and school training programs. Consistent with Provision C.7, the County also participates in multiple watershed stewardship programs overseen by the San Mateo County Resource Conservation District. In addition, the County develops and implements public outreach materials specifically targeting the ASBS watershed as part of the Proposition 84 grant-funded Fitzgerald ASBS Pollution Reduction Program (see Section 5.2.1 for more details).

C.8. Water Quality Monitoring

Provision C.8 of the MRP requires an extensive and comprehensive water quality monitoring program. On behalf of its member agencies, SMCWPPP performs water quality monitoring activities in compliance with MRP Provision C.8. Some of this work is accomplished through participation in BASMAA regional projects. A core element of the C.8 monitoring program is the random probabilistic design to conduct bioassessments in non-tidal streams throughout the County at a rate of ten stations per year. Although there are currently no C.8 monitoring stations in the Fitzgerald ASBS watershed, this may not be the case in future years through the random sample draw.

C.9. Pesticide Toxicity Controls

The primary objective of Provision C.9 is to implement requirements of the TMDL for Diazinon and Pesticide-related Toxicity for Urban Creeks in the region. Provision C.9 of the MRP is primarily implemented individually by each SMCWPPP member; however, SMCWPPP helps agency staff to understand the requirements through education and training (e.g., subcommittee meetings and workshops) and implements Provision C.9.h, the public outreach component of Provision C.9.

The County Board of Supervisors adopted the County of San Mateo Integrated Pest Management (IPM) Policy on June 8, 2010 and has since been implementing the policy accordingly. The IPM policy emphasizes non-pesticide alternatives to pest management. The County's roadside vegetation management program was recently updated to eliminate the use of herbicides adjacent to County roads.

C.10. Trash Load Reduction

MRP Provision C.10, Trash Load Reduction, requires that trash loads from MS4s are reduced by 70 percent by 2017 and 80 percent by 2019 working towards a goal of 100 percent reduction by 2022. The first step in meeting this requirement was determination of the baseline load of trash from the MS4 and submittal of a Short-Term Trash Load Reduction Plan by February 2012 (County 2012). A Long-Term Trash Load Reduction Plan and Assessment Strategy was completed in February 2014 (County 2014). Provision C.10.b requires annual cleanup at Trash Hot Spots, installation of a mandatory minimum number of full trash capture systems, and development of receiving water monitoring programs for trash.

Provision C.10 is primarily implemented by member agencies. SMCWPPP assists by helping agency staff with implement and prepare the Short and Long-term Trash Load Reduction Plans, coordinating a Trash Committee, and by providing Annual Report templates.

In collaboration with BASMAA, the County estimated baseline annual trash generation rates for several land use types and adjusted the estimates according to reductions anticipated by various control measures (County 2012). Details of the County's trash reduction measures are included in the County of San Mateo's Long-Term Trash Load Reduction Plan and Assessment Strategy (February 2014). Control measures already implemented or planned for the Mid-Coast area which encompasses the Fitzgerald ASBS watershed include (but are not limited to):

- DPW routinely sweeps selected County-maintained streets in Montara and Moss Beach. The frequency of street sweeping is generally twice per month. Street sweeping is not conducted on all County-maintained roadways in the ASBS watershed as many of the streets lack improvements (curbs, gutters, etc.) which would enable sweepings to be collected instead of simply being pushed aside.

- On November 6, 2012, the County Board of Supervisors passed a Reusable Bag Ordinance that became effective on April 22, 2013. The Ordinance is available at: http://smchealth.org/sites/default/files/docs/EHS/Final_15_Plastic%20Bag_Ord_04637.pdf
- On March 1, 2011, the County Board of Supervisors adopted Ordinance No. 04542 prohibiting food vendors from using polystyrene-based disposable food service ware. The ordinance is available at: http://www.smchealth.org/sites/default/files/docs/PolystyreneBan.pdf
- Since 2012, twenty full trash capture devices (catch basin connector pipe screen devices - CPS) have been installed throughout the ASBS watershed. Three additional trash capture devices (flume filter storm drain inserts and vault cartridge system) were installed as part of the Proposition 84 Pollution Reduction Program as described in Section 5.2.
- Since approximately 2000, the DPW Roads Division has conducted on-land trash cleanups at hot spot locations where litter is more commonly observed. The cleanup activities are conducted using the SWP work force (generally two workers) and a DPW Roads Division supervisor and typically occur every other Wednesday.
- Both SMCWPPP and county programs such as RecycleWorks and the Proposition 84 Fitzgerald Pollution Reduction Program conduct public education and outreach targeted at litter reduction.
- The County also supports volunteer cleanup efforts at the Reserve and Montara State Beach.

C.11. Mercury Controls

Provision C.11, Mercury Controls, implements stormwater runoff-related actions required by the San Francisco Bay mercury TMDL. Although the Pacific Ocean at Pillar Point, near the south end of the Fitzgerald ASBS, is 303(d) listed for mercury, the Bay mercury TMDL does not target this area (a separate TMDL is scheduled for 2019). However, some activities conducted under Provision C.11 are implemented countywide and potentially benefit the ASBS. For example, County Environmental Health's Household Hazardous Waste (HHW) Program offers residents the opportunity to drop-off mercury containing devices and other hazardous wastes at designated stations or events free of charge. County Environmental Health also has a program that provides inexpensive hazardous waste disposal options to eligible businesses. RecycleWorks provides public outreach promoting these programs.

C.12. PCB Controls

Provision C.12 of the MRP, PCB Controls, implements the urban runoff requirements of the San Francisco Bay PCBs TMDL. Although the Bay PCB TMDL does not target waters in the Fitzgerald ASBS area, some of the activities conducted under Provision C.12 are implemented countywide and potentially benefit the ASBS. For example, Provision C.12.f requires that Permittees develop and implement protocols for managing materials with PCBs in certain structures during demolition.

C.13. Copper Controls

Provision C.13 of the MRP implements the copper control measures identified in the Basin Plan (Regional Water Board 2015) that the Regional Water Board has deemed necessary to support copper site-specific objectives in San Francisco Bay. Although the Fitzgerald ASBS is outside of this area, many of the activities required by Provision C.13 are implemented countywide and potentially benefit waters in the ASBS area. Provision C.13 requires management of waste from copper architectural features and discharges from pools that contain copper-based chemicals and verification of implementation of proper BMPs through industrial facility inspections.

SMCWPPP develops and distributes fact sheets, trains industrial inspectors, and performs other public education and outreach activities. County Planning staff distribute a flyer on architectural copper to project applicants and/or contractors installing and/or maintaining architectural copper. The flyer is also posted on P&B's website: http://planning.smcgov.org/sites/planning.smcgov.org/files/Architectural_copper_BMPs_FINAL.pdf. Both the Construction Site Inspection Form used by DPW and Planning and Building inspectors and the C.3 and C.6 Development Review Checklist used during the Planning review process include architectural copper BMPs. The County is responsible for conducting and tracking violations related to copper control during industrial inspections and performs follow-up and enforcement as needed.

C.14. San Pedro Creek and Pacifica State Beach Indicator Bacteria TMDL

Provision C.14 implements the San Pedro Creek and Pacifica State Beach Indicator Bacteria TMDL. Provision C.14 is limited to a specific area outside of the Fitzgerald ASBS watershed.

C.15. Exempted and Conditionally Exempted Discharges

Provision C.15 exempts certain unpolluted non-stormwater discharges from the MRP Discharge Prohibition A.1. which prohibits non-stormwater discharges. The C.15 exemptions are similar to the non-stormwater discharges allowed under the Special Protections and include:

- Flows from riparian habitats or wetlands;
- Diverted stream flows;
- Flows from natural springs;
- Rising ground waters;
- Uncontaminated and unpolluted groundwater infiltration;
- Single family homes' pumped groundwater, foundation drains, and water from crawl space pumps and footing drains;
- Pumped groundwater from drinking water aquifers (*not allowed under the Special Protections*); and
- NPDES permitted discharges (individual or general permits).

Provision C.15 also conditionally exempts non-stormwater discharges that are potential sources of pollutants if they are identified as not being sources of pollutants to receiving waters, or if appropriate control measures are implemented. Some of these sources are allowed under the Special Protections (e.g., foundation drains, basement pumps from structures other than single family homes), others are not addressed specifically in the Special Protections (e.g., air conditioning condensate, residential car washing, swimming pool discharges, and irrigation water). Control measures that may be required depending on the type of discharge include (but are not limited to): monitoring, notification, tracking, flow restrictions, land dispersal, public education and outreach, dechlorination, and water conservation.

SMCWPPP assists municipal staff in complying with the MRP requirements and conducts public education and outreach activities related to C.15 (e.g., car washing, landscape irrigation) as part of the pollution reduction Provision C.7 outreach. The County's RecycleWorks program also conducts public education and outreach related to Provision C.15.

4.2. San Vicente Creek Bacteria Water Quality Improvement Plan

On May 11, 2016, the Regional Water Board adopted a Resolution to support the Water Quality Improvement Plan (WQIP) for bacteria in San Vicente Creek (Resolution No. R2-2016-0024). The Resolution included a recommendation to delist the Reserve from the CWA 303(d) list based on monitoring results with low frequency (0.2% to 9.4%) of WQO exceedances for fecal indicator bacteria (total coliform, fecal coliform, enterococci). Improvements in water quality at the Reserve are attributed, in part, to actions implemented by entities in the watershed (e.g., the County, the San Mateo County Resource Conservation District (RCD), individual property owners/operators, local Surfrider chapter) since 2001, including:

- Implementation of BMPs at horse facilities in the watershed;
- Inspection, detection, and elimination of illicit discharges of untreated sewage to the Creek from one septic system;
- Implementation of stormwater pollution prevention BMPs in the urban areas; and
- Education and outreach activities resulting in increased public awareness of polluting activities and ways to prevent or minimize them (e.g., efforts to educate and remind dog owners to properly manage their dog waste).

The Staff Report supporting the WQIP recommends that more actions are needed to meet bacteria WQOs in the creek (Regional Water Board 2016). The WQIP is an alternative to a TMDL. The WQIP includes most of the actions that would be required by a TMDL but allows for adaptive management and greater flexibility in addressing the bacteria impairments in San Vicente Creek. The WQIP requires several implementation actions to be conducted with the goal of meeting bacteria water quality objectives[5] over a ten-year timeframe. If bacteria WQOs are not achieved within ten years, the Regional Water Board may develop a TMDL.

The WQIP implementation actions focus on "high priority" sources of bacteria in the watershed: horse waste from commercial horse facilities; dog waste from pet dogs; human waste from onsite wastewater treatment systems (OWTS); and stormwater runoff. Other identified sources of bacteria to the creek are considered "low priority" for several reasons: lack of evidence suggesting they are "major" sources, active management by other regulations or permits (i.e., sanitary sewer overflows), significant time and effort needed to evaluate and manage (i.e., private sewer laterals), and/or not readily "controllable" (i.e., wildlife).

Several parties are identified in the WQIP as responsible for reducing high priority bacteria discharges, including: commercial horse facility operators, Golden Gate National Recreation Area (GGNRA), the County, and septic system owners. Responsible parties are encouraged to work together to attain WQOs and avoid duplicate actions, such as monitoring and reporting. Implementation and monitoring actions, responsible/implementing parties, and the schedule for implementation are summarized in Table 4.1.

[5] The current bacteria WQOs for fresh water include fecal coliform (geometric mean < 200 MPN/100mL, 90th percentile < 400 MPN/100mL) and total coliform (median < 240 MPN/100mL, no sample > 10,000 MPN/100mL). If and when new statewide WQOs are adopted, these will likely change to *E. coli* (geometric mean < 126 cfu/100mL, STV < 410 cfu/100mL).

The County is currently developing implementation and monitoring plans consistent with the actions and schedule identified in the WQIP and Table 4.1.

Table 4.1. San Vicente Bacteria WQIP Implementation Actions and Schedule.

Source/ Activity	Implementation Actions	Implementing Party	Schedule
Horse Waste	Obtain coverage and comply with the updated Water Board's General Waste Discharge Requirements for Confined Animal Facilities (CAF Order).	Horse property owners or operators (i.e., GGNRA or lessees)	Obtain coverage no later than 90 days from updated CAF Order adoption; Comply with Order requirements per timeline specified in the Order
	Produce a Ranch Water Quality Plan or other plans, in compliance with the updated CAF Order.	Horse property owners or operators (i.e., GGNRA or lessees)	2 Years
	Implement BMPs and management actions specified in the previously developed Ranch Water Quality Plan, or other plans, if required.	Horse property owners or operators (i.e., GGNRA or lessees)	According to schedule in the Ranch Water Quality Plan(s) or other plans
Pet Waste (Dog Waste)	Submit a plan, based on Provision C.1.a of the MRP and/or Water Code Section 13267, to the Water Board, acceptable to the Executive Officer, for managing pet (dog) waste within the San Vicente Creek watershed. The plan shall describe BMPs being implemented and additional BMPs that will be implemented to prevent or reduce pet waste discharges in order to attain water quality objectives. The plan shall include implementation methods, an implementation schedule, and proposed milestones. The plan should consider the following elements: • Development and implementation of a comprehensive education and outreach program for pet owners; • Posting of park, trail, and sidewalk signs regarding pet waste disposal requirements and leash laws; • Providing disposal bags and providing and servicing waste cans at convenient intervals on sidewalks, trails, and other popular dog walking areas; • Developing and implementing a visual inspection and cleanup plan for high pet waste accumulation areas; and • Developing pet waste ordinances and leash laws.	County of San Mateo; GGNRA	By June 2017

Source/ Activity	Implementation Actions	Implementing Party	Schedule
Human Waste (OWTS, portable toilets, waste holding devices)	Inspect all OWTS within the San Vicente Creek watershed to ensure proper functioning and compliance with local and regional regulations for OWTS.	County of San Mateo	By June 2017
	Require and ensure repair and proper maintenance of the OWTS within the watershed, as necessary.	County of San Mateo	Ongoing
	Report the results of the OWTS inspections, any subsequent actions resulting from the inspections, as well as current and future efforts to ensure compliance with local and regional regulations for proper functioning and management of OWTS within the watershed.	County of San Mateo	By December 2017
	Perform proper maintenance, and repair of the OWTS per local ordinance.	OWTS owners	Ongoing
	Ensure proper servicing and maintenance of portable toilets and waste holding devices within GGNRA property.	GGNRA	Ongoing
	Provide information on pump out service frequency for waste handling devices.	GGNRA	Annually
	Cooperate in communication and data sharing with other entities involved in human waste management in the watershed, such as the County Environmental Health Services Division.	Montara Water and Sanitary District	Ongoing
Stormwater Runoff	Submit a plan, based on Provision C.1.a of the MRP and Water Code Section 13267, to the Water Board, acceptable to the Executive Officer, which describes BMPs being implemented and additional BMPs that will be implemented to prevent or reduce discharges of bacteria to storm drain systems to attain numeric targets. The plan shall include implementation methods, an implementation schedule, and proposed milestones. The plan should consider enhancing the following programs: • Illicit discharge detection • Storm system cleaning • Site design (e.g., Low Impact Development) • Homeless camp cleanup • Pet waste management	County of San Mateo	By June 2017
	If objectives are not achieved by June 2021, submit a plan, acceptable to the Executive Officer, which describes additional BMPs or enhanced BMPs with a schedule for implementation and milestones.	County of San Mateo	By December 2021
	Provide a report on the status of the implementation activities. This may be accomplished as part of the annual MRP reporting.	County of San Mateo	Annually beginning September 2017

Source/ Activity	Implementation Actions	Implementing Party	Schedule
Water Quality Monitoring	Submit a bacteria water quality monitoring plan for the San Vicente Creek watershed to 1) better characterize bacteria contributions from different sources/areas; and 2) evaluate effectiveness of the corrective measures. The responsible parties may submit plans separately, but are strongly encouraged to collaborate on a single cooperative plan. The monitoring plan shall be acceptable to the Executive Officer.	GGNRA; Horse Facility Operators; San Mateo County	As soon as possible and no later than June 2017
Water Quality Objectives Attainment	--	All Parties	By June 2026

4.3. Local Coastal Program

The Local Coastal Program (LCP) is the County's guiding document for implementation of the State Coastal Act administered by the California Coastal Commission. With information and policies pertaining to issues such as buildout and development, water supply capacity, wastewater treatment capacity, recreation, impervious surface zoning standards, nonpoint surface runoff controls, and sensitive species and habitat protection, the LCP governs land development in the unincorporated coastal area of San Mateo County. All development in the Coastal Zone must either comply with the policies and ordinances of the LCP in order to be issued a coastal development permit, or be granted an exemption from the requirements. The County Planning and Building Department released an updated LCP on June 18, 2013. The updated LCP includes policy recommendations from the Midcoast LCP Update Project. The Midcoast project area encompasses the Fitzgerald ASBS watershed and includes policies and amendments such as a limitation on private well development in urban areas, avoidance of development in areas that are susceptible to erosion (e.g., bluff edges and faces), and establishment of minimum stormwater BMPs.

Part of the Midcoast LCP Update Project called for the establishment of the Midcoast Stormwater Drainage Committee to assist in resolving surface water runoff and drainage control issues. The committee was formed by the County Board of Supervisors in October 2006 and began meeting in July 2007. The Committee was made up of a representative of the Midcoast Community Council, the Director of Public Works, the Director of Planning and Building, a community member, and a general contractor. As a final work product, the Committee developed a list of prioritized drainage problems based on their analysis of local drainage issues. The Committee also provided recommendations for addressing the highest priority drainage improvements. The Committee's final recommendations were reported to and accepted by the County Board of Supervisors, and the Committee then disbanded. The recommendations were later used to assist with BMP site selection for the Prop 84 Fitzgerald Pollution Reduction Program.

4.4. Fitzgerald Marine Reserve Master Plan

A draft Master Plan for the Reserve was completed for the County Parks by Brady/LSA in 2002 and was accepted in 2004 as a final Master Plan. The plan describes the biological resources found at the Reserve and provides a brief history of its use and regulatory status. Visitor use (e.g., direct trampling of delicate algae and invertebrates) is identified as the primary cause of deterioration of natural resources

in the intertidal zone. The plan includes goals and policies designed to protect natural resources of the Reserve while providing educational and recreational opportunities. They include: a new visitor management program with an emphasis on education and maximum visitor capacities, uses and facilities program (e.g., new education center and sustainable green parking lot), development of a monitoring program (e.g., 10-year limited visitor use study at Moss Beach Reef), restoration feasibility studies, a water quality improvement program (e.g., San Vicente Creek), sensitive species protection, habitat and vegetation management programs, prohibition of domestic and feral animals, and an implementation program.

4.5. County Parks Maintenance Activities

County Parks is responsible for the operation of parks and trails located throughout the County including two County parks within the Fitzgerald ASBS watershed: the Reserve and Pillar Point Bluff. All County Parks maintenance activities are conducted in accordance with the MRP and the County of San Mateo Watershed Protection Maintenance Standards (2004). These standards were developed in conjunction with FishNet 4C, a County-based salmon protection and restoration program that brought together the central coast counties of Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, and Monterey; the National Marine Fisheries Service; Regional Water Board; and the California Department of Fish and Wildlife. The Maintenance Standards manual was created to meet NPDES requirements as well the Endangered Species Act Section 4(d) Rule for steelhead and salmon.

The key focus of the manual is on implementing BMPs related to protecting water quality, aquatic habitat, and salmonid fisheries. Guidelines in the manual address road and trail design, routine and emergency road and trail related maintenance activities, common facilities such as storage sites and maintenance yards, and vegetation management practices. The Maintenance Standards manual goes beyond those developed for other coastal counties by increasing the level of commitment to BMP implementation.

4.6. County Zoning Ordinance Regulations

The County Planning and Building Department is responsible for the administration of County Zoning Ordinance Regulations. The following standards and regulations support protection of the Fitzgerald ASBS watershed:

1. Zoning Regulations for the County's Midcoast Area (including Moss Beach, Montara, El Granada, Miramar, and Princeton) were amended on May 24, 2011 by the San Mateo County Board of Supervisors and certified by the California Coastal Commission on August 8, 2012 (making them effective in the coastal zone on September 7, 2012). The amendments discussed below were made to the S-17, S-94, S-105, C-1, CCR, M-1, PAD, and RM-CZ zoning districts found in the Fitzgerald ASBS watershed area:

    - Prohibit grading activities during the wet weather season, unless specifically approved by the Community Development Director and Building Official.
    - Restrict the amount of a parcel area covered by impervious structures less than 18 inches in height to 10 percent of the parcel size.

2. (Rural) Resource Management-Coastal Zone and Planned Agricultural District zoned parcels must comply with the development review criteria of Chapter 20A.2 and 36A.2, respectively, of the Zoning Ordinance. Such criteria include:

- Environmental Quality Criteria: Use of pesticides and other chemicals should be of the types and amounts that will have no significant or persistent adverse effects upon the environment; use and discharge of chemical agents, particularly including pesticides and heavy metals, which concentrate in the food chain and interrupt or destroy the primary biological network or threaten the survival of endangered species shall be prohibited; development shall not have a significant adverse environmental impact on primary wildlife or marine resources.
- Site Design Criteria: No use or development shall substantially detract from the natural characteristics of existing major water courses; structural development that will adversely affect a perennial stream and associated riparian habitat shall be prohibited.
- Water Resources Criteria and Primary Water Resources Criteria: Solid and liquid waste discharge and disposal shall not be permitted to contaminate water resources or otherwise adversely affect a marine, aquatic or riparian environment; all discharges which might effect a water body shall comply with discharge requirements as established by the Regional Water Board; discharge of water containing organic nutrients shall be shifted from the aquatic environment to land environments whenever possible when such shift will produce less detrimental effects; grading and other landscape alteration shall be kept to a minimum; site preparation procedures and construction phasing shall be carefully controlled to reduce erosion and exposure of soils to the maximum extent possible; projects shall utilize methods to maintain surface water runoff at or near existing levels; development, with the exception of agricultural uses and public works and public safety projects, which might cause significant adverse impacts upon the natural course or riparian habitat of any stream, shall not be permitted; projects shall clearly demonstrate methods to be employed for management of vegetative cover, surface water runoff, ground water recharge, and erosion and sedimentation processes to assure stability of downstream aquatic environments; development that will alter or contribute to the deterioration of the quality of water in any water body shall be prohibited.
- Primary Fish and Wildlife Areas: Prohibit significant reduction of primary habitat areas; ecological characteristics shall not be changed in a manner that would have substantial adverse impacts on the quantity or quality of marine and other wildlife; filling or dredging of tidal marshes, estuaries or marine waters is not allowed.

3. The County's Confined Animal Ordinance seeks to protect water quality, sensitive habitats, soil and other significant environmental resources from potential adverse impacts of confined animals, among other goals. The Ordinance requires a confined animal permit or exemption be issued by the Department to regulate the keeping of confined animals (e.g., domesticated animals that typically have an adult weight exceeding 300 pounds, including but not limited to horses, mules, donkeys, and pot belly pigs). See Appendix B for a more detailed discussion of the Confined Animal Ordinance permit and exemption processes and enforcement procedures.

    - The Confined Animal Ordinance requires submittal of a detailed drainage and stormwater management plan and manure management plan for review and approval to ensure there are no adverse impacts to water quality or sensitive habitats. The drainage plan is required to show the confined animal areas, feeding and washing areas, direction of water flow, and proposed site drainage system. Specific drainage standards

for confined animals include prohibiting surface runoff from coming into contact with stored animal manure; draining liquids more than ten feet from wells, septic tanks and/or drainfields; and draining animal waste runoff and liquids used to clean confined animals away from creeks, streams, lakes or other water bodies.

- The manure management plan is required to include the method for and frequency of collecting, processing, storing and disposing or using the manure produced on-site. Specific manure management standards include requiring all animal waste be collected daily from confined animal structures; limiting stored animal waste for off-site use or disposal from being kept on site more than fourteen days; and requiring stored waste to be covered and separated from the ground by impermeable material.
- Confined animal structures and animal use of the property (including pasture or range areas) are prohibited from being located in lakes, creeks, and streams; within fifty feet of lakes, perennial creeks and streams, and thirty feet of intermittent creeks and streams; in sensitive habitat areas, including riparian corridors and wetlands; within fifty feet of the outward boundary of riparian corridors; within 100 feet of wetlands; on land used for a domestic well or septic tank, or above leach lines; and/or on slopes exceeding 30 percent for structures and 50 percent for animal use.

The County has identified ten confined animal permit facilities located within the Fitzgerald ASBS watershed. Compliance review of confined animal permits by the Planning and Building Department includes a Planning and Building Department site inspection for zoning compliance and an Environmental Health Division site inspection for manure management and drainage compliance. Review and inspection for confined animal facilities in San Mateo County are conducted every three years.

4. The County's Dog Kennel/Cattery Ordinance provides provisions to allow such facilities to operate in the unincorporated County. The County has identified one dog kennel permit facility located within the Fitzgerald ASBS watershed. Compliance review of dog kennel permits by the Planning and Building Department includes a Planning and Building Department site inspection for zoning compliance and an Environmental Health Division site inspection for drainage and health compliance. Annual renewals are required for dog kennel facilities and include a compliance review. The Department will ensure that the existing dog kennel facility and all future dog kennel facilities within the ASBS watershed have current operation plans on file with the County, including an approved drainage and stormwater management plan and waste management plan, for the permitted facility. Annual renewal will include compliance review and inspection of the approved operating facility. Additionally, the Planning Department has updated the Dog Kennel/Cattery Permit Application to identify the requirement for drainage and stormwater management plans and waste management plans.

5. The County's Water Efficient Landscape Ordinance requires applicable projects (including new construction and rehabilitation landscapes by public agencies, private development, and developer-installed for single-family and multi-family residential equal to or greater than 2,500 sq. ft. and new construction landscapes equal to or greater than 5,000 sq. ft. for homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects) to comply with the State's Model Water Efficient Landscape Ordinance. Landscape design compliance includes protection and preservation of native species and natural vegetation, use of water-conserving plant and turf species, use of plants that are disease and pest resistant, and

plant adaptability to climate, geologic, and topographical conditions of a project site. Furthermore, irrigation design compliance includes use of sensors that suspend or alter irrigation operation during unfavorable weather conditions, manual shut-off valves, and strategic placement of irrigation heads to minimize runoff and overspray onto non-targeted areas (e.g., hardscapes, roadways or structures). The County's Water Efficient Landscape Ordinance is currently being updated to comply with the State Department of Water Resources 2015 Model Water Efficient Landscape Ordinance Revision.

4.7. County Code of Ordinances

The County has incorporated applicable requirements of the MRP, LCP, and other plans into its Code of Ordinances. Several chapters are particularly relevant to ASBS drainages and the requirements of the Special Protections. For example:

- Chapter 3.64 (Logging Practices) prohibits logging activities that may cause change in the course of streams or erosion of their banks.
- Chapter 4.36 (Water Conservation) is intended to promote reasonable conservation of water in the County. Efficient irrigation techniques required for new developments and open areas and encouraged for agriculture will result in less dry season (i.e., non-stormwater) flow.
- Chapter 4.100 (Stormwater Management and Discharge Control) seeks to eliminate non-stormwater discharges to the MS4; control the discharge to MS4 from spills, dumping or disposal of materials other than stormwater; and reduce pollutants in stormwater discharges to the maximum extent practicable consistent with the requirements of the CWA and MRP (and any amendment, revision or reissuance thereof).
- Chapter 4.107 (Prohibition on the Use of Polystyrene Based Disposable Food Service Ware by Food Vendors) restricts the use of Styrofoam by food vendors based in part on findings that these materials constitute a substantial portion of the litter within the County.
- Chapter 4.114 (Reusable Bags) restricts the use of single-use carryout bags based in part on findings that these bags contribute litter in storm drains, creeks, and the ocean.

4.8. Caltrans Stormwater Management Plan

Runoff from Highway 1, which parallels the coastline in the Fitzgerald ASBS watershed, is permitted by the State Water Board under the NPDES Statewide Storm Water Permit Waste Discharge Requirements for State of California Department of Transportation (Caltrans) (Order No. 2012-0011-DWQ) which became effective on July 1, 2013. The scope of the Caltrans permit is similar to the MRP. Stormwater discharges that are not managed to the maximum extent practicable (MEP) standard are prohibited and the permit specifies a BMP selection and design process developed to meet the MEP standard. Caltrans is also covered under the General Exception to the Ocean Plan and the Caltrans stormwater permit includes all the provisions of the ASBS Special Protections. Caltrans' Storm Water Management Plan (SWMP) describes the procedures and practices used to reduce the discharge of pollutants to storm drainage systems and receiving waters. Caltrans is currently in the process of updating their 2005 SWMP for consistency with the new stormwater permit. The revised SWMP must be submitted to the State Water Board by July 1, 2014. Caltrans' Annual Reports describe inspections, maintenance, monitoring, and other ASBS Special Protections compliance activities conducted within the various ASBS watersheds where Caltrans facilities are located.

4.9. San Mateo County Resource Conservation District

The San Mateo County Resource Conservation District assists County agricultural and rural landowners with comprehensive resource planning and conservation including erosion control, water quality and stormwater management. The RCD is a non-regulatory district that provides free and confidential technical assistance Countywide to help landowners protect, conserve, and restore natural resources (e.g., Livestock and Land program). In addition to its Countywide programs, the RCD is active in protection of water quality in the Fitzgerald ASBS watershed through its participation in the Fitzgerald Marine Reserve Critical Coastal Area Pilot Project and the Proposition 84 grant-funded Fitzgerald ASBS Pollution Reduction Program. These projects are described below in Section 5.0 of this Compliance Plan.

4.10. Critical Coastal Areas Program

The Critical Coastal Areas (CCA) Program is a non-regulatory program that focuses on implementation of management measures to address existing or potential nonpoint source (NPS) pollution impacts to coastal resources. The CCA Program is a major component of *California's Nonpoint Source Pollution Control Program*. It promotes a collaborative watershed approach by bringing together multiple interest groups. Over 100 CCAs, including the Fitzgerald Marine Reserve, have been identified based on degraded water quality and high resource value. In 2005 the Reserve was selected as one of five Pilot CCAs where state agency staff worked with local stakeholders to test the benefits of developing watershed-based plans and implementing appropriate mitigation measures to address polluted runoff. The lessons learned from the Pilot projects will eventually be applied to all CCAs.

Phase I of the Pilot CCA Program formed a Steering Committee comprised of staff from several state and local agencies, including County DPW, Planning and Building, and Parks to support a dialog among the numerous watershed stakeholders. In addition, San Francisco Estuary Institute (SFEI) and Association of Bay Area Governments (ABAG) were enlisted to assist with technical components of the Pilot Project. Phase I resulted in an *NPS Watershed Assessment for the James V. Fitzgerald Marine Reserve Critical Coastal Area* (California Coastal Commission 2008). Contributing watersheds were described, monitoring data were compiled and summarized, and existing and potential pollutants were identified (see Section 3.1.2).

Another outcome of the Pilot CCA Program was development of the Fitzgerald Historical Ecology report (SFEI 2008). This report compiles historical maps, surveys, aerial photography, and anecdotal narratives to compare past and present landscapes. Knowledge of the historical landscape and how it has changed over time can help set priorities for future restoration projects. For example, SFEI (2008) found evidence of a wet meadows along the lower reaches of San Vicente Creek, a reach that now consists primarily of willow-dominated riparian communities. Restoration of the wet meadows could improve water quality and reduce flooding.

The Phase I NPS Watershed Assessment describes initial steps that were taken to develop an Action Plan to remediate water quality in the watersheds (California Coastal Commission 2008). A draft inventory of existing management measures was compiled and the San Vicente Creek watershed was identified as a location with relatively extensive existing BMP implementation, largely due to activities at the Moss Beach Ranch Equestrian Center (e.g., livestock exclusion fencing, manure management, vegetated swales, sediment traps). However, much of the information throughout the watershed was derived through interviews and most landowners would not approve public distribution of the information provided, making it difficult to quantify the data. The Steering Committee identified six broad areas that could form the basis of an Action Plan (California Coastal Commission 2008):

1. Water quality monitoring
2. Targeted BMP implementation
3. Targeted Midcoast NPS Outreach Campaign
4. Outreach, input, and support on County watershed policies
5. Technical assistance to landowners and builders for implementation of watershed policies
6. Permit streamlining for restoration projects

Funding was frozen in late 2008 due to budgetary concerns. Although the Action Plan was not prepared, the Fitzgerald Pollution Reduction Program was designed to begin addressing many of the prioritized action areas and activities that were identified by the CCA Steering Committee.

Table 4.1. Existing Programs Addressing Water Quality in the Fitzgerald ASBS

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
Municipal Regional Stormwater NPDES Permit (MRP) San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)	Municipal operations BMPs Source control at commercial businesses and industrial sites Inspection and follow-up of illicit discharges (e.g., non-stormwater discharges) Construction site BMPs to address sediment, erosion, run-on and run-off control Development site post-construction controls for pollutants and stormwater discharge rates and durations Trash, PCB, copper, mercury, pesticides, and other pollutant controls Public outreach and education Water quality monitoring	Pesticides Metals PAHs Sediment Trash Legacy Organics Other stormwater runoff pollutants

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
San Vicente Creek Water Quality Improvement Plan (WQIP)	Implementation and monitoring actions to control "high priority" bacteria sources within the San Vicente Creek watershed Comprehensive plan to manage pet (dog) waste Comprehensive plan to prevent or reduce discharges of bacteria to the MS4 Inspect and require maintenance of OWTS Comply with Water Board's General Waste Discharge Requirements for Confined Animal Facilities (CAF Order) (responsibility of horse property owners/operators Bacteria water quality monitoring plan	Bacteria
Department of Public Works (DPW) Watershed Protection Program (developed in conjunction with County Parks)	Permitting and compliance for DPW projects Erosion control design and implementation Development and implementation of Watershed Protection Maintenance Standards for DPW activities Training for County staff Participation in local conservation efforts	Sediment Pesticides Trash Oil & Grease
County Integrated Pest Management Policy	Reduced use of pesticides on property owned or managed by the County to the maximum extent practicable	Pesticides
County Zoning Ordinance Regulations	Prohibit grading activities during wet weather Environmental quality, site design, and water resources criteria No adverse impacts on the quantity or quality of marine and other wildlife	Sediment Pesticides Nutrients Other stormwater runoff pollutants
County Confined Animal Ordinance	Detailed drainage and manure management plans required for approval of confined animal permit Setbacks from lakes, creeks, and streams required for animal structures and pastures	Sediment Nutrients Bacteria
County Water Efficient Landscape Ordinance	Applicable projects must comply with State's Model Water Efficient Landscape Ordinance	Non-stormwater discharges

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
County Stormwater Management and Discharge Control Ordinance (Chapter 4.100)	Prohibits discharges of material other than stormwater into County storm drains unless in compliance with a NPDES permit or a specified exception Requires use of BMPs for any activity or operation which may contribute to stormwater pollution Prohibits littering in streets, storm drains, catch basins, conduits or other drainage structures such that it may become a pollutant	Trash Other stormwater runoff pollutants
Local Coastal Program (LCP)	Runoff containing fertilizers or pesticides must be stored on site and not released to any perennial or intermittent streams, and managed in accordance with U.S. Environmental Protection Agency & Regional Water Board regulations Nonpoint surface runoff control measures Impervious surface zoning standards Buildout and development policies BMPs for new development Erosion and sediment control plans Limited land disturbance and grading restrictions Sensitive species and habitat protections	Fertilizer Pesticides Sediment Other stormwater runoff pollutants
County Environmental Health and RecycleWorks	Education and outreach on topics including green gardening and landscaping, recycling, green business and building, and hazardous waste	Stormwater runoff pollutants
Fitzgerald Marine Reserve Master Plan	Natural resource management Visitor management program Uses and facilities program Water quality improvement program	Stormwater runoff pollutants

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
Critical Coastal Area Program (CCA) CCA is part of the CA Nonpoint Source Pollution Control Program, administered by the State Water Board and the California Coastal Commission	Pilot project completed for the Fitzgerald Marine Reserve CCA Watershed Assessment completed to identify potential pollution impacts to coastal resources Action Plan was to be developed and implemented to address these impacts and improve water quality; however, the CCA pilot program is currently on hold due to budgetary issues.	Stormwater runoff pollutants
Monterey Bay Sanctuary Citizen Watershed Monitoring Network Snapshot Day and First Flush Monitoring	Water quality monitoring at locations within the Fitzgerald ASBS watershed	pH Temperature, Dissolved oxygen Nutrients Bacteria Metals Suspended sediment
County Environmental Health Recreational Water Quality Program	Bacteria water quality monitoring at locations within the Fitzgerald ASBS watershed	Bacteria
James V. Fitzgerald ASBS Pollution Prevention Program (Proposition 84 Grant-funded)	Storm drain inventory and assessment Microbial source tracking study Implementation of structural BMP retrofits to storm drain infrastructure Retrofit existing parking lot to improve filtration of runoff BMP effectiveness water quality monitoring Public education and outreach Future stormwater pollution reduction planning	Stormwater runoff pollutants

5.0 ADDITIONAL BEST MANAGEMENT PRACTICES IN ASBS WATERSHED

The County will continue to implement the MRP, LCP, Fitzgerald Reserve Master Plan, County Code of Ordinances, and other programs listed in Table 4.2 that require a range of structural and non-structural BMPs, as well as comprehensive monitoring and reporting. In areas that drain to Fitzgerald ASBS, additional BMPs are employed (or planned) to comply with the Special Protections of the Ocean Plan. This section describes the additional BMPs. See also Appendix B which describes recommended changes to County policies and programs that are relevant to the Special Protections and recommends additional measures to improve water quality protection.

The need for additional non-structural and structural BMPs to maintain natural ocean water quality (beyond those described below in this section) will be assessed following review of the results of the monitoring program (Section 7.0). Any additional structural BMPs determined necessary to comply with the Special Protections will become operational by March 2018 (Section 8.0).

5.1. Non-Structural BMPs

Non-structural BMPs involve operational, maintenance, regulatory (e.g., ordinances), studies, or educational activities designed to reduce or eliminate increased flow/volume and pollutant-related impacts of stormwater runoff. Installing new physical structures is not involved.

5.1.1. Inspection Program

The Special Protections require an inspection program with the following minimum inspection frequencies for construction sites, industrial and commercial facilities, and stormwater outfall drains in the ASBS watershed. In most cases, Special Protections inspections are more frequent than those required under the MRP or other programs. The County has updated their various inspection plans to accommodate ASBS requirements. The inspection program is described in greater detail in Appendix B.

- **Construction sites** – *weekly during rainy season*. Inspections for compliance with the Special Protections, MRP Provision C.6, and County Stormwater Management and Discharge Control Ordinances are conducted at construction sites in the ASBS watershed prior to land disturbance, weekly during the rainy season, and following active construction. Violations must be corrected before the next rain event or within 10 business days after discovery. These requirements are established in the County's Stormwater ERP for the Municipal Stormwater Program (revised May 17, 2013).
- **Industrial facilities -** *monthly during the rainy season*. Industrial facilities in the ASBS watershed are inspected by the County consistent with the Special Protections. The County has added a new category of inspection frequencies to the Industrial and Commercial Business Inspection Plan for ASBS sites. Industrial and commercial facilities are mapped in Figure 3.8.
- **Commercial facilities** – *twice during the rainy season*. This category includes restaurants, of which there are several in the Fitzgerald ASBS watershed. Commercial facilities in the ASBS watershed are inspected by the County consistent with the Special Protections. The County has added a new category of inspection frequencies to the Industrial and Commercial Business Inspection Plan for ASBS sites. Industrial and commercial facilities are mapped in Figure 3.8
- **Stormwater outfall drains equal to or greater than 18 inches in diameter** – *twice annually, prior to and during the rainy season*. Five of the stormwater discharge outfalls for which the County

is fully or partially responsible exceed 18 inches in diameter (FIT012, FIT015, FIT028, FITNEW1, and FITNEW2). The DPW Roads Division conducts inspections at these five discharge outfalls and removes trash and other anthropogenic debris according to the Special Protections. Currently, County DPW staff assigned to ASBS compliance track ASBS outfall inspection needs and inform Roads Division staff via email communication. Consistent with the County's Collection Screening Program, the DPW Roads Division also performs collection system screening. A minimum of one screening point per square mile is inspected annually during the dry season for illicit discharge detection and elimination. ASBS discharge inspections and the collection system screening inspections are documented on the SMCWPPP Collection System Screening Forms. Additionally, catch basins, v-ditches, curbs, and pipes, including those located in the ASBS watershed, are typically inspected and cleaned as needed prior to the start of the rainy season and during significant storm events.

All above inspections are documented in the County's MRP Annual Report.

5.1.2. Microbial Source Tracking

A Microbial Source Tracking (MST) study was conducted as part of the Proposition 84 Fitzgerald Pollution Prevention Program. The main goal of the MST study was to provide information about the primary sources of fecal contamination within the ASBS watershed and to assist with the selection of appropriate non-structural and structural BMPs to reduce fecal pollution. MST monitoring was conducted during wet and dry conditions between January and October 2012 at stations in Martini, Kanoff, Montara, Dean/Sunshine Valley, and San Vicente Creeks. Water samples were collected by SFEI and analyzed for fecal indicator bacteria. University of California, Davis (UCD) conducted genetic analysis of host-associated *Bacteroidales* on samples from water, sediment, and biofilm matrices to assess the contribution of human, bovine, dog, and horse sources to fecal contamination. Fecal indicator bacteria monitoring confirmed year-round exceedances of WQOs with lower concentrations measured during the dry season. The genetic analysis suggested a greater contribution of warm-blooded animals in the wet season compared to first flush and dry season samples, with dog-associated *Bacteroidales* the most frequently detected host marker. Uncharacterized fecal sources, such as wildlife or other domestic animals appear to be the primary source of fecal pollution during the dry season. The MST study recommended further monitoring and investigation of bovine, septic system, and sanitary sewer sources. Recommended BMPs include outreach programs to address dog waste and septic system maintenance, and implementation of horse manure controls. (SFEI and UCD 2013).

The County plans to coordinate with the RCD and/or SMCWPPP to meet the recommendations of the MST study by developing an enhanced pet and horse waste public information and outreach effort. This program will build off and support outreach efforts in the San Pedro Creek watershed which is located approximately seven miles north and is implementing a TMDL for bacteria. Several efforts are currently being implemented or are under consideration (see also Section 5.1.3):

- "Pre-Rain Pet Waste Alerts" – The RCD has begun disseminating area-wide alerts via email before wet weather events with educational materials and to remind pet owners to clean up waste in their yards. An example of one issued in water year 2015 is included as Appendix C.

- "Get Out of Manure Free Program" – The RCD would provide individualized education for landowners with small numbers of horses and livestock regarding water quality and options for manure management. RCD would help schedule of dumpster service from Recology for manure hauling to properties signed up with the Program.

5.1.3. Public Outreach and Education

In order to comply with the Special Protections, the County began a targeted education and outreach program for the Fitzgerald ASBS watershed aimed at pollution reduction. The targeted education and outreach is part of the Fitzgerald Pollution Reduction Program, which was initiated with Proposition 84 grant funding. Completed tasks under the Fitzgerald Pollution Reduction Program as well as planned efforts for the future are summarized below. Public outreach efforts targeting pet waste and other sources of bacteria will be described in the plans that will be developed by the County by June 2017 in accordance with the San Vicente Bacteria WQIP.

Website Development

As part of the Proposition 84 grant-funded work, County DPW and Environmental Health created a website dedicated to the Fitzgerald Pollution Reduction Program at www.smchealth.org/asbs. Links to this website are prominently posted on other County websites addressing stormwater runoff, such as the SMCWPPP website at www.flowstobay.org. The website serves as a platform to inform readers about ASBS and the Fitzgerald Pollution Reduction Program with links to BMP factsheets, key regulations, grant reports, and the Fitzgerald Special Edition Newsletters (described below).

Planning also has a webpage dedicated to compliance with the Special Protections at http://planning.smcgov.org/san-mateo-county-fitzgerald-asbs-pollution-reduction-program. This webpage is focused on educating private landowners on ASBS-specific regulations such as the prohibition of non-stormwater discharges, new point sources, pool and spa discharges; architectural copper BMPs; siting of car wash facilities; erosion and sediment control plan approval; construction site inspections; and landscape irrigation.

Fitzgerald Special Edition Newsletters

Since 2012, the County has published three annual newsletters describing various aspects of the Fitzgerald Reserve, ASBS, watershed, regulatory setting, and the Fitzgerald Pollution Reduction Program, as well as measures that local residents and businesses can take to eliminate non-stormwater discharges and reduce pollutants in stormwater runoff. Specific topics include:

- General stormwater education
- Bacteria impairments of local waters and potential sources
- Non-chemical pest control options
- Awareness of copper in architectural features
- Low impact development (LID) techniques such as permeable pavements, rain gardens, vegetated swales, and rain barrels

Annual newsletters are posted on the website and distributed electronically and via hardcopy to key stakeholder groups. Hardcopies are also left at select locations in the ASBS watershed such as coffee shops and the post office to increase awareness. The first three issues of the Fitzgerald Special Edition Newsletter are included as Appendix D. Dependent on future funding, the County may continue with production of the annual newsletters.

Flyers, Factsheets, and Checklists

In an effort to reduce bacteria and nutrient sources, through the Fitzgerald Pollution Reduction Program, the County generated a pet waste flyer for distribution through the Summer 2013 issue of the Fitzgerald Special Edition Newsletter that is tied to the SMCWPPP Team Effort campaign. The flyer

included a link to the Team Effort landing page, http://www.flowstobay.org/teameffort. On that site there is also a link to the 10-page "Horse Owners Guide to Water Quality" produced by the Council of Bay Area Resource Conservation Districts. A link to the flyer was provided on the SMCWPPP Team Effort page. SMCWPPP also addresses pet waste on their Facebook page (@flowstobay) and conducted a giveaway of dog bag dispensers through Facebook.

In an effort to ensure that residents and business owners in the ASBS watershed were aware of resources related to pollution prevention, the County developed a second flyer that was distributed through the Summer 2014 issue of the Fitzgerald Special Edition Newsletter. The flyer provided useful web links for pollution prevention resources and provided a list of tips for measures that could be taken at home or business. The flyer also referred readers to the SMCWPPP Team Effort landing page.

Workshops

As part of the Proposition 84 Fitzgerald Pollution Reduction Program, the County and SFEI hosted a Low Impact Development Workshop on August 25, 2012, entitled "Protecting Coastal Watersheds: with Focus on Residential Low-Impact Development." The workshop covered topics including rain gardens and bioswales, pervious pavement, irrigation and pesticide use, rainwater harvesting, and permits and requirements. The presentations are available on the Fitzgerald Pollution Reduction Program website - http://smchealth.org/asbs. The County, in collaboration with the RCD, plans to continue to promote residential LID in the ASBS watershed. Together, the County and RCD are actively seeking grant opportunities to support this work. Future workshops and resources will be expanded to include GI requirements. See Section 4.1 and Appendix B for more details of the new GI requirements.

Other Collaborations

As recommended by the Proposition 84-funded MST study conducted as part of the Fitzgerald ASBS Pollution Reduction Program in 2012 (see Section 5.1.2) and as an outcome of the WQIP (see Section 4.2), the County has begun to coordinate with SMCWPPP, the RCD, the GGNRA, and BASMAA to develop an enhanced pet waste public information and outreach effort. Dissemination of area-wide notifications (i.e., email alerts) to pick up backyard pet waste before wet weather events began in water year 2015. Other activities may include conducting local school programs and initiating a pledge effort. These efforts would inform residents about how waste enters waterways, how contamination can result in beach closures and threaten human health and wildlife, and remind people to clean up waste in their yards and where dogs are walked. These activities would result in increased awareness and will be prompts for direct action.

The County also plans to coordinate with the RCD on development of an enhanced outreach effort to provide information to residents with livestock on ways to reduce potential water quality impacts related to animal feces. The effort may include technical assistance about BMPs (e.g. installing roofs over chicken coops) and development of site-specific manure management plans for residents or property managers. Outreach efforts may also include "get out of manure free" days to help reduce manure loads in the ASBS watershed. Outreach is a needed step to achieve sustained, long-term reductions in pollutant sources through behavioral and structural changes in manure management.

5.1.4. Non-Stormwater Discharge Elimination

Consistent with MRP Provision C.5 (Illicit Discharge Detection and Elimination), the County prohibits most non-stormwater discharges. County and SMCWPPP activities addressing this provision are described above in Section 4.1. Non-stormwater sources that are exempted from the discharge prohibition by MRP Provision C.15 are similar to those allowed under the Special Protections. County and SMCWPPP public outreach and education programs also target non-stormwater discharges. The

County implements enhanced non-stormwater discharge elimination measures in the ASBS watershed. Related public outreach and education programs such as the annual Fitzgerald Special Edition Newsletters are described above in Section 5.1.2.

Non-authorized non-storm water discharge elimination measures are maintained and monitored over time and reported in the County's Annual Report. Illicit discharges are tracked and recorded though several County departments. As part of the Stormwater ERP, all construction site inspection reports by County Planning and Building Department and DPW include a check for illicit discharges to stormwater drains. If such discharges are present there is a 10-day follow up inspection for correction, and elevation of sanctions if necessary until resolved. County Environmental Health tracks illicit discharges related to hazardous material spills and business inspections. The County also enforces municipal codes and ordinances through its complaint system which is tracked by County Environmental Health and DPW. Confidential complaints about non-stormwater discharges such as sewage spills, swimming pools, broken piping, illegal dumping, hazardous material spills, etc. can be online or by phone. In fiscal year 2014/15, the County piloted "Report It! SMC," a mobile phone application that makes it easy for residents and staff to report illegal dumping, broken water lines, and other non-stormwater discharges. The program will eventually be expanded jurisdiction-wide.

- Car washing: The Planning and Building Department uses its development review process to identify and require new/replaced hardscaped areas that could be used for car washing (e.g., driveways) to pipe/drain to adequately-sized vegetative areas or other on-site treatment facilities prior to discharge to any County storm drain system. Discharge to the sanitary sewer is prohibited (MWSD Code Section 3-7.100). The Department, as part of its public information/assistance service, relies on staff to distribute literature and provide education at the public assistance counter about the concern of car wash discharges to the ASBS and requirement for alternative means of car washing and/or car wash discharge within the ASBS watershed. Alternative means of car washing to be encouraged by the Department includes use of commercial car wash facilities and use of as little detergents as necessary (for on-site car washing activities). These measures are identified as encouraged by the Department rather than required since effective enforcement by the County would be infeasible.
- Swimming pools/hot tubs: The Planning and Building Department uses its development review process to prohibit the discharge from new/replaced/demo pools and hot tubs to storm drains. The majority of the Fitzgerald ASBS watershed is served by MWSD. MWSD allows pool discharge to the sanitary sewer system subject to the requirements in Section 3-8.800 of the MWSD Code (no permit required). Therefore, the Planning and Building Department imposes conditions of approval and/or requires under building permit review that pools and hot tubs within the ASBS watershed discharge to the sanitary sewer system. Alternatively, for properties that are served by private septic systems, pool or hot tub discharge is required to be dechlorinated and slowly discharged to landscaped areas (determined adequate to support the volume).
- Landscape Irrigation: The Planning and Building Department uses its development review process to require the use of drought tolerant and native vegetation and to prohibit fertilizer and pesticide use through conditions of approval within the ASBS watershed. The Department, as part of its public information/assistance service, relies on staff to educate citizens at the public assistance counter about the concerns of polluted irrigation water and other chemical discharge to the ASBS. The Department also implements the State of California Model Water Efficient Landscape Ordinance (effective January 1, 2010) which seeks to promote the

conservation and efficient use of water. The Department requires compliance with the Ordinance for applicable projects as defined in Section 490.1 of the Ordinance. Pursuant to the Ordinance, landscape plans are required to be designed to protect and preserve native species and natural vegetation, use water-conserving plant and turf species, and use plants that are disease and pest resistant and adaptable to climate, geologic, and topographical conditions of a project site. Furthermore, irrigation design compliance includes use of sensors that suspend or alter irrigation operation during unfavorable weather conditions, manual shut-off valves, and strategic placement of irrigation heads to minimize runoff and overspray onto non-targeted areas (e.g., hardscapes, roadways or structures). Staff are trained to review landscape plans as part of development proposals for use of native, drought tolerant species (as regulated by other Planning policies and regulations). The Department contracts out to a third party landscape architect for Water Efficient Landscape Ordinance compliance review of landscape and irrigation plans. The County's Water Efficient Landscape Ordinance is currently being updated to comply with the State Department of Water Resources 2015 Model Water Efficient Landscape Ordinance Revision.

5.1.5. Development Review

MRP Provision C.3 requires appropriate source control, site design, and stormwater treatment measures be incorporated into new development and redevelopment projects. Compliance with this Provision is accomplished primarily through the implementation of LID techniques required through the County Planning and Building Department's development review process. During this process, project applicants are required to complete a C.3/C.6 Development Review Checklist to determine the applicability of source control, site design, and stormwater treatment measures, based on the proposed project scope. Enhanced on-site source control, BMPs, and stormwater treatment are required at the planning approval, building permit, and construction phases for project sites within the Fitzgerald ASBS watershed to prohibit waste discharge into the ASBS and/or limit discharge in accordance with the Special Protections. The Planning Department uses the planning permit review process as an opportunity to evaluate potential water quality effects and identify appropriate mitigation measures during environmental reviews and to impose conditions of approval that will minimize and/or eliminate potential water quality impacts, including into the Fitzgerald ASBS. All development within the ASBS watershed is reviewed to ensure compliance with the County's drainage policies and that any sources for pollution are treated appropriately on-site to minimize/eliminate source pollution to the County's storm drain system and subsequently to the Fitzgerald ASBS. All new point source discharges to the ASBS are prohibited and all non-stormwater discharges to a County storm drain are prohibited. DPW conducts routine inspections throughout construction for proper installation and construction of stormwater treatment measures for C.3 regulated project sites. Recordation of an Operations and Maintenance Agreement between the County and project applicant is required prior to final construction inspection for C.3 regulated sites to address the long-term operation and maintenance of stormwater treatment measures. The following is a step-by-step summary of the Planning and Building Permit Review process:

Summary of Planning and Building Permit Review Process

Planning applications for private construction within the ASBS watershed require a preliminary drainage plan for review and approval that identifies drainage patterns, onsite source controls and site design measures, and stormwater treatment measures as applicable to the project scope. Planning and DPW review these plans for compliance with the MRP, ASBS Special Protections, BMPs and other applicable land use regulations (General Plan, Local Coastal Program, Zoning Ordinance, Grading Ordinance, Confined Animal Ordinance). Conditions of approval are added to project decisions as necessary to

ensure compliance. The building permit review process also includes review by Planning and DPW to ensure construction plans are in compliance with any planning approval and conditions of approval and the MRP, ASBS Special Protections, BMPs, and other applicable land use regulations.

5.2. Structural BMPs

Structural BMPs involve the installation of engineering solutions to the physical treatment or infiltration of runoff. The Special Protections require that "BMPs to control storm water 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 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."

New development and redevelopment projects in the Fitzgerald ASBS watershed implement the structural BMPs required by MRP Provision C.3. The MRP emphasizes the use of LID principles in project planning, including rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes. If stormwater runoff cannot be eliminated through the use of LID, stormwater treatment systems are required and must be sized according to the same design storm referenced in the Special Protections.

Trash controls are being implemented Countywide and in the ASBS per MRP Provision C.10 and the County's Long-Term Trash Load Reduction Plan (see Section 4.1 for details).

Additional structural BMPs are being implemented in the Fitzgerald ASBS watershed through the Fitzgerald Pollution Reduction Program. This program is described in detail below.

5.2.1. Proposition 84 Fitzgerald ASBS Pollution Reduction Program

The County and its grant partners at SMCWPPP; UCD; SFEI; and the RCD received a Proposition 84 Grant from the State of California to implement the multi-phased Fitzgerald Pollution Reduction Program. The purpose of the Proposition 84 Grant Program, administered by the State Water Board, is to implement surface water quality improvement and source control projects to address potential discharges identified within ASBS watersheds. The Pollution Reduction Program contains several key elements which taken together are designed to help protect Beneficial Uses, improve water quality at public beaches and the ASBS, achieve the water quality objectives outlined in the Ocean Plan, comply with the Special Protections, and work towards de-listing the Reserve and San Vicente Creek for coliform bacteria. The project elements and their current status are listed in Table 5.1. Additional details for key elements are provided in the subsections below.

Table 5.1. Fitzgerald Pollution Reduction Program Elements and Status

Element	Status
1) Design, review, and implement pilot storm drain BMPs at multiple locations, including ASBS high threat discharge points. Includes 7 structural BMPs.	BMPs installed in 2011 and monitored in 2012 and 2013. See Table 5.2 and Figure 5.1 for BMP locations.
2) Storm drain inventory and assessment, identification of problem areas for erosion, litter, flooding, etc., and prioritization list of BMP and drainage improvement projects.	Completed February 2013. Identified hydraulic deficiencies and nine prioritized sites for BMP implementation (BKF 2013).
3) Pathogen source tracking/MST study in Montara, Dean, and San Vicente Creek watersheds.	Completed February 2013. Of tested markers, dog waste identified as primary contributor to fecal pollution during the wet season. See Section 5.1.2 for more details.
4) Agency and public outreach and education to communicate the significance of the natural resources of the ASBS (public workshops, surveys, outreach materials).	Website (www.smchealth.org/asbs) developed in 2011. LID workshop held in August 2012. Public Survey conducted in 2012. Annual newsletters published in 2012, 2013, and 2014 (Appendix D). Sustainable landscaping assessments and BMP plans prepared for residential properties by RCD in 2013 and 2014. See Section 5.1.3 for more details.
5) Phase 2 storm drain BMP implementation following evaluation of pilot BMPs, storm drain inventory and assessment, and MST study. Includes 14 County-installed and maintained structural BMPs and 7 RCD-coordinated private LID projects.	County BMPs installed in 2013 and 2014, and the Reserve green parking lot retrofit in 2014. Residential LID measures installed by RCD in 2015. See Table 5.2 and Figure 5.1 for County BMP locations. See Table 5.3 and Figure 5.3 for RCD LID project locations.
6) Water quality monitoring of County-installed structural BMPs to measure pollutant load reduction and project benefits.	Pilot BMP evaluation completed, showing that vegetated swales were most effective at removing target pollutants (SFEI 2013, SCCWRP 2015). Evaluation of Phase 2 County BMPs to be completed by March 2016 with Final Grant Report.
7) Future Planning, including development of a BMP Operation and Maintenance Plan; a plan for continuation of the Pollution Reduction Program, including future BMP implementation based on pollution load reduction forecasts generated from models developed by SFEI and calibrated with data from the current study; and assessment of County policies based on information gained from this program.	Completed and submitted with the Final Grant Report on March 2016.

Pilot Storm Drain BMPs

In the fall of 2011, the County conducted a pilot program to integrate several types of structural BMPs (including LID-type practices) into existing storm drain infrastructure at seven locations within the Fitzgerald ASBS watershed. The pilot BMPs included 1) native grass sod swales, 2) vegetated swales

with under-drain systems, 3) flume filter storm drain inserts, and 4) a catch basin replacement vault with Stormwater Management StormFilter® cartridges. Pilot BMPs and locations are listed in Table 5.2.

During two storm events in March and April 2012, six of the BMPs were evaluated for performance (effluent water quality and pollutant removal) using a paired sampling approach with one water sample collected at the inflow of the treatment area and the other collected at the outflow. At three sites samples were analyzed for a comprehensive suite of urban runoff constituents including metals, PAHs, pyrethroid pesticides, suspended sediment, nutrients, and fecal indicator bacteria. The remaining three sites were sampled for conventional water quality parameters (conductivity, dissolved oxygen, pH, temperature, turbidity) and suspended sediment concentration only as a surrogate for other pollutants. SFEI (2013) reported results of the monitoring and concluded that BMPs were generally effective at reducing pollutant concentrations. Removal efficiencies varied depending on site specific and drainage area characteristics. SFEI (2013) noted that the flume filter inserts clogged quickly with leaf litter and sediment resulting in stormwater bypassing the BMPs and high maintenance needs. Although effective when functioning properly, flume filter inserts were not recommended for Phase 2 of the Program.

Phase 2 County BMPs

Using lessons learned from monitoring, implementation, and maintenance of the Pilot BMPs and the MST study, Phase 2 included installation of fourteen BMPs in 2013 and 2014. Grassy and vegetated swales were installed at 12 sites within the ASBS watershed and adjacent Kanoff Creek watershed. Phase 2 also included a green street retrofit project involving the installation of two bioretention facilities and educational signs along Carlos Street in Moss beach (Figure 5.2).

Funding to implement portions of the Reserve Green Parking Lot Demonstration Project (near FIT025) that was originally envisioned in the Master Plan for the Reserve (Brady/LSA 2002) was also part of Phase 2. After several iterations, the County approved a design in 2014. The design included construction of a trench drain to capture runoff from the parking lot which will then be routed to a bioretention basin to filter runoff before discharging to San Vicente Creek and the ASBS as well as an educational sign (Figure 5.2). Construction was completed in 2014.

Phase 2 County BMP locations are listed in Table 5.2 and mapped in Figure 5.1. Performance monitoring of representative Phase 2 County BMPs was conducted in 2013 and 2014 by SFEI. The monitoring report was completed in January 2015 and is included as an appendix to the Final Grant Report that was submitted March 1, 2016. The Review of County Policies/Programs and Recommendations to Reduce Stormwater Runoff and Non-Point Source Impacts to Water Quality in the ASBS (EOA 2015) is included with this Compliance Plan as Appendix B and is also be part of the Final Grant Report.

Table 5.2. Fitzgerald Pollution Reduction Program Pilot and Phase 2 BMPs Installed by the County

Site ID	ASBS ID	Site Name	Approx. Drainage Area	Pilot BMP	Pilot Comments	Phase 2 BMP
C1	FIT002	Seacliff Ct.	<1 ac	Flume filter storm drain insert	Frequent maintenance due to roadside ditch erosion	120-ft grassy swale with grade checks
C2	FIT003	7th St.	12.8 ac	Grassy swale	Only north drainage treated	Replace vegetation at Phase I BMP; construct 100-ft vegetated swale in south drainage; drainage controls
C3	N/A	Main St.	10 ac	--	--	100-ft grassy swale
C4	FIT006	11th St.	<1 ac	--	--	50-ft grassy swale; drainage controls
C5	FIT008	14th St. N	--	--	--	115-ft grassy swale
C6	FIT009	14th St. S	--	Flume filter storm drain insert	Frequent maintenance due to clogging	--
C7	FIT015	Juliana Avenue	2.5 ac	Vegetated swale	Lower drainage not captured and treated	50-ft grassy swale in secondary ditch to treat lower drainage area
C8	FIT024	Beach St.	<0.5 ac	--	--	70-ft grassy swale
C9	FIT025	FMR Parking Lot	--	--	--	Trench drain and bioretention basin
C10	Near FIT025	North Lake St. (San Vicente Creek)	1.4 ac	Catch basin vault with StormFilter cartridges	--	--
C11	FIT027	Cypress & Beach Way	0.5 ac	Vegetated swale	Lower drainage area not captured and treated	40-ft grassy swale to treat lower drainage area
C12	FIT029	Ocean Blvd & Bernal Ave	5 ac	Grassy swale	Swale damaged by parking & foot traffic	Replace & regrade grassy swale with 100-ft & 70-ft vegetated swales; add signage & fencing to prevent future trampling
C13	FITNEW1	Carlos St. (in Wienke Way watershed)	0.6 ac	--	--	2 bioretention facilities
C14	FITNEW1	Wienke Way	30 ac	--	--	100-ft vegetated swale
C15	Kanoff Creek	4th St. (Kanoff Creek)	0.5 ac	--	--	105-ft grassy swale
C16	Kanoff Creek	Farallone @ 4th St.	10 ac	--	--	130-ft vegetated swale
C17	Kanoff Creek	Farallone @ 3rd St.		--	--	215-ft vegetated swale

Notes: ac = acre, ft = feet

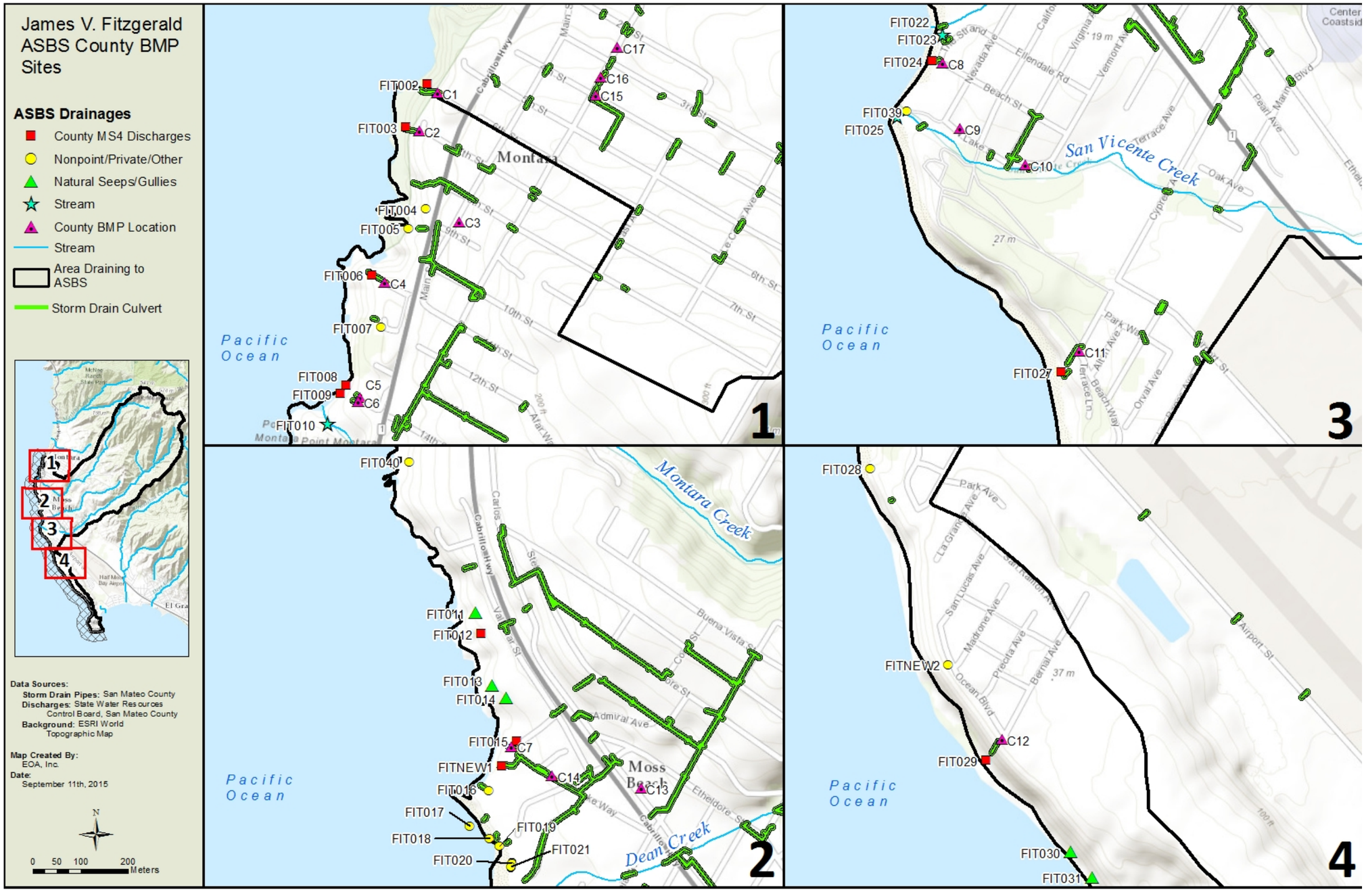


Figure 5.1. Phase 2 County BMP Locations, Fitzgerald Pollution Reduction Program.

Figure 5.2. BMPs at Carlos Street Raingarden (Left) and FMR Parking Lot Improvement Project (Right).

Phase 2 RCD LID Projects

The County is coordinating with the RCD to encourage voluntary conservation on public/private properties through technical assistance and financial incentive programs for landowners to install BMPs and LID measures to improve water quality to the ASBS. As of December 2015, multiple LID BMPs were installed on seven private properties that are located in the Fitzgerald ASBS watershed. The overall objective of the LID projects is to improve water quality to the Fitzgerald ASBS by reducing pollutant sources from the upland watershed areas. The LID projects were specifically designed to reduce priority pollutants (i.e., fecal coliform from pet waste, pesticides, metals, and other vehicle and household derived pollutants) by capturing, storing, infiltrating, treating, and/or redirecting stormwater. Designs include combinations of rainwater catchment systems; vegetated swales; rain gardens; replacing driveways with permeable pavement; strategies to direct flow to vegetated areas; and roof installments over compost, confined animal structures, and chicken coop areas. The BMPs are expected to improve stormwater drainage and associated erosion issues due to impervious surfaces, steep slopes, and hard clay pan soils within the watershed. It is anticipated that the projects will serve as demonstration sites for the community both through site visibility and by community leadership provided by participating landowners. The RCD-coordinated LID projects are listed in Table 5.3, which references the ASBS drainage point to which the properties eventually drain.

Table 5.3. RCD-Coordinated LID Projects, Fitzgerald ASBS Pollution Reduction Program

LID Project #	ASBS ID	LID Project Features
LID2	FITNEW1 (Wienke Way)	Vegetated swale to treat runoff from Highway 1 Rain gardens with under drain Rainwater catchment system (4 tanks) Irrigation system using captured runoff Vegetated swale
LID3	FIT010 (Montara Creek)	Replace concrete surfaces with permeable pavement (1090 sq. ft.) Replace paved surfaces with earthen swale and native plants Rainwater catchment system (1 tank) Rain garden with under drain Roofing for chicken coop
LID4	FIT022 (Dean Creek)	Rainwater catchment system (2 tanks) Rain garden with under drain Drainage improvements Vegetated swale Stormwater runoff energy dissipation (concrete block weirs)
LID5	NA (coastal bluff between FIT028 and FIT029)	Rainwater catchment system (1 tank) Rain garden Vegetated swale Drainage improvements Replace 420 sq. ft. of driveway with permeable pavement
LID6	FITNEW2 (Ocean Blvd & Madrone)	Rain garden Vegetated swale Replace concrete driveway with permeable pavement (425 sq. ft.)
LID7	FIT022 (Dean Creek)	Rain garden with under drain Roofing for chicken coop
LID9	FIT025 – San Vicente Creek)	Rainwater catchment system (2 tanks) Rain gardens

Notes: sq. ft. = square feet

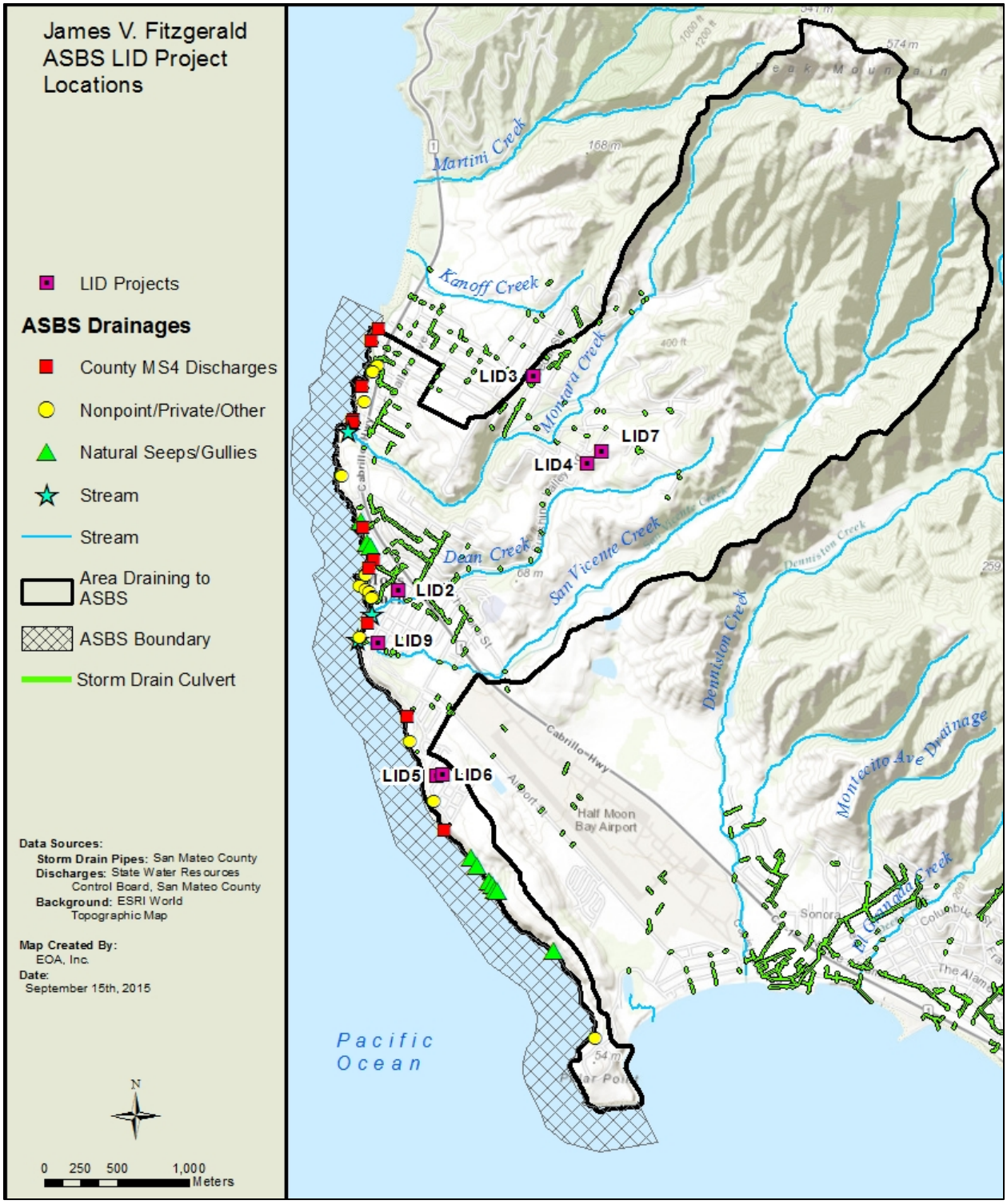


Figure 5.3. RCD-Coordinated LID Projects.

6.0 PARKS AND RECREATION

The County will comply with Provision II.A of the Special Protections which specifically addresses parks and recreation facilities.

Two County parks are located in the Fitzgerald ASBS watershed: Fitzgerald Marine Reserve and Pillar Point Bluff. The Reserve was created in 1969 to protect the mosaic of habitats and tremendous diversity of marine life that exist in the area. The Reserve is currently designated as a Marine Protected Area and is jointly managed by the California Department of Fish and Wildlife and the County. In addition to its 370 acres of intertidal and subtidal marine habitat, the Reserve includes 32 acres of upland coastal bluffs with a 100-year old grove of Monterey cypress. The Bluff Trail traverses approximately one half mile of windswept bluff top between the Reserve parking lot (near San Vicente Creek) and Seal Cove to the south. Facilities at the Reserve consist of a small visitor center/office with parking area, restrooms, and picnic tables in Moss Beach.

A Master Plan for the Reserve was completed for the County by Brady/LSA (2002). The plan describes the biological resources found at the Reserve and provides a brief history of its use and regulatory status. Visitor use (e.g., direct trampling of delicate algae and invertebrates) is identified as the primary cause of deterioration of natural resources in the intertidal zone. The plan includes goals and policies designed to protect natural resources of the Reserve while providing educational and recreational opportunities. They include: a new visitor management program with an emphasis on education and maximum visitor capacities, uses and facilities program (e.g., new education center and sustainable green parking lot), development of a monitoring program (e.g., 10-year limited visitor use study at Moss Beach Reef), restoration feasibility studies, a water quality improvement program (e.g., San Vicente Creek), sensitive species protection, habitat and vegetation management programs, prohibition of domestic and feral animals, and an implementation program.

Based on recommendations in the Master Plan, Pillar Point Bluff was acquired by the County in 2011 as an addition to the Fitzgerald Marine Reserve. Pillar Point Bluff is located approximately one mile south of the Reserve and contains 140 acres of bluff top that was historically used for grazing. The unpaved Jean Lauer Trail system loops around the bluff top and is open to hikers, bikers, equestrians, and dogs on leash. A small parking lot is located just outside of the ASBS watershed near the Half Moon Bay Airport.

County Parks is responsible for the operation of parks and trails located throughout the County. All County Parks maintenance activities are conducted in accordance with the MRP and the County of San Mateo Watershed Protection Maintenance Standards manual (2004). These standards were developed in conjunction with FishNet 4C, a County-based salmon protection and restoration program that brought together the central coast counties of Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, and Monterey; the National Marine Fisheries Service; Regional Water Board; and the California Department of Fish and Wildlife. The Maintenance Standards manual was created to meet NPDES requirements as well the Endangered Species Act Section 4(d) Rule for steelhead and salmon.

The key focus of the manual is on implementation of BMPs to protect water quality, aquatic habitat, and salmonid fisheries. Guidelines in the manual address road and trail design, routine and emergency road and trail related maintenance activities, common facilities such as storage sites and maintenance yards, and vegetation management practices. The Maintenance Standards manual goes beyond those developed for other coastal counties by increasing the level of commitment to BMP implementation.

6.1. Pollutant Sources

Potential water quality impacts to the ASBS from its entire watershed are described in Section 3.2. A subset of those pollutant sources may occur within the County parks. For example, the Reserve parking lot, near FIT025, is a potential source of trash and pollutants associated with automobiles (e.g., oil, grease, metals), picnic areas are a potential source of trash, improperly maintained trails can cause erosion, and pets and horses can be a source of bacteria.

6.2. Management Measures/Practices for Soil Erosion

The Maintenance Standards manual addresses erosion and sedimentation through the implementation and continual maintenance of BMPs. Vegetation management and slope stabilization are ongoing actions that reduce erosion through implementation of the following BMPs: brush packing, brush layering, coir netting, live staking, mulching, vegetative buffers, erosion control blankets or mats, asphalt berms, containment, hand seeding, and hydroseeding. The Master Plan (2002) for the Reserve describes policies aimed at upgrading the park's trails traversing the top bluffs by replanting, rebuilding and resurfacing. Resurfacing with pervious materials and planting native plants will result in increased stability and reduced erosion from foot traffic. The areas adjacent to the mouth of San Vicente Creek (FIT025) was recently revegetated with native plants and secured with erosion control fabric. This area provides buffer between the adjacent trail and the creek for reducing sediment and slowing stormwater before it reaches the creek.

The County recently conducted a geotechnical hazard assessment of Pillar Point Bluff. It is possible that coastal retreat rates along the coastline have recently accelerated, possibly due to sea level rise and climate change. The report recommended closing off and replacing several trail segments to increase safety and prevent trail-caused erosion (Cotton, Shires and Associates 2016).

6.3. Management Measures/Practices for Pesticides

County Parks pesticide use policies center around the implementation of Intergraded Pest Management (IPM) techniques that seek to encourage non-pesticide alternative or the least toxic chemicals. Management actions aimed at minimizing the use of toxic chemicals and pesticides on park lands include:

- preference for IPM-certified contractors;
- requirements for County departments and contractors to develop an active IPM Plan ensuring minimum negative impacts on the community and environment;
- annual reporting summarizing and evaluating pest control activities with possibilities for reform,
- landscape and structural pest control alternatives;
- review of contracts, service agreements and purchasing procedures with pesticide applicators to identify possibilities for pesticide use reduction and use of the least harmful chemicals; and
- educational outreach or support for Countywide efforts to inform citizens of the goals and techniques of IPM and pesticide related water issues.

IPM techniques employed at the Reserve and Pillar Point Bluffs County Park could include "*biological controls (e.g., ladybugs and other natural enemies or predators); physical or mechanical controls (e.g.,*

hand labor or mowing); cultural controls (e.g., mulching, discing, or alternative plant type selection); and reduced risk chemical controls (e.g., soaps or oils). (Quoted from SMC_IPM-Policy)

6.4. Management Measures/Practices for Public Education

The Master Plan for the Reserve (2002) includes goals and policies to provide educational and outreach opportunities throughout the reserve by shifting the recreational focus of the Reserve towards an educational one. The Reserve visitor center was recently improved and supplies visitors with information, maps, and brochures regarding the Reserve's resources. There is a signage program in development that will inform visitors about Reserve restrictions and natural and cultural resources. Currently two signs have been installed: one at the Carlos Street Rain Garden informing the public about stormwater impacts on aquatic life and water quality and one at the Reserve Parking lot Improvement Project providing background information on the Reserve and the water quality benefits of the parking lot design. In addition, signage reminding visitors about pet and leash restrictions have been installed along trails in the Reserve. Pet waste stations including trash cans and bags are located at both ends of the California Coastal Trail segment that runs through the Reserve (i.e., the "Dardanelle" trail) (Figure 6.1). These measures supplement the targeted public education and outreach program that was initiated as part of the Proposition 84 Fitzgerald Pollution Reduction Program (see Section 5.1.3).

Figure 6.1. Photograph of pet waste station at Dardanelle Trail.

6.5. Management Measures/Practices for Trash

The Master Plan includes a policy to limit tobacco use to designated areas containing receptacles to encourage appropriate waste disposal. Receptacles will be located in areas easily serviced by solid waste disposal contractors to ensure adequate maintenance. Furthermore, policies regulating the maximum number of visitors and creating designated picnicking areas will reduce the trash generation of the park. Other activities consistent with the MRP address trash management such as County Parks community outreach cleanup events and DPW Roads Division on-land trash cleanups at hot spot locations where litter is more commonly observed. Trash is very minimal at the Reserve and staff pick it up daily. Two former annual clean up events (Earth Day and Coastal Cleanup Day) have been moved from the Reserve to other locations in the County with more trash (e.g., Pacifica Beach).

6.6. Management Measures/Practices for Parking Areas and Other Developed Features

In 2014, construction of the Reserve Green Parking Lot Demonstration Project (near FIT025) was completed. This project was originally envisioned in the Master Plan for the Reserve (Brady/LSA 2002) and was funded as part of Phase 2 of the Proposition 84 Fitzgerald Pollution Reduction Program. The design includes a trench drain to capture runoff from the parking lot which and conveyance to a bioretention basin to filter runoff before discharge to San Vicente Creek and the ASBS (Figure 5.2). An educational sign informs visitors about the ASBS, potential water quality impacts of stormwater runoff, and features of the BMP that mitigate potential water quality impacts.

6.7. Maintenance and Repair of Parks and Recreation Facilities

Construction, maintenance, and repair of park facilities follow the guidelines, standards, and BMPs described in the Maintenance Standards manual (2004). The manual contains lists of recommended BMPs for each type of management action to minimize erosion and waste discharge. In regards to paved (parking lot) and unpaved (trails) traffic areas, the Maintenance Standards provide information on the use of berms, barriers, and diversions to protect sensitive areas from stormwater runoff. Breaks in slopes and vegetation establishment are recommended to slow runoff velocities and retain sediment on site. All BMPs are periodically inspected and maintained as needed. Furthermore, trash receptacles are located within the parking lot area to encourage proper trash disposal.

7.0 MONITORING

Water quality monitoring within the Fitzgerald ASBS and its watershed is conducted under several types of programs. Monitoring of discharges and receiving water required under the Special Protections is described below in Section 7.1. Monitoring designed to show the effectiveness of BMPs installed through the Fitzgerald Pollution Reduction Program is described above in Section 5.2.1.

7.1 Central Coast ASBS Regional Monitoring Program

The ASBS Special Protections contain monitoring requirements for identified discharges to ASBS. These mandatory requirements include the Core Discharge Monitoring Program and the Ocean Receiving Water and Reference Area Monitoring Program. In order to meet the monitoring requirements, the County joined the Central Coast ASBS Regional Monitoring Program (CCRMP). This program involved gathering and analyzing the monitoring data required by Provision IV of the Special Protections for identified discharge outfalls (over 18 inches in diameter) and receiving waters.

The CCRMP was developed through discussions with staff from State and Regional Water Boards and ASBS responsible parties extending from Marin County to Big Sur, including the County. 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. The monitoring program entailed collection of water samples during six storms over three years. Pre- and post-storm samples were collected from ocean receiving water stations at each participating ASBS. Storm samples were collected from outfalls and from nine reference sites cited throughout the study area. Two background sites along the shore within Monterey Bay, distant from any ASBS, were also sampled. Samples were analyzed for a comprehensive suite of constituents, including metals, FIB, nutrients, PAHs, pesticides, and toxicity, per Special Protections requirements. The CCRMP includes five outfalls that discharge to the Fitzgerald ASBS:

- Outfalls 18 – 36 inches:
    - FIT012 – 24-inch concrete ditch near Maritime Walk;
    - FIT015 – 20-inch wide earthen ditch below 12-inch CMP near Juliana Avenue;
    - FITNEW2 – 24-inch AC roadway swale across Madrone Avenue draining to bluff gully on private property (listed as FIT029 in CCRMP Scope of Work); and
    - FIT028 – 20-inch concrete gutter below 15-inch PVC near Moss Beach Distillery Restaurant[6].
- Outfalls greater than 36 inches:
    - FITNEW1 – 36-inch RCP near Wienke Way (listed as FIT016 in CCRMP Scope of Work).

Receiving water was monitored in the surf zone at the point of contact between runoff from the 36-inch drainage pipe (FITNEW1) near Wienke Way and the Pacific Ocean. Two reference sites for the Fitzgerald ASBS were selected as part of the CCRMP. They were selected based on watershed characteristics with greater than 90 percent open space and no listed water quality impairments (AMS 2014). The reference

[6] Although FIT028 was included as an 18 – 36 inch outfall in the CCRMP, the actual discharge is a 15-inch pipe that drains into a larger sized open gutter on private property.

site sampling locations are in the surf zone at the mouth of the Tunitas Creek and Gazos Creek watersheds in San Mateo County.

The CCRMP followed a set of standard operating procedures (AMS 2013) and conducted monitoring according to a Quality Assurance Project Plan (QAPP; AMS 2014). Final results are described in AMS (2016).

7.2 CCRMP Findings

On August 29, 2016, AMS published the Final Report describing findings from the CCRMP (AMS 2016). Monitoring data will be submitted to the California Environmental Data Exchange Network (CEDEN) by AMS. Data from the Fitzgerald ASBS monitoring stations (discharge and receiving water) and the reference stations were provided separately to the County and are included with this Updated Final Fitzgerald ASBS Compliance Plan as Appendix A.

The CCRMP Final Report focuses on whether there are **spatial patterns** in constituent concentrations in reference and pre-storm samples, and whether there are associations among constituents that would help assess whether discharge constituents have anthropogenic sources and constitute waste (AMS 2016). Data are not identified by the ASBS location where they were collected. Where data are discussed, stations are identified by randomly assigned letter. Within this spatial (rather than specific) context, five study questions are addressed:

1. Are there north-to-south differences in reference conditions?
2. Are there north-to-south differences in pre-storm water quality at ASBS sites?
3. Are storm discharges altering natural water quality, as defined by the 85th percentile?
4. Are alterations of natural water quality likely due to anthropogenic waste?
5. Are marine biological resources being measurably affected by ASBS storm discharges?

The CCRMP Final Report describes, summarizes, and evaluates a large set of data from a highly complex monitoring program. The sections below **briefly** summarize why AMS (2016) explored the five study questions, the major CCRMP findings, and, where applicable, specific results from the Fitzgerald ASBS monitoring stations.

- **Are there north-to-south differences in reference conditions?** AMS (2016) explored this issue to assist ASBS responsible parties in selection of reference sites that are relevant to the conditions prevailing at their discharge(s). The two northernmost reference sites (Tunitas and Gazos) were already identified as appropriate, based on proximity, for the Fitzgerald ASBS in earlier versions of this Compliance Plan. These stations comprise two of the three stations within the informally-delineated north subregion. The CCRMP Final Report notes clear statistically significant differences between reference conditions in the north subregion of the study area and the south subregion, a finding that supports earlier decisions for Fitzgerald ASBS reference site selection. The north subregion reference sites had higher concentrations of most constituents. Subregions identified in the CCRMP Final Report were informally delineated based on geographic location along the coast rather than geologic conditions, ocean littoral cell zones[7],

[7] Littoral cells are individual self-contained segments within which sediment transport is bounded or contained (Patsch and Griggs 2006). They are often referred to as beach compartments and are used to explain how sediment moves along the shoreline.

vegetation coverage, or other criteria. However, AMS (2016) notes that differences in trace metal concentrations may be due to geologic differences.

- **Are there north-to-south differences in pre-storm water quality at ASBS sites?** AMS (2016) explored this question to assess whether there are spatial differences in *ambient* conditions at ASBS receiving water stations. Higher ambient constituent concentrations could make it more challenging to meet the natural water quality threshold. Similar to reference sites, the northern receiving water stations had significantly higher trace metal and TSS concentrations than the southern stations. However, concentrations of FIB, nutrients, PAHs, and pesticides were generally higher in the south. These findings support the idea that natural water quality differs depending on location and thus reference sites should be selected as site-specific to the area of interest (e.g., similar geology, proximity to larger regional watersheds such as the San Francisco Bay Delta Watershed).

- **Do storm discharges alter receiving water quality?** This is a challenging question to answer, in part, due to the potential limitations inherent in the CCRMP monitoring program described in Section 7.2 and high variability in stormwater monitoring results in general. Program-wide, concentrations of constituents in receiving water samples were usually below the 85th percentile threshold based on the entire set of nine reference sites. However, most constituents had higher concentrations in post-storm receiving water samples compared to pre-storm samples. These same generalities apply to the Fitzgerald ASBS data.

- **Are alterations of receiving water quality due to anthropogenic waste?** AMS (2016) suggests that most of the constituents monitored are related to urban land uses. However, silver and arsenic, lacking a relationship to TSS concentrations, appear to be naturally occurring. In addition, nutrients cannot be chemically directly linked to anthropogenic sources.

- **Are marine biological resources being affected by ASBS storm discharges?** AMS (2016) evaluated water quality and other monitoring parameters to assess whether ASBS Beneficial Uses are supported in the study area. Four components of the CCRMP were considered particularly relevant to this analysis. All support or, in the case of toxicity, potentially support a finding in which marine biological resources are not measurably affected by ASBS storm discharges.

    - **Rocky Intertidal Monitoring** for sessile and mobile organisms was performed at eight sites, including the Fitzgerald ASBS, five other ASBS and two reference stations. AMS (2016) concluded that, based on the evidence, discharges along the central California coast do not impact diversity or community composition in the nearby rocky intertidal habitats. The Fitzgerald ASBS did differ from the other sites with respect to sessile species composition. However, the differences are likely the result of unique geomorphology at the site.

    - **Mussel Bioaccumulation Monitoring** for several persistent organic pollutants (POPs) was conducted in collaboration with the Central California Long-term Environmental Assessment Program (CCLEAN). CCLEAN has been monitoring mussels at five sites in Monterey Bay for over 15 years. The CCRMP added a station at Point Reyes and expanded the list of constituents. Based on the monitoring results and a review of the long-term record, concentrations of POPs in mussels have been declining over recent years around Monterey Bay. No organophosphate or pyrethroid pesticides were

detected in any samples; however, some pharmaceuticals with veterinary and/or human applications were detected suggesting runoff from livestock operations. There is no evidence that contaminants from stormwater are accumulating or causing adverse effects on mussels in the ASBS in closest proximity to the monitoring sites (Carmel Bay).

- **Toxicity Testing** conducted in receiving water samples suggests that marine biological resources could be affected by ASBS discharges as it was statistically associated with trace metals and pyrethroid pesticides. However, a small percent (<2%) of toxicity tests in reference water samples also failed indicating that some toxicity could be naturally occurring.

- **Measurement of Nutrients**. Nutrients in ocean water can potentially cause harmful algal blooms. However, AMS (2016) concluded that nutrients discharged into ASBS have had no noticeable effect on algal blooms or nuisance growths. This conclusion is based on an annual loading estimate of 14.5 kg nitrogen/site/storm from discharges compared to an average annual nitrogen load of 3,400,000 kg from rivers and wastewater discharges.

The CCRMP Final Report concludes with the observation that the natural water quality threshold (i.e., 85th percentile of reference site conditions) is extremely conservative and the recommendation that a more reasonable threshold would be the 95th percentile. The County supports this recommendation.

> *The primary water quality threshold for judging whether natural water quality is being achieved in ASBS is the 85th percentile of values from reference sites in the ocean at the mouths of streams with <5% of their watersheds under human development. This threshold essentially requires ASBS participants to achieve better water quality than is present in the ocean at the mouths of these clean reference streams. It is far from certain that this level of water quality is achievable. It seems a very daunting task to ensure that water quality along a city shoreline be better than the best water quality available along undeveloped shoreline of the state. If we can assume that the water quality at reference sites fully supports sensitive marine life, then requiring the same, and not necessarily better, water quality should provide a robust level of protection for marine life in ASBS.*
>
> *If this approach were utilized, a more reasonable threshold would be the 95th percentile. This would ensure that any value falling outside the bounds of most reference values would become the focus of corrective measures. Such a threshold would have a profound effect on the number of constituents potentially being flagged for mitigation measures, while still leaving plenty of room for improving water quality.* (AMS 2016)

7.3 Fitzgerald ASBS Monitoring Results

Results from the CCRMP at Fitzgerald ASBS monitoring stations are included in Appendix A. The data were evaluated to assess whether there were any exceedances of natural water quality or Ocean Plan WQOs. The process for determining natural water quality exceedances is described in Section 2.2.2 and illustrated in Figure 2.1. The natural water quality threshold is based on the 85th percentile of constituent concentrations measured at Tunitas Creek and Gazos Creek. These two reference sites were identified in the Draft and Final versions of the Compliance Plan. Of all the reference sites sampled by the CCRMP, these are closest in proximity to the Fitzgerald ASBS which is located to the north of all reference sites. Based on CCRMP findings of significant differences in water quality between the north and south subregions, these stations are likely most representative of natural water quality at the

Fitzgerald ASBS based on geology and proximity to the San Francisco Bay Delta Watershed. Post-storm monitoring results from the Fitzgerald ASBS receiving water station near FITNEW1 (Wienke Way) were compared to the natural water quality threshold and Ocean Plan WQOs. The receiving water station was monitored during six storm events:

- November 20, 2013
- February 26, 2014
- February 6, 2015
- April 7, 2015
- December 3, 2015
- January 5, 2016

Based upon the results of the monitoring, there were no exceedances of natural water quality for most potential pollutants monitored (i.e., metals, FIB, pesticides). For pollutants that did exceed the natural water quality threshold (i.e., PAHs, urea[8], toxicity), the exceedances were not observed in subsequent sampling events. Ocean Plan instantaneous maximum WQOs for FIB were exceeded during three storm events. It cannot be determined whether County stormwater discharges caused or contributed to these exceedances. Furthermore, new structural BMPs were installed in 2013 and 2014 and improved public outreach targeting pet waste and other bacteria sources is currently being planned as part of the San Vicente Creek Bacteria WQIP. These actions are expected to improve water quality in the FITNEW1 outfall. Therefore, no further action or monitoring is required based on the process for determining natural water quality exceedances. However, implementation of this Compliance Plan will continue to be reported with the MRP Annual Report.

- **Metals**. No natural water quality thresholds were exceeded for any of the metals sampled during any of the storm events.

- **Conventional Constituents**. Oil and grease and TSS natural water thresholds were not exceeded. The natural water quality threshold for FIB was not exceeded; however, the Ocean Plan WQO for fecal coliform was exceeded in the February 6, 2015 sample and the Ocean Plan WQO for enterococcus was exceeded in the February 26, 2014 and January 5, 2016 samples. Although natural FIB densities appear to be relatively high during storm conditions, it is possible that the discharges contributed to the WQO exceedances, based on FIB densities measured in the outfall (FITNEW1 – Wienke Way). However, it is unknown whether discharge contributions (if present) were from uncontrollable wildlife or anthropogenic sources (e.g., pet waste). As part of Phase 2 of the Proposition 84 Grant-funded Pollution Reduction Program (see Section 5.2.1, Table 5.2, Figure 5.2), the County installed two bioretention facilities and a vegetated swale within the FITNEW1 watershed in 2013 and 2014. It is likely that the performance of these BMPs will improve as their vegetation matures. Furthermore, the County is in the process of developing a plan for managing pet (dog) waste in the San Vicente Creek watershed as part of the WQIP (see Section 4.2). Although FITNEW1 is outside of the San Vicente Creek watershed, many of the bacteria control actions that are implemented through the plan will have a broader effect.

- **Nutrients**. The natural water quality threshold for urea was exceeded during the first storm sampled on November 20, 2013. There were no exceedances in the subsequent five storms. It is

[8] Monitoring for urea is not required by the Special Protections but was added by the CCRMP.

unclear whether the exceedance was caused by discharges because the post-storm urea concentration (18 ug/L) was similar to the pre-storm concentration (15 ug/L). In the subsequent storm event, the pre-storm concentration (28 ug/L) was higher than the post-storm concentration (11 ug/L). These findings suggest that urea may be sources other than the discharge in the receiving water. Since subsequent storms are considered resample events, no action is required, based on process for determining exceedances (Section 2.2.2, Figure 2.1).

- **PAHs**. The natural water quality threshold for the sum of PAHs was exceeded during the first storm sampled on November 20, 2013. There were no exceedances in the subsequent five storms. Since subsequent storms are considered resample events, no action is required, based on process for determining exceedances (Section 2.2.2, Figure 2.1). The Ocean Plan does not have an instantaneous maximum WQO for PAHs. If the Ocean Plan 30-day average WQO for the protection of human health (0.0088 ug/L) is extrapolated to an instantaneous maximum using a 10:1 ratio (0.088 ug/L; as suggested in AMS 2016), then there were also no WQO exceedances of PAHs. The BMPs that were recently installed in the FITNEW1 watershed are expected to significantly decrease PAHs in discharges.

- **Pesticides**. No pesticides were detected in the Fitzgerald ASBS receiving water station.

- **Toxicity**. One receiving water sample had a failed toxicity test: kelp growth on December 3, 2015. The cause of the toxicity is unknown and there were no other natural water quality or WQO exceedances on this date. Since the subsequent storm is considered a resample event, no action is required, based on process for determining exceedances (Section 2.2.2, Figure 2.1).

8.0 COMPLIANCE AND IMPLEMENTATION SCHEDULE

This Updated Final ASBS Compliance Plan, dated September 20, 2016, includes results of the Receiving Water Monitoring Program (AMS 2016) that show the County is in full compliance with the Special Protections. The County will continue to implement this Compliance Plan and will report annually on compliance activities in the MRP Annual Report. Completed and ongoing (i.e., reporting) elements of County's ASBS Special Protections implementation are listed in Table 8.1.

Table 8.1. San Mateo County ASBS Special Protections Implementation Schedule

Element	Deadline	Remarks
Prohibit all non-authorized non-stormwater discharges and trash.	Mar. 20, 2012	Completed consistent with MRP (Section 4.1) and County Code of Ordinances (Section 4.7). Additional ASBS-specific non-stormwater discharge elimination measures targeting car washing, swimming pool releases, and landscape irrigation are described in Section 5.1.4.
Implement non-structural BMPs including inspection program.	Sep. 20, 2013	Completed and ongoing consistent with the MRP (Section 4.1), the WQIP (Section 4.2), and this Compliance Plan. • The construction, industrial, commercial, and storm drain outfall inspection program is described in Section 5.1.1. • Other non-structural BMPs include ASBS-targeted public outreach and education (Section 5.1.3) and development review (Section 5.1.5). • The Fitzgerald Pollution Reduction Program also includes future public outreach measures to be implemented that will target pet and livestock (horse) owners (see Section 5.2.1).
Submit Draft Compliance Plan to State and Regional Water Boards.	Sep. 20, 2014	Completed.
Submit Final Compliance Plan to State and Regional Water Boards.	Sep. 20, 2015	Completed.
Any additional structural BMPs determined necessary to comply with Special Protections are operational.	Mar. 20, 2018	Completed. Fitzgerald Pollution Reduction Program BMP implementation ongoing through November 2014 (see Section 5.2.1 for details): • Pilot BMPs installed at seven locations in 2011 and monitored for effectiveness in 2012. • Phase 2 BMPs installed at fifteen locations in 2013 and 2014.
Discharges from Fitzgerald ASBS watershed do not alter natural ocean water quality in ASBS.	Mar. 20, 2018	Completed. Reference and receiving water quality were characterized as part of CCRMP (AMS 2016). Based on the CCRMP results, there is need for additional non-structural and structural BMPs to maintain natural ocean water quality.
Reporting	Annually on Oct. 1	Ongoing. Special Protections compliance measures are reported each year in the County's MRP-required Annual Report.

9.0 REFERENCES

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Appendix A

CCRMP Monitoring Data

Appendix A. CCRMP Results for Fitzgerald ASBS

Metals and PAHs

	Date	Chromium (ug/L)	Lead (ug/L)	Cadmium (ug/L)	Arsenic (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Copper (ug/L)	Selenium (ug/L)	Mercury (ng/L)	Sum of PAHs (ug/L)
Outfalls 18 to 36 inches												
Maritime Walk	20-Nov-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maritime Walk	12-Dec-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Juliana	20-Nov-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Juliana	12-Dec-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Distillery	20-Nov-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Distillery	12-Dec-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Madrone	20-Nov-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Madrone	12-Dec-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Outfall > 36 inches												
Weinke Way	20-Nov-13	10.7	11.2	0.14	3.87	11.4	0.04	132	**43.1**	0.96	99.9	0.374
Weinke Way	26-Feb-14	2.76	2.5	0.08	1.58	5.03	0	64.9	17.9	1.34	16.8	0.005
Weinke Way	6-Feb-15	4.17	5.54	0.143	0.548	9.12	0	167	**55.4**	0.162	37.3	0.568
Weinke Way	7-Apr-15	1.78	0.315	0.022	0.513	2.03	0	7.94	4.84	0.022	6	0
Weinke Way	3-Dec-15	1.32	1.11	0.020	0.167	2.32	0	11.7	8.06	0.043	8.03	0
Weinke Way	5-Jan-16	1.42	1.20	0.024	0.46	1.97	0	16.3	9.96	0.037	8.23	0.044
Receiving Water (Pre-storm)												
Weinke Way	18-Nov-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.08	0
Weinke Way	25-Feb-14	0.680	0.049	0.053	1.53	0.587	0.21	0.704	0.291	0.043	0.428	0
Weinke Way	5-Feb-15	1.12	0.198	0.045	1.68	1.57	0.04	1.56	0.712	0.235	1.08	0
Weinke Way	6-Apr-15	0.043	0.124	0.005	1.82	0.928	0.11	0.078	0.153	0.027	0.801	0
Weinke Way	2-Dec-15	0.560	0.028	0.021	1.43	0.697	0.06	0.700	0.305	0.022	0.764	SD
Weinke Way	3-Jan-16	1.06	0.197	0.050	1.84	1.53	0.05	1.84	0.771	0.03	2.03	0
Receiving Water (Post-storm)												
Weinke Way	20-Nov-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.14	0.043
Weinke Way	26-Feb-14	1.17	0.268	0.058	1.64	0.918	0.200	1.64	0.687	0.058	0.957	0
Weinke Way	6-Feb-15	3.40	0.842	0.062	2.08	3.64	0.010	5.71	2.49	0.088	3.17	0.013
Weinke Way	7-Apr-15	0.604	0.073	0.061	1.64	0.727	0.270	0.691	0.373	0.027	1.29	0
Weinke Way	3-Dec-15	1.02	0.158	0.021	1.52	1.08	0.070	1.44	0.639	0.024	1.11	0
Weinke Way	5-Jan-16	1.78	0.335	0.041	1.83	1.74	0.060	2.68	0.93	0.037	3.42	0.013
Reference Sites												
Gazos Creek	20-Nov-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.468	0
Gazos Creek	7-Feb-14	0.196	0.044	0.028	1.29	0.603	0.590	0.391	0.085	0.052	0.563	0
Gazos Creek	27-Feb-14	0.588	0.024	0.045	1.55	0.434	0.140	0.379	0.331	0.048	0.489	0
Gazos Creek	12-Dec-14	13.2	3.30	0.556	5.89	28.4	0.26	41.1	15.6	0.688	34.4	0
Gazos Creek	7-Feb-15	1.08	0.223	0.032	1.24	2.2769	0.01	1.9679	1.008	0.102	2.15	0
Gazos Creek	7-Apr-15	0.356	0.041	0.042	1.46	0.9463	0.26	0.5663	0.464	0.028	1.07	0
Tunitas Creek	6-Feb-14	1.65	0.144	0.040	1.80	1.2924	0.64	1.022	0.377	0.059	1.37	0
Tunitas Creek	26-Feb-14	0.437	0	0.040	1.49	0.479	0.15	0.2525	0.222	0.085	0.301	0
Tunitas Creek	26-Mar-14	0.660	0.005	0.043	1.53	0.5894	0.16	0.4455	0.244	0.053	0.449	0
Tunitas Creek	12-Dec-14	33.4	4.94	0.376	7.99	53.9818	0.28	62.1	25.9	0.713	43.6	0.025
Tunitas Creek	7-Apr-15	0.668	0.068	0.052	1.62	1.3766	0.26	0.632	0.516	0.030	0.744	0
Tunitas Creek	5-Jan-16	13.4	2.90	0.183	4.55	26.2	0.07	27.8	10.2	0.195	24.4	0.057
Natural Water Quality Threshold (85th percentile of reference sites) [a]		**17.4**	**3.63**	**0.412**	**6.31**	**33.5**	**0.60**	**45.3**	**17.7**	**0.693**	**34.9**	**0.0266**
Ocean Plan Water Quality Objective (Inst. Max.)		**20**	**20**	**10**	**80**	**50**	**7**	**200**	**30**	**150**	**400**	**0.0088 [a]**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

b. The Ocean Plan WQO for PAHs is a 30-day average

Appendix A. CCRMP Results for Fitzgerald ASBS

Conventional Analytes and Nutrients

	Date	Oil and Grease (mg/L)	TSS (mg/L)	Coliform, Fecal MPN/100mL	Enterococcus MPN/100mL	E. coli MPN/100mL	Nitrate as N (mg/L)	Ortho-Phosphate as P (mg/L)	Ammonia as N (mg/L)	Urea (ug/L)
Outfalls 18 to 36 inches										
Maritime Walk	20-Nov-13	0	2	**2289**	**4719**	2289	NA	NA	NA	NA
Maritime Walk	12-Dec-14	0	3	**1078**	**2064**	1464	NA	NA	NA	NA
Juliana	20-Nov-13	0	2	**2212**	**757**	2289	NA	NA	NA	NA
Juliana	12-Dec-14	0	4	**38732**	**81641**	92084	NA	NA	NA	NA
Distillery	20-Nov-13	0	21	**2934**	**39726**	2627	NA	NA	NA	NA
Distillery	12-Dec-14	6	10	**81641**	**241960**	120333	NA	NA	NA	NA
Madrone	20-Nov-13	0	212	**1817**	**31062**	48392	NA	NA	NA	NA
Madrone	12-Dec-14	0	20	**4874**	**9335**	5573	NA	NA	NA	NA
Outfall > 36 inches										
Weinke Way	20-Nov-13	0	214	0	0	0	0	0	0.1	32
Weinke Way	26-Feb-14	0	54	0	0	0	0	0	0.07	97
Weinke Way	6-Feb-15	0	115	**1600**	**2420**	2420	1	0.33	0.24	190
Weinke Way	7-Apr-15	0	2	**920**	**1986**	1553	0.4	0.19	0	16
Weinke Way	3-Dec-15	0	7	61	**8212**	20	0.4	0.16	0	34
Weinke Way	5-Jan-16	0	11	**521**	**1211**	479	1.2	0.18	0	16
Receiving Water (Pre-storm)										
Weinke Way	18-Nov-13	0	12	4.5	35	6	0	0	0	15
Weinke Way	25-Feb-14	0	11	7.8	15	0	0	0	0	28
Weinke Way	5-Feb-15	0	24	46	0	41	0.2	0.04	0	10
Weinke Way	6-Apr-15	0	12	2	0	20	0.7	0.06	0	0
Weinke Way	2-Dec-15	0	8	4	10	4	0.2	0	0	0
Weinke Way	3-Jan-16	0	23	10	10	10	0.4	0.03	0	0
Receiving Water (Post-storm)										
Weinke Way	20-Nov-13	0	66	0	0	0	0	0	0	18
Weinke Way	26-Feb-14	0	27	240	**1700**	1	0	0	0	11
Weinke Way	6-Feb-15	0	72	**1600**	52	148	0.2	0.04	0	10
Weinke Way	7-Apr-15	0	13	7.8	41	0	0.6	0.05	0	0
Weinke Way	3-Dec-15	0	14	7	10	7	0.2	0.03	0	0
Weinke Way	5-Jan-16	0	32	30	**202**	30	0.4	0.04	0	0
Reference Sites										
Gazos Creek	20-Nov-13	0	10	20	40	40	0	0	0	13
Gazos Creek	7-Feb-14	0	6	20	10	20	0	0	0	0
Gazos Creek	27-Feb-14	0	9	31	10	31	0	0	0	0
Gazos Creek	12-Dec-14	0	800	100	202	100	1.4	0.41	0.06	0
Gazos Creek	7-Feb-15	0	15	20	63	10	0.1	0.06	0	10
Gazos Creek	7-Apr-15	0	7	216	41	201	0.6	0.06	0	0
Tunitas Creek	6-Feb-14	0	17	7.8	38	0	0	0	0	0
Tunitas Creek	26-Feb-14	0	7	49	45	0	0	0	0	0
Tunitas Creek	26-Mar-14	0	12	10	10	10	0	0	0	0
Tunitas Creek	12-Dec-14	0	1440	1613	1829	1712	1.4	2.16	0.06	0
Tunitas Creek	7-Apr-15	0	15	920	238	487	0.2	0.07	0	0
Tunitas Creek	5-Jan-16	0	518	2433	6968	1712	1.1	0.09	0	17
Natural Water Quality Threshold (85th percentile of reference sites) [b]										
		0	**832**	**1654**	**2086**	**1712**	**1.4**	**0.497**	**0.06**	**13.2**
Ocean Plan Water Quality Objective (Inst. Max.)										
		--	**--**	**400**	**100**	**--**	**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix A. CCRMP Results for Fitzgerald ASBS

Toxicity

	Date	Urchin Fertilization	Kelp Germination	Kelp Growth	Mussel Normal Development	Mussel Survival
Outfalls 18 to 36 inches						
Maritime Walk	20-Nov-13	F	NA	NA	NA	NA
Maritime Walk	12-Dec-14	P	NA	NA	NA	NA
Juliana	20-Nov-13	P	NA	NA	NA	NA
Juliana	12-Dec-14	P	NA	NA	NA	NA
Distillery	20-Nov-13	P	NA	NA	NA	NA
Distillery	12-Dec-14	P	NA	NA	NA	NA
Madrone	20-Nov-13	P	NA	NA	NA	NA
Madrone	12-Dec-14	P	NA	NA	NA	NA
Outfall > 36 inches						
Weinke Way	20-Nov-13	P	NA	NA	NA	NA
Weinke Way	26-Feb-14	F	NA	NA	NA	NA
Weinke Way	6-Feb-15	P	NA	NA	NA	NA
Weinke Way	7-Apr-15	P	NA	NA	NA	NA
Weinke Way	3-Dec-15	P	NA	NA	NA	NA
Weinke Way	5-Jan-16	P	NA	NA	NA	NA
Receiving Water (Pre-storm)						
Weinke Way	18-Nov-13	NA	NA	NA	NA	NA
Weinke Way	25-Feb-14	NA	NA	NA	NA	NA
Weinke Way	5-Feb-15	NA	NA	NA	NA	NA
Weinke Way	6-Apr-15	NA	NA	NA	NA	NA
Weinke Way	2-Dec-15	NA	NA	NA	NA	NA
Weinke Way	3-Jan-16	NA	NA	NA	NA	NA
Receiving Water (Post-storm)						
Weinke Way	20-Nov-13	P	P	P	P	NA
Weinke Way	26-Feb-14	P	P	P	P	NA
Weinke Way	6-Feb-15	P	P	P	P	P
Weinke Way	7-Apr-15	P	P	P	P	P
Weinke Way	3-Dec-15	P	P	F	P	P
Weinke Way	5-Jan-16	P	P	P	P	P
Reference Sites						
Gazos Creek	20-Nov-13	P	P	P	P	NA
Gazos Creek	7-Feb-14	P	P	P	P	NA
Gazos Creek	27-Feb-14	P	P	P	P	NA
Gazos Creek	12-Dec-14	P	P	P	P	P
Gazos Creek	7-Feb-15	P	P	P	P	P
Gazos Creek	7-Apr-15	P	P	P	P	P
Tunitas Creek	6-Feb-14	P	P	P	P	NA
Tunitas Creek	26-Feb-14	P	P	P	P	NA
Tunitas Creek	26-Mar-14	P	P	P	P	NA
Tunitas Creek	12-Dec-14	P	P	P	P	P
Tunitas Creek	7-Apr-15	P	P	P	P	P
Tunitas Creek	5-Jan-16	P	P	P	P	P
Natural Water Quality Threshold (85th percentile of reference sites) [b]		**P**	**P**	**P**	**P**	**P**
Ocean Plan Water Quality Objective (Inst. Max.)		**--**	**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix A. CCRMP Results for Fitzgerald ASBS

Pesticides

	Date	Ethoprop (ug/L)	Sulfotep (ug/L)	Fonofos (ug/L)	Diazinon (ug/L)	Parathion, Methyl (ug/L)	Fenchlorphos (ug/L)	Malathion (ug/L)
Outfalls 18 to 36 inches								
Maritime Walk	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Maritime Walk	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Juliana	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Juliana	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Distillery	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Distillery	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Madrone	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Madrone	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Outfall > 36 inches								
Weinke Way	20-Nov-13	0	0	0	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0	0	0	0
Receiving Water (Pre-storm)								
Weinke Way	18-Nov-13	0	0	0	0	0	0	0
Weinke Way	25-Feb-14	0	0	0	0	0	0	0
Weinke Way	5-Feb-15	0	0	0	0	0	0	0
Weinke Way	6-Apr-15	0	0	0	0	0	0	0
Weinke Way	2-Dec-15	SD	SD	SD	SD	SD	SD	SD
Weinke Way	3-Jan-16	0	0	0	0	0	0	0
Receiving Water (Post-storm)								
Weinke Way	20-Nov-13	0	0	0	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0	0	0	0
Reference Sites								
Gazos Creek	20-Nov-13	0	0	0	0	0	0	0
Gazos Creek	7-Feb-14	0	0	0	0	0	0	0
Gazos Creek	27-Feb-14	0	0	0	0	0	0	0
Gazos Creek	12-Dec-14	0	0	0	0	0	0	0
Gazos Creek	7-Feb-15	0	0	0	0	0	0	0
Gazos Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	6-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Mar-14	0	0	0	0	0	0	0
Tunitas Creek	12-Dec-14	0	0	0	0	0	0	0
Tunitas Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	5-Jan-16	0	0	0	0	0	0	0
Natural Water Quality Threshold (85th percentile of reference sites) [b]								
		0	**0**	**0**	**0**	**0**	**0**	**0**
Ocean Plan Water Quality Objective (Inst. Max.)								
		--	**--**	**--**	**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix A. CCRMP Results for Fitzgerald ASBS

Pesticides

	Date	Chlorpyrifos (ug/L)	Tokuthion (ug/L)	Thionazin (ug/L)	Dichlofenthion (ug/L)	Chlorpyrifos methyl (ug/L)	Fenitrothion (ug/L)	Parathion, Ethyl (ug/L)
Outfalls 18 to 36 inches								
Maritime Walk	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Maritime Walk	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Juliana	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Juliana	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Distillery	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Distillery	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Madrone	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Madrone	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Outfall > 36 inches								
Weinke Way	20-Nov-13	0	0	0	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0	0	0	0
Receiving Water (Pre-storm)								
Weinke Way	18-Nov-13	0	0	0	0	0	0	0
Weinke Way	25-Feb-14	0	0	0	0	0	0	0
Weinke Way	5-Feb-15	0	0	0	0	0	0	0
Weinke Way	6-Apr-15	0	0	0	0	0	0	0
Weinke Way	2-Dec-15	SD	SD	SD	SD	SD	SD	SD
Weinke Way	3-Jan-16	0	0	0	0	0	0	0
Receiving Water (Post-storm)								
Weinke Way	20-Nov-13	0	0	0	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0	0	0	0
Reference Sites								
Gazos Creek	20-Nov-13	0	0	0	0	0	0	0
Gazos Creek	7-Feb-14	0	0	0	0	0	0	0
Gazos Creek	27-Feb-14	0	0	0	0	0	0	0
Gazos Creek	12-Dec-14	0	0	0	0	0	0	0
Gazos Creek	7-Feb-15	0	0	0	0	0	0	0
Gazos Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	6-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Mar-14	0	0	0	0	0	0	0
Tunitas Creek	12-Dec-14	0	0	0	0	0	0	0
Tunitas Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	5-Jan-16	0	0	0	0	0	0	0
Natural Water Quality Threshold (85th percentile of reference sites) [b]		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Ocean Plan Water Quality Objective (Inst. Max.)		**--**	**--**	**--**	**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix A. CCRMP Results for Fitzgerald ASBS

Pesticides

	Date	Trichloronate (ug/L)	Ethion (ug/L)	Bifenthrin (ug/L)	Cyfluthrin, total (ug/L)	Cyhalothrin, Total lambda (ug/L)	Cypermethrin, total (ug/L)	Deltamethrin/ Tralomethrin (ug/L)
Outfalls 18 to 36 inches								
Maritime Walk	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Maritime Walk	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Juliana	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Juliana	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Distillery	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Distillery	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Madrone	20-Nov-13	NA	NA	NA	NA	NA	NA	NA
Madrone	12-Dec-14	NA	NA	NA	NA	NA	NA	NA
Outfall > 36 inches								
Weinke Way	20-Nov-13	0	0	0.003	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0.012	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	--	--	--	--	--
Weinke Way	5-Jan-16	0	0	0.003	0	0	0	0
Receiving Water (Pre-storm)								
Weinke Way	18-Nov-13	0	0	0	0	0	0	0
Weinke Way	25-Feb-14	0	0	0	0	0	0	0
Weinke Way	5-Feb-15	0	0	0	0	0	0	0
Weinke Way	6-Apr-15	0	0	0	0	0	0	0
Weinke Way	2-Dec-15	SD	SD	SD	SD	SD	SD	SD
Weinke Way	3-Jan-16	0	0	0	0	0	0	0
Receiving Water (Post-storm)								
Weinke Way	20-Nov-13	0	0	0	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0	0	0	0
Reference Sites								
Gazos Creek	20-Nov-13	0	0	0	0	0	0	0
Gazos Creek	7-Feb-14	0	0	0	0	0	0	0
Gazos Creek	27-Feb-14	0	0	0	0	0	0	0
Gazos Creek	12-Dec-14	0	0	0	0	0	0	0
Gazos Creek	7-Feb-15	0	0	0	0	0	0	0
Gazos Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	6-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Feb-14	0	0	0	0	0	0	0
Tunitas Creek	26-Mar-14	0	0	0	0	0	0	0
Tunitas Creek	12-Dec-14	0	0	0	0	0	0	0
Tunitas Creek	7-Apr-15	0	0	0	0	0	0	0
Tunitas Creek	5-Jan-16	0	0	0	0	0	0	0
Natural Water Quality Threshold (85th percentile of reference sites) [b]		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Ocean Plan Water Quality Objective (Inst. Max.)		**--**	**--**	**--**	**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix A. CCRMP Results for Fitzgerald ASBS

Pesticides

	Date	Esfenvalerate/ Fenvalerate, total (ug/L)	Fenpropathrin (ug/L)	Permethrin, cis- (ug/L)	Permethrin, trans- (ug/L)
Outfalls 18 to 36 inches					
Maritime Walk	20-Nov-13	NA	NA	NA	NA
Maritime Walk	12-Dec-14	NA	NA	NA	NA
Juliana	20-Nov-13	NA	NA	NA	NA
Juliana	12-Dec-14	NA	NA	NA	NA
Distillery	20-Nov-13	NA	NA	NA	NA
Distillery	12-Dec-14	NA	NA	NA	NA
Madrone	20-Nov-13	NA	NA	NA	NA
Madrone	12-Dec-14	NA	NA	NA	NA
Outfall > 36 inches					
Weinke Way	20-Nov-13	0.006	0	0	0
Weinke Way	26-Feb-14	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0
Weinke Way	3-Dec-15	--	--	--	--
Weinke Way	5-Jan-16	0	0	0	0
Receiving Water (Pre-storm)					
Weinke Way	18-Nov-13	0	0	0	0
Weinke Way	25-Feb-14	0	0	0	0
Weinke Way	5-Feb-15	0	0	0	0
Weinke Way	6-Apr-15	0	0	0	0
Weinke Way	2-Dec-15	SD	SD	SD	SD
Weinke Way	3-Jan-16	0	0	0	0
Receiving Water (Post-storm)					
Weinke Way	20-Nov-13	0	0	0	0
Weinke Way	26-Feb-14	0	0	0	0
Weinke Way	6-Feb-15	0	0	0	0
Weinke Way	7-Apr-15	0	0	0	0
Weinke Way	3-Dec-15	0	0	0	0
Weinke Way	5-Jan-16	0	0	0	0
Reference Sites					
Gazos Creek	20-Nov-13	0	0	0	0
Gazos Creek	7-Feb-14	0	0	0	0
Gazos Creek	27-Feb-14	0	0	0	0
Gazos Creek	12-Dec-14	0	0	0	0
Gazos Creek	7-Feb-15	0	0	0	0
Gazos Creek	7-Apr-15	0	0	0	0
Tunitas Creek	6-Feb-14	0	0	0	0
Tunitas Creek	26-Feb-14	0	0	0	0
Tunitas Creek	26-Mar-14	0	0	0	0
Tunitas Creek	12-Dec-14	0	0	0	0
Tunitas Creek	7-Apr-15	0	0	0	0
Tunitas Creek	5-Jan-16	0	0	0	0
Natural Water Quality Threshold (85th percentile of reference sites) [b]		**0**	**0**	**0**	**0**
Ocean Plan Water Quality Objective (Inst. Max.)		**--**	**--**	**--**	**--**

example cells with light red highlighting exceed Natural Water Quality Threshold

example cells with bold red font exceed Ocean Plan WQO (Inst. Max.)

Results below the detection limit are reported as zero.

NA = not analyzed

ND = no data (saltwater interference)

SD = sample destroyed

a. The 85th percentile calculated in Excel using PERCENTILE.EXE function

Appendix B

James V. Fitzgerald Areas of Special Biological Significance (ASBS). Review of County Policies/Programs and Recommendations to Reduce Stormwater Runoff and Non-Point Source Impacts to Water Quality (EOA 2015)

James V. Fitzgerald Area of Special Biological Significance (ASBS)

Review of County Policies/Programs and Recommendations to Reduce Stormwater Runoff and Non-Point Source Impacts to Water Quality

Submitted in Support of Final Report for the County of San Mateo Fitzgerald Marine Reserve ASBS Pollution Reduction Program

Prepared for:
County of San Mateo
400 County Center
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Prepared by:
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1410 Jackson St.
Oakland, CA 94612

March 30, 2015

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LIST OF ABBREVIATIONS

ASBS	Area(s) of Special Biological Significance
BASMAA	Bay Area Stormwater Management Agencies Association
BFLGP	Bay-Friendly Landscaping and Gardening Program
BFQP	Bay-Friendly Qualified Professional
BFLGC	Bay-Friendly Landscaping & Gardening Coalition
BMP	Best Management Practice
C/CAG	City/County Association of Governments
CCA	Critical Coastal Area
CCRMP	Central Coast Regional Monitoring Program
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
DPW	San Mateo County Department of Public Works
ERP	Enforcement Response Plan
FOG	Fats, Oil and Grease
GI	Green Infrastructure
IPM	Integrated Pest Management
LCP	Local Coastal Program
LID	Low Impact Development
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
MST	Microbial Source Tracking
NRCS	National Resource Conservation Service
NPDES	National Pollution Discharge Elimination System
PAH	Polynuclear Aromatic Hydrocarbons
PIP	Public Information and Participation
RCD	San Mateo County Resource Conservation District
SFEI	San Francisco Estuary Institute
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
TMDL	Total Maximum Daily Load
UCD	University of California, Davis
WELO	Water Efficient Landscape Ordinance

1.0 INTRODUCTION

This report summarizes key policies and programs that the County of San Mateo (County) implements that help protect and enhance water quality in the James V. Fitzgerald Marine Reserve, an Area of Special Biological Significance (ASBS). Many of these policies and programs have been recently revised to facilitate compliance with the Special Protections for Beneficial Uses of ASBS (Special Protections). The Special Protections are included with the General Exception to the California Ocean Plan waste discharge prohibition to ASBS that was adopted by the California State Water Resources Control Board (State Water Board) on March 20, 2012. The Special Protections require development of ASBS Compliance Plans by permitted point source dischargers (such as the County) or ASBS Pollution Prevention Plans by nonpoint source dischargers. The County's Draft ASBS Compliance Plan (County 2014) describes how the County, a National Pollutant Discharge Elimination System (NPDES) permitted point source stormwater discharger, is complying with the Special Protections.

The objectives of this report are to a) briefly summarize the existing relevant policies and programs, b) document recent changes to the policies and programs, especially those resulting from implementation of the Draft ASBS Compliance Plan and Special Protections, and c) recommend potential actions and associated improvements to the policies and programs to reduce stormwater runoff and non-point source impacts to water quality in the ASBS watershed.

1.1. Environmental Setting

The Fitzgerald ASBS is located in unincorporated coastal San Mateo County approximately seven miles north of the City of Half Moon Bay and includes the entire three-mile shoreline of the Fitzgerald Marine Reserve (Reserve). Coastal San Mateo County is rural in nature and presents a stark contrast to the densely urbanized areas located only ten miles to the east along the San Francisco Bay peninsula on the opposite side of the Santa Cruz Mountains. The watershed draining to the Fitzgerald ASBS is approximately 4.5 square miles (sq. mi.) or 2,880 acres and includes three relatively small creeks (Montara Creek, Dean Creek, and San Vicente Creek) and coastal bluff areas that drain directly to the ocean (Figure 1).

With more than two-thirds of the watershed in unincorporated rural lands, the dominant land uses are park/open space, ranching and equestrian facilities, small-scale agriculture, residential, light commercial/industrial, and a military facility. Three unincorporated residential communities are located in the watershed: Montara, Moss Beach, and Seal Cove. The urbanized areas are primarily very-low to medium density residential and overall imperviousness in the combined San Vicente, Dean, and Montara Creeks watershed (Figure 1) is estimated at only seven percent (San Mateo Countywide Stormwater Pollution Prevention Program 2002, California Coastal Commission 2008). A relatively limited network of storm drains and culverts directs runoff from some of the developed areas to receiving waters.

1.1.1. Water Quality Impacts

Existing and potential water quality impacts to the Fitzgerald ASBS are typical of those common to rural (e.g., open space, equestrian facilities, and small-scale agriculture), park, and residential land uses. Microbial pathogen indicators (e.g., coliform bacteria) have been identified as pollutants of concern in the area, and both the Reserve and San Vicente Creek are included on the 2010 Clean Water Act (CWA) 303(d) list for coliform bacteria with nonpoint sources identified as the potential source. A Microbial Source Tracking (MST) study conducted as part of the Proposition 84 grant-funded James V. Fitzgerald ASBS Pollution Reduction Program suggested that dogs are a primary source of fecal pollution.

Specifically, the project report stated "of the four host-specific markers that were analyzed (dog, horse, bovine, and human), dog-associated *Bacteroidales* was the most frequently detected host marker in the water, as well as in sediments and biofilms at all sites in the wet season" (SFEI and UCD 2013). A Total Maximum Daily Load (TMDL) to address the impairments is scheduled to be completed by 2019.

Pollutants of concern identified by the Fitzgerald Pollution Reduction Program (reports in preparation), unpublished preliminary water quality data from the Central Coast Regional ASBS Dischargers Monitoring Program, California Coastal Commission (2008), Ocean Plan Exception Monitoring (2007), and County Environmental Health Recreational Water Quality Monitoring Program include:

- Fecal indicator bacteria and urea;
- Trace metals (e.g., copper, nickel, zinc, lead);
- PAHs;
- Sediment related to land use activities (i.e., rural roads, construction, and residential practices) and due to flooding and erosion associated with the inadequate storm drain infrastructure;
- Pyrethroid pesticides (e.g., permethrin); and
- Legacy chemicals (elevated concentrations of DDT and PCBs found in bivalve tissues).

1.2. Existing Policies and Programs

Table 4.1 from the Draft ASBS Compliance Plan (County 2014) lists and summarizes the policies, plans, ordinances, and/or programs that have been developed to protect natural resources throughout the County and the Beneficial Uses of the ocean and other water bodies. This table is included below; additional details are available in the Draft ASBS Compliance Plan. Based on a review of these policies, together with information gained from the Fitzgerald Pollution Reduction Program and identified pollutants of concern, the following areas for improvement were identified:

- Confined Animal Ordinance (Section 2.0)
- Public Green Infrastructure (Section 3.0)
- Private Green Infrastructure (Section 4.0)
- Inspections (Section 5.0)
- Public Outreach and Education (Section 6.0)

The sections below describe existing policies, recent changes, and recommendations for improvements in these areas. Section 7.0 summarizes the recommendations from the various sections above.

Table 1. Table 4.1 (Existing Programs Addressing Water Quality in the Fitzgerald ASBS) from the Draft ASBS Compliance Plan (County 2014)

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
Municipal Regional Stormwater NPDES Permit (MRP) San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)	Municipal operations best management practices (BMPs) Source control at commercial businesses and industrial sites Inspection and follow-up of illicit discharges (e.g., non-stormwater discharges) Construction site BMPs to address sediment, erosion, run-on and run-off control Development site post-construction controls for pollutants and stormwater discharge rates and durations Trash, PCB, copper, mercury, pesticides, and other pollutant controls Public outreach and education Water quality monitoring	Pesticides Metals PAHs Sediment Trash Legacy Organics Other stormwater runoff pollutants
Department of Public Works (DPW) Watershed Protection Program	Permitting and compliance for DPW projects Erosion control design and implementation Development and implementation of Watershed Protection Maintenance Standards for DPW activities Training for County staff Participation in local conservation efforts	Sediment Pesticides Trash Oil & Grease
County Integrated Pest Management Policy	Reduced use of pesticides on property owned or managed by the County to the maximum extent practicable	Pesticides
County Zoning Ordinance Regulations	Prohibit grading activities during wet weather Environmental quality, site design, and water resources criteria No adverse impacts on the quantity or quality of marine and other wildlife	Sediment Pesticides Nutrients Other stormwater runoff pollutants

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
County Confined Animal Ordinance	Detailed drainage and manure management plans required for approval of confined animal permit Setbacks from lakes, creeks, and streams required for animal structures and pastures	Sediment Nutrients Bacteria
County Water Efficient Landscape Ordinance	Applicable projects must comply with State's Model Water Efficient Landscape Ordinance	Non-stormwater discharges
County Stormwater Management and Discharge Control Ordinance (Chapter 4.100)	Prohibits discharges of material other than stormwater into County storm drains unless in compliance with a NPDES permit or a specified exception Requires use of BMPs for any activity or operation which may contribute to stormwater pollution Prohibits littering in streets, storm drains, catch basins, conduits or other drainage structures such that it may become a pollutant	Trash Other stormwater runoff pollutants
Local Coastal Program (LCP)	Runoff containing fertilizers or pesticides must be stored on site and not released to any perennial or intermittent streams, and managed in accordance with U.S. Environmental Protection Agency & Regional Water Board regulations Nonpoint surface runoff control measures Impervious surface zoning standards Buildout and development policies BMPs for new development Erosion and sediment control plans Limited land disturbance and grading restrictions Sensitive species and habitat protections	Fertilizer Pesticides Sediment Other stormwater runoff pollutants
County Environmental Health and RecycleWorks	Education and outreach on topics including green gardening and landscaping, recycling, green business and building, and hazardous waste	Stormwater runoff pollutants
Fitzgerald Marine Reserve Master Plan	Natural resource management Visitor management program Uses and facilities program Water quality improvement program	Stormwater runoff pollutants

Program	Summary of Sources Controlled / BMPs	Primary Pollutants Addressed
Critical Coastal Area Program (CCA) CCA is part of the CA Nonpoint Source Pollution Control Program, administered by the State Water Board and the California Coastal Commission	Pilot project completed for the Fitzgerald Marine Reserve CCA Watershed Assessment completed to identify potential pollution impacts to coastal resources Action Plan was to be developed and implemented to address these impacts and improve water quality; however, the CCA pilot program is currently on hold due to budgetary issues.	Stormwater runoff pollutants
Monterey Bay Sanctuary Citizen Watershed Monitoring Network Snapshot Day and First Flush Monitoring	Water quality monitoring at locations within the Fitzgerald ASBS watershed	pH Temperature, Dissolved oxygen Nutrients Bacteria Metals Suspended sediment
County Environmental Health Recreational Water Quality Program	Bacteria water quality monitoring at locations within the Fitzgerald ASBS watershed	Bacteria
James V. Fitzgerald ASBS Pollution Prevention Program (Proposition 84 Grant-funded)	Storm drain inventory and assessment Microbial source tracking study Implementation of structural BMP retrofits to storm drain infrastructure Retrofit existing parking lot to improve filtration of runoff BMP effectiveness water quality monitoring Public education and outreach Future stormwater pollution reduction planning	Stormwater runoff pollutants

2.0 CONFINED ANIMAL ORDINANCE (CAO)

2.1. Summary of Existing Ordinance

The County Planning and Building Department (Planning) is responsible for the administration of the County's Confined Animal Ordinance (CAO). The CAO helps address bacteria, sediment, and other pollutants of concern in the ASBS watershed by regulating the care and management of confined animals in unincorporated San Mateo County. The CAO requires a confined animal permit or exemption be issued by Planning to regulate the keeping of confined animals. Confined animals are defined as domesticated animals that are kept in confined structures (i.e., not solely in a pasture or range area) and typically have an adult weight exceeding 300 pounds, including but not limited to horses, mules, donkeys, and pot belly pigs.

Permits are required for the keeping of six or more animals in the rural area on land designated Open Space, Agriculture, Timber Preserve or Public Recreation and three or more animals in the urban area on land designated as Open Space, Agriculture or Public Recreation. Exemptions apply to smaller facilities and/or keeping of confined animals in the rural area for less than thirty consecutive days.

2.1.1. CAO Permit Process

Application for a Confined Animal Permit requires submittal for approval of a site management plan which demonstrates conformance to the criteria and standards of the CAO. The site management plan must include drainage and manure management components:

- The drainage component is required to show the confined animal areas, feeding and washing areas, direction of water flow, and proposed site drainage system. Specific drainage standards for confined animals include prohibiting surface runoff from coming into contact with stored animal manure; draining liquids more than ten feet from wells, septic tanks and/or drain fields; and draining animal waste runoff and liquids used to clean confined animals away from creeks, streams, lakes or other water bodies.
- The manure management component is required to include the method for and frequency of collecting, processing, storing and disposing or using the manure produced on-site. Specific manure management standards include requiring all animal waste be collected daily from confined animal structures; limiting stored animal waste for off-site use or disposal from being kept on site more than fourteen days; and requiring stored waste to be covered and separated from the ground by impermeable material.
- Confined animal structures and animal use of the property (including pasture or range areas) are prohibited from being located in lakes, creeks, and streams; within fifty feet of lakes, perennial creeks and streams, and thirty feet of intermittent creeks and streams; in sensitive habitat areas, including riparian corridors and wetlands; within fifty feet of the outward boundary of riparian corridors; within 100 feet of wetlands; on land used for a domestic well or septic tank, or above leach lines; and/or on slopes exceeding 30 percent for structures and 50 percent for animal use.

Planning's permit application review process includes a site visit and request for comments from the County Environmental Health Department, the Confined Animal Technical Advisory Committee, and the local fire agency.

An approved Confined Animal Permit is reviewed every three years for compliance with the conditions of approval. The review process includes a site inspection by Planning staff for zoning compliance, and a site inspection by Environmental Health staff for manure management and drainage compliance.

In accordance with the CAO, progressive enforcement action will be taken to bring noncompliant facilities into compliance. The initial identification of a facility's noncompliance with County Ordinance and regulations will result in the issuance of a written notice to the owner/operator for corrective action, the nature of the violation, the process to remedy the violation, and a specified date (up to 3 months after the date of violation, depending on the nature of the violation) by which corrective action shall be taken and/or re-inspection will occur. If corrective action is not taken by the specified deadline, the case is referred to the County Code Enforcement Division for further enforcement action. The Code Enforcement Division will issue a notice of violation with a two week deadline for compliance. If compliance is not made, Administrative Citations would be issued with fines pursuant to County Ordinance Code Section 1.40.010. If additional time is needed to correct the violation, the owner/operator must submit a timeline/schedule for compliance for review and approval by the County that demonstrates timely efforts toward compliance. Continued neglect to correct a violation will result in revocation of the permit, possible legal action and/or abatement by the County.

2.1.2. CAO Exemption Process

Confined animal keepers seeking exemption from the Confined Animal Permit must demonstrate to Planning the following:

- The keeping of confined animals conforms with the: (1) minimum parcel area, (2) maximum number of animals, (3) prohibited locations, and (4) minimum setback provisions of the CAO.
- Confined animal structures are not located within 300 feet of the inland extent of any beach, or of the mean high tide line where there is no beach.
- Confined animal structures are not located within 100 feet of any wetland, estuary, or stream, or within 300 feet of the top of any coastal bluff, or within 50 feet of the riparian corridor.
- Confined animal structures are not located on slopes of thirty percent (30%) or greater.
- Confined animal structures are not located within 50 feet of a domestic well, or above a septic system.
- The keeping of confined animals will include runoff control and manure management measures that protect water quality, sensitive habitats, and other significant environmental resources from potential adverse impacts.

Planning staff reviews the information and conducts a site visit prior to issuance of a certificate of exemption. The CAO does not currently require periodic review of exemptions.

2.2. Summary of Recent Relevant Changes

The current version of the CAO is dated 2001. No changes have been made since that time.

2.3. Recommended Future Improvements

Planning is currently in the process of reviewing the CAO, including review with the designated Confined Animal Technical Advisory Committee, for improvements to the current enforcement process to ensure such process is applied in an appropriate and timely manner and to update the frequency of inspections for confined animal facilities within the San Pedro Creek watershed. This review will be completed by April 30, 2015. Proposed amendments to the CAO must be brought to the County's Board of Supervisors

for approval. Progress of this review will be reported to the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) with the County's next (FY 2014/15) Bay Area Stormwater Municipal Regional Permit (MRP) Annual Report due September 15, 2015.

Recommendations for updates to the CAO include:

- Update the CAO to specifically acknowledge and address the sensitive receiving water resources in the Fitzgerald ASBS that are subject to the Special Protections, and other areas where more rigorous water quality protection efforts are warranted, such as the San Pedro Creek watershed in the City of Pacifica for which a bacteria Total Maximum Daily Load (TMDL) was adopted in 2012.

- Conduct more frequent (e.g., annual) review, including site inspections, of facilities within the ASBS and San Pedro Creek watersheds holding Confined Animal Permits.

- Conduct reviews, including site inspections, of facilities holding certificates of exemption every three years. These facilities include those with up to five animals in the rural area and up to two animals in the urban area.

- Change the enforcement process to follow the procedures for code enforcement of stormwater related violations, as detailed in the Planning and Building Department and Department of Public Works Stormwater Enforcement Response Plan.

- Add staff from the County Office of Sustainability, which was formed in July, 2014 as a pilot program of the County Manager's Office, to the Confined Animal Technical Advisory Committee or request Office of Sustainability staff's review and comment on Confined Animal Permit applications.

- Include an educational component developed by Planning staff to the review process for Confined Animal Permits and facilities holding exemptions. The education component could include development (or adoption) of a guidebook describing equestrian-related and pertinent Bay-Friendly Landscaping Best Management Practices (BMPs) that protect water quality. Site inspectors could engage facility owners/operators in discussions regarding sensitive receiving waters (e.g., Fitzgerald ASBS) and state-of-the-art manure management methods (e.g., composting), and could distribute Fitzgerald Pollution Reduction Program educational materials and the new (or adopted) BMP guidebook. The County may decide to use the Council of Bay Area Resource Conservation Districts' Horse Owners Guide to Water Quality Protection until an ASBS-specific version is developed. Encourage facility operators and owners to seek technical assistance from other agencies, such as the San Mateo County Resource Conservation District (RCD).

It is also recommended that the County develop a new ordinance or update an existing ordinance (e.g., stormwater ordinance) to address management of excreta from other domestic animals such as dogs and cats.

3.0 PUBLIC GREEN INFRASTRUCTURE

A new vision has emerged that entails the use of Green Infrastructure (GI) through a holistic hierarchy of stormwater management that considers stormwater a resource instead of hazard:

1. Reduce: Convert existing impervious surfaces to pervious surfaces and construct new surfaces where possible with permeable pavements that allow water to infiltrate into the subsoil, thereby reducing the run-off of stormwater at its source.
2. Re-direct: Convey the flow from any remaining impervious surfaces to sustainable landscapes employing the natural processes of trees, plants, soil and the biological communities in that soil to treat and clean stormwater.
3. Re-use: Consider rainwater as a resource and use it in place of potable water for irrigation or toilet flushing, thus saving potable water for the highest and best use – drinking.

GI has grown out of the field of Low Impact Development (LID), which has traditionally been used at the parcel level to reduce site run-off and protect or restore natural hydrologic functions. GI can be thought of as the "re-spongifying" of the urban watershed – both public and private properties.

This section of the report discusses GI in the public realm and the process of institutionalizing changes to standard municipal engineering, planning and maintenance processes to reduce the run-off of polluted stormwater from municipally owned roadways, sidewalks, parking lots and landscapes. The historical practice of directing urban run-off as quickly and efficiently as possible to lakes, rivers, creeks, bays and oceans with concrete, asphalt and pipes is no long accepted. Now the mantra is "slow it, spread it, and sink it" as reflected in the hierarchy above. Communities in the Bay Area and all over the world are rediscovering old practices, such as building roads out of pavers, to reduce pollution and restore the health of local watersheds. These newly designed roadways are called Green Streets and are one aspect of GI. Other key components of GI are parks, the urban forest and other planted landscapes. However, not all vegetated landscapes are sustainable and they can create pollutants of their own. Combining the concepts of Bay-Friendly Landscaping with GI creates a program tailored to the local climate. If the Bay Area is to become more resilient in the face of climate change, droughts and sea-level rise, the landscaping used in GI needs to be designed in a holistic manner that addresses these issues as well as stormwater permit requirements.

3.1. Summary of Existing Relevant Policies and Programs

LID concepts were first incorporated into the stormwater permits in the Bay Area in 2001. The MRP expanded those concepts into LID site design and treatment requirements and also began to address LID in the public right-of-way. The MRP requires that new roadways and roadways adding a travel lane that are replacing or creating over 10,000 square feet of contiguous impervious surface incorporate LID measures. There are currently no requirements for road projects within the existing road footprint or for retrofits of existing roads, except for an already completed requirement to implement ten Green Street pilot projects throughout the Bay Area.

The next MRP, anticipated to be adopted during 2015, will likely include requirements for greatly expanded public right-of-way GI planning and early implementation, including opportunistic retrofitting of existing roadways. GI will also likely be used to help meet the provisions of the permit related to pollutants of concern such as PCBs, mercury and trash. When properly designed and maintained, GI is generally effective at reducing levels of a wide range of pollutants in stormwater, including microbial

pathogens and associated indicator organisms (e.g., coliform bacteria), suspended sediments, organics (e.g., PAHs, PCBs and many pesticides), and metals (e.g., copper, zinc and nickel) (BASMAA 2015).

The anticipated (though currently under development) approach for the next MRP can be summarized as follows:

- Use GI (both in public right-of-way and private projects) as part of long-term compliance with mercury/PCB, trash and C.3 provisions.
- Initiate programs to coordinate long-term GI planning.
- Leverage private development to incorporate GI in public right-of-way, as feasible.
- Review capital improvement program projects for GI opportunities.
- Adopt GI resolutions committing Permittees to GI policies and procedures.
- Train staff, contractors and public on benefits of GI.
- Track and report on implementation progress.
- Coordinate with transportation stakeholders to include GI in transportation funding mechanisms.

3.2. Summary of Recent Relevant Changes

As part of the prioritization and planning process, impervious cover area in each watershed draining to the ASBS and vicinity was estimated in the Critical Coastal Areas Program Pilot Project. Based on established relationships between impervious area and aquatic habitat degradation, percent impervious area has been identified as a predictor of stream health. Degradation, including channel erosion, reduced groundwater discharge, and increased flooding, has been observed in watersheds with as little as 10 percent impervious area. Watersheds with 10 to 25 percent impervious area may experience major alterations in stream morphology. Watersheds with over 25 percent impervious area suffer from loss of habitat, lack of floodplain connectivity, bank instability, and decreased water quality. Current impervious area in the San Vicente, Dean, and Montara watersheds was estimated at 7 percent, which is below the threshold for stream health degradation. Future development in the watersheds could increase impervious area; however, development is constrained by Local Coastal Plan restrictions (San Mateo Countywide Stormwater Pollution Prevention Program 2002, California Coastal Commission 2008).

Based on the impervious cover data and the low amount of existing and planned development and redevelopment activity in the area, the County's GI efforts to-date have focused on achieving water quality improvements in the ASBS watershed through retrofits of existing roadside ditches into vegetated swales, a green streets project along Carlos Street in Moss Beach, and a parking lot retrofit at the Fitzgerald Marine Reserve with stormwater quality and quantity control BMPs. Over the last several years the County has implemented 21 BMPs at 17 locations throughout ASBS watershed including BMPs addressing 11 direct storm water discharges to the ASBS.

3.3. Recommended Future Improvements

The conversion of publicly owned infrastructure from gray to green is a decades-long process that encompasses and affects many San Mateo County policies and programs. The Departments of Planning and Building, Parks, Public Works, Fire, Police, Health, Environmental Health, Legal, Economic Development and Finance, and Office of Sustainability, are all involved in planning and implementing long-term sustainable changes to the streets, drainage systems, open spaces, parks, buildings, landscapes and other facilities that are County controlled and/or owned within the ASBS. The County is

still in the early stages of collecting data, setting priorities and making long term planning decisions about how to best spend limited available funds on achieving water quality objectives within the ASBS watershed.

It is recommended that the County continue to gradually convert its public infrastructure within the ASBS watershed from gray to green and to use resources, such as the Countywide Sustainable Green Streets and Parking Lots Design Guidebook, to prepare for the new MRP requirements – both in planning and public works. The Guidebook is an award-winning document that illustrates a set of tools for implementing sustainable GI into the public right-of-way design process. It integrates multi-modal active transportation concepts with stormwater quality and quantity practices to help municipalities take the next step towards implementing more sustainable public projects.

More specific recommendations are listed below and grouped according to the applicable department:

Department of Public Works (DPW):

A. Highlight the following on the main DPW web page:

   http://publicworks.smcgov.org/

   1. General GI Approach and Priorities - Add information about GI and the priorities for DPW. Outline what DPW and others are doing to gradually convert from gray to green throughout the county and specifically in the ASBS.
   2. ASBS Prop 84 Grant – Provide GI project details for BMPs in public right-of-way on DPW website or provide link to Fitzgerald ASBS Pollution Reduction Program page (http://smchealth.org/asbs) that includes project details. DPW will coordinate with other County Departments as appropriate (e.g., the Office of Sustainability) and the RCD on the highlighting of the improvements completed.
   3. Bay-Friendly Landscaping and Gardening Program (BFLGP) and Training/Certification – Highlight what DPW is doing in this area.
   4. Develop additional County website features such as done by the San Francisco Public Utilities Commission with their GI projects, interactive map and Typical Details:
      http://sfwater.org/index.aspx?page=614
      http://sfgov.maps.arcgis.com/apps/MapTour/index.html?appid=1c85679029a541c48d4a6aa0826f0a00&webmap=43fa8343164744448f66b6d519678196#
      http://sfwater.org/sdg

B. Establish goals to train and achieve Bay-Friendly Qualified Professional (BFQP) status for all DPW maintenance crews (landscape and roadway) in a BFLGP O&M program by 2018. For example, the City of Oakland requires that all of their park and landscape maintenance staff become Bay Friendly Qualified Professionals in order to work full time and/or be eligible for promotion (95 staff have now completed the training as of 2015), and Section 3.5.1 of the City's Environmentally Preferable Purchasing policy (EPP) requires Bay Friendly maintenance for City landscapes (Oakland EPP 2007). The County should work with the Friends of Fitzgerald Marine Reserve and other local groups to customize Bay-Friendly Landscaping maintenance standards for the ASBS watershed, educating the public on the benefits of the Bay-Friendly Landscaping at the same time. The County could work with the BFLGP to re-brand the BFLGP as an Ocean-

Friendly LGP or some other similar name as other agencies have done in California such as River-Friendly and Lake-Friendly.

C. Review any projects that the County has planned for new or retrofits of landscaping and/or streets and modify those projects as possible to add GI or Bay-Friendly elements in the ASBS watershed. Note: MRP 2.0 approach may include reviewing all capital improvement program projects for GI opportunities.

D. Develop Bay-Friendly Landscaping stormwater treatment system details for urban forestry. See example of City of Fremont details: http://www.fremont.gov/232/Landscape-Architecture

E. Continue to work with SFEI to generate recommendations for prioritized LID and GI implementation locations and seek possible grant funding to implement those projects.

Department of Planning and Building:

A. Make improvements to Planning websites:

https://planning.smcgov.org/stormwater-pollution-prevention-projects

http://planning.smcgov.org/areas-special-biological-significance

1. Add information about GI, Bay-Friendly Landscaping, the Water Efficient Landscape Ordinance and the priorities for Planning. Outline Planning's role in the gradual conversion of public infrastructure from gray to green throughout the county and specifically in the ASBS.
2. Add information on what the County is considering related to the incorporation of GI into various planning documents such as those below in item C, and especially those related to the ASBS watershed.

B. Make improvements to Building website:

https://planning.smcgov.org/building

Over time, with the addition of CALGreen and other similar sections of the new building code, the Building Department's scope and mission have been broadened from life and safety only to include water quality and other environmental issues like energy efficiency. The website could include information on the following: Rainwater Harvesting as described and defined in the 2013 Plumbing Code, the Rain Barrel Rebate Program from SCMWPPP, LID requirements for new development projects in the MRP, Water Efficient Landscaping Ordinance (WELO) requirements from the State and/or County and information on the drought as it relates to the construction of new landscapes and buildings.

C. Begin to incorporate GI into County planning documents such as: Active Transportation (Bike/Pedestrian/Transit), Open Space/Parks, General and Specific Plans, and Urban Forestry.

4.0 PRIVATE GREEN INFRASTRUCTURE

4.1. Summary of Existing Relevant Policies and Programs

As a Permittee of the MRP, the County is required to implement Provision C.3 of the permit which relates to development projects. GI and Low Impact Development (LID) are keystone concepts in Provision C.3 which requires projects to use design strategies that increase perviousness, infiltration, evapotranspiration, harvesting and use of rainwater and biotreatment. Provision C.3 also requires appropriate source control measures to reduce pollutants from coming into contact with stormwater and for larger projects, the reduction of peak flows to creeks that are at risk of erosion.

The next MRP will likely be adopted during 2015 and is anticipated to require increased implementation of LID and GI with tie-ins to provisions of the permit related to pollutants of concern.

As part of the Proposition 84 grant-funded portion of the Fitzgerald Pollution Reduction Program, sustainable back yard assessments were conducted by the RCD with assistance from the National Resource Conservation Service (NRCS), and design plans for LID/BMPs (e.g., rain gardens, swales, rain water catchment systems, permeable driveways) were developed for nine properties in the ASBS watershed. These projects will be implemented over the next year and will serve as demonstration sites for the community.

The land uses within the ASBS watershed (as shown in Figure 1 below) are primarily open space with low density single family residential and some small commercial. Current and projected levels of redevelopment are low which affects the effectiveness of various strategies that are available. Further discussion of this is included in Section 4.3.

As landscaping is a key component of the LID and GI approach, it is crucial that the design, construction and maintenance of that landscaping be done using sustainable practices. Otherwise pollutants from the landscape can actually worsen water quality. The MRP recommends the use of the Bay-Friendly Landscaping program. Its holistic sustainable approach to landscaping is appropriate for the region's climate and covers all the best management practices of a landscape including water quality. Bay-Friendly Landscaping in tandem with LID requirements for private development can create a powerful partnership for implementing GI and converting watersheds to a more sustainable and healthy ecosystem. Other methods for getting Bay Friendly Landscaping out into the community include working with education programs in schools, community workshops, nurseries and Master Gardeners. Possible partners in this effort include SMCWPPP, RecycleWorks, and the County's Green Business Program, RCD, Agricultural Extensions and School Districts.

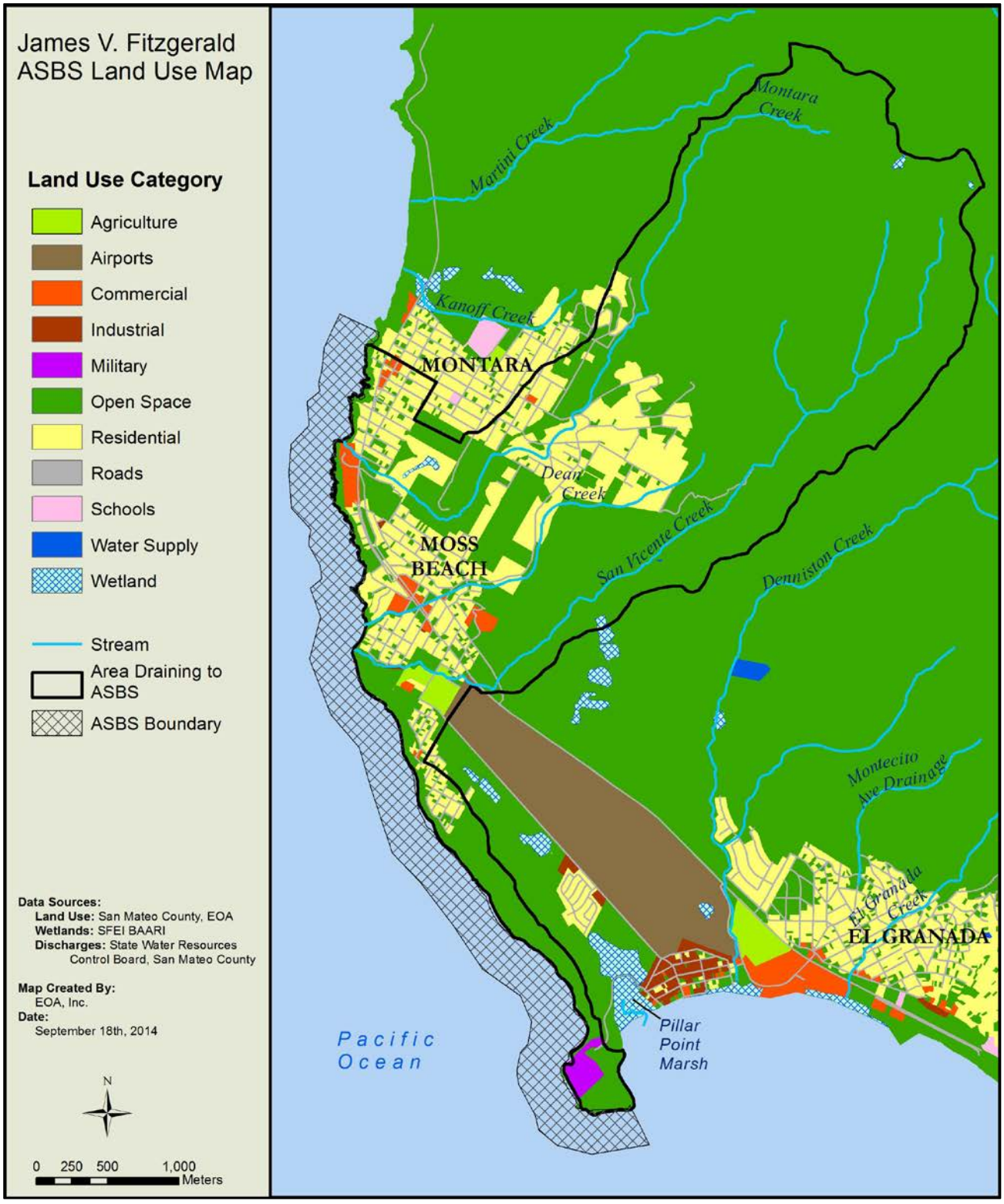

Figure 1. Land Use in the Fitzgerald ASBS Watershed

4.2. Summary of Recent Relevant Changes

Recently adopted new policies and programs related to LID and private GI include:

1. The County formed a New Project Review (NPR) committee in 2014 to improve the planning permit review process by creating a forum where applicable reviewing agencies can conduct an initial joint review of new projects. The NPR committee provides an initial review of the project's stormwater compliance to identify whether additional details or site plan modifications are needed to address stormwater management and compliance with the MRP. The County began using a new process in Planning with the updated C.3 - C.6 Project Checklist in 2014. The new checklist helps streamline the project review process for County staff and applicants and summarizes the data required for the annual stormwater report submitted to the Regional Water Board.
2. The San Mateo County Office of Sustainability was created in 2014 by the County Manager's office. Its tasks include coordinating NPDES compliance activities and the annual stormwater report, TMDL compliance, programs related to implementation of the Climate Action Plan, and interdepartmental communication and coordination related to sustainability activities.

4.2.1. Planning and Building Permit Counter

Planning, through its development/redevelopment project review and approval process and its role as an information clearinghouse for private property developers, has several opportunities to educate the public about ASBS water quality issues and require related mitigating measures. For example, the County addresses non-stormwater discharges by using the Planning development review process to identify and require new/replaced hardscaped areas that could be used for car washing (e.g., driveways) to pipe/drain to adequately-sized vegetative areas or other on-site treatment facilities prior to discharge to any County storm drain system. Nutrients, pesticides, and over-irrigation (i.e., non-stormwater discharges) are addressed through the Planning review process by requiring the use of drought tolerant and native vegetation and prohibiting fertilizer and pesticide use through conditions of approval within the ASBS watershed. As part of its public information/assistance service, Planning relies on staff to educate citizens at the public assistance counter about the concerns of polluted irrigation water and other chemical discharges to the ASBS. In addition, Planning implements the State of California Model Water Efficient Landscape Ordinance (effective January 1, 2010) which seeks to promote the conservation and efficient use of water. Planning and DPW review new development project plans for compliance with MRP Provision C.3 and as appropriate require those projects to include site plans with adequate stormwater management practices.

4.3. Recommended Future Improvements

The current County Water Efficient Landscape Ordinance (WELO) and MRP Provision C.3 thresholds require LID as large projects come forward with proposals for the complete demolition and re-design of existing properties and small projects come forward with proposals for retrofits or new buildings and landscapes. However, for the low density, rural and small commercial land uses common within the ASBS watershed with thresholds under the current MRP and County municipal codes, LID actions are unlikely to occur.

It is recommended that the pace of private GI conversion be increased through several programs:

A. Adopt and implement new lower WELO and Provision C.3 thresholds specific to the ASBS watershed to require LID on smaller commercial and single family properties as buildings and

landscapes are renovated or refurbished. Lower the current thresholds in the WELO (to 500 or 1,000 sq. ft.) and in the County Stormwater Management and Discharge Control ordinance (Title 4, Chapter 4.100 and specifically Section 4.140 of the County Municipal Code) to all works of grading and paving for projects within the ASBS watershed. Add more Bay Friendly Landscaping required elements to the WELO and Water Conservation in Landscaping (Section 4.36.120 of the Municipal Code) such as the use of compost as a soil amendment. Programs modeling this approach include:

- StopWaste: http://stopwaste.org/preventing-waste/landscape-policies-ordinances
- City of Union City http://www.ci.union-city.ca.us/departments/economic-community-development/planning
- City of Emeryville WELO and Stormwater Ordinance http://emeryville.org/519/Plans-Programs

B. Adopt and implement new rebate programs to incentivize retrofitting existing properties with LID (e.g., rain barrels, rain gardens, pervious pavement, and green roofs). Building on the current City/County Association of Governments (C/CAG) rain barrel rebate program (flowstobay.org/rainbarrel), create more rebates and incentive programs for the ASBS watershed residents and businesses. Model programs include:

- RainScapes Rebate Program – Montgomery County www.montgomerycountymd.gov/dep/water/rainscapes-rebates.html www.montgomerycountymd.gov/DEP/water/rainscapes.html
- "Downspout Re-Direct" rebates - Santa Cruz County water agencies like Soquel www.soquelcreekwater.org/conserving-water/rebates/downspout-re-direct
- City of Palo Alto Rebate Program www.cityofpaloalto.org/gov/depts/pwd/stormwater/rebates/default.asp

C. Consider working with C/CAG to restore the SMCWPPP Community Action Grants for small residential projects or school projects.

D. Consider adopting and implementing new regulatory means to require over time the retrofitting of existing properties at time of sale and/or by a specified certain date. This can be done by the adoption of an LID ordinance or the modification of the existing Stormwater ordinance with specific regulations for the ASBS watershed with time of sale or date-certain mechanisms, Post-Construction Soil Standards, landscaping minimums and site design measures. Model programs include:

- EBMUD – Private Sewer Lateral Ordinance www.eastbaypsl.com/eastbaypsl
- Soils for Salmon program from Seattle area www.soilsforsalmon.org
- San Jose – Municipal Code and LID Policy

www.stormwater.sanjoseca.gov/planning/stormwater/

E. Develop new outreach programs or better coordinate existing programs to educate residents and local businesses about water quality concerns, water saving landscaping methods and sustainable landscaping benefits to encourage additional voluntary property improvements. Note that SMCWPPP is already doing some outreach on behalf of the County and other Permittees.

1. Develop a LID guidance brochure or booklet primarily targeted to small-scale and residential projects. Model programs include:

   - San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) C.3 Technical Guidance Manual
   - SMCWPPP Green Streets Guide
   - RCD Rural Roads guide and other RCD information
   - Bay-Friendly Landscaping and Gardening Coalition
   - Santa Cruz RCD "Slow it, Spread it, Sink it"
   - Bay Area Stormwater Management Agencies Association (BASMAA) Fact Sheets
   - SMC Planning ASBS website
   - SMCWPPP Rain Barrel rebate
   - Bay Area Eco Gardens - SCVURPPP
   - The measures developed for the Proposition 84 grant project (but not yet constructed), including photos and design details.

   The brochure should include the following elements:

   - Midcoast/ASBS specific – for permit applicants located within the ASBS watershed and broader MidCoast area
   - Use layman's language with many example photographs of local projects
   - Background section on the ASBS and stormwater quality
   - Pesticide/herbicide alternatives (Bay-Friendly Landscaping)
   - Pet waste
   - Use and proper disposal of hazardous materials (paints, solvents, etc.)
   - Sewer lateral/septic maintenance & resources
   - O&M recommendations
   - Cautions – soil type, coastal erosion, septic drain fields
   - Permitting requirements and regulations
   - Funding options

2. Increase education about watersheds and water quality in schools located in the ASBS watershed, especially in relation to LID/GI and Bay-Friendly Landscaping and Gardening. For example, educational programs such as the Banana Slug String Band outreach program and RecycleWorks could be enhanced, and participation in Oceans Week activities at Farallone View Elementary should continue. A model program to consider is the "Keep it Clean Downstream" Partnership with signage in Boulder, Colorado. http://www.keepitcleanpartnership.org/

3. Conduct enhanced outreach to architectural copper vendors and installers in the ASBS watershed. The SMCWPPP architectural copper BMP flyer should be customized for the ASBS watershed. Architectural copper vendors who provide services to property owners in the ASBS watershed should be contacted and provided with the updated flyer via email.

5.0 INSPECTIONS

This section focuses on construction site, industrial and commercial facility, and storm drain outfall inspections conducted by the County. The frequency of these types of inspections was recently increased to comply with the Special Protections. Other types of inspections performed by the County are not addressed here. The inspections described below are intended to help address a variety of pollutants of concern typically found in urban stormwater runoff. In addition, where applicable, inspections are used as an opportunity for public outreach.

5.1. Summary of Existing Relevant Policies and Programs

The County is a Permittee under the Bay Area Stormwater Municipal Regional Permit (MRP) (Order No. R2-2009-0074). The MRP contains requirements for Permittees to implement a Construction Site Control Program, a Commercial/Industrial Site Control Program and a Collection System Screening Program. The MRP has minimum inspection requirements and minimum legal authority requirements for all three programs.

The County meets the legal authority requirements through San Mateo County Municipal Code Chapter 4.100 Storm Water Management and Discharge Control. Chapter 4.100 provides the legal authority for the County to require BMPs at any construction site, commercial business or industrial facility that may cause or contribute to stormwater runoff pollution and perform inspections to determine whether a site is in compliance with the local ordinance. The ordinance also provides enforcement authority for inspectors to bring sites into compliance as needed.

5.1.1. Construction Sites

The County Construction Site Control Program includes all construction sites. The minimum inspection frequency required by the MRP is to inspect each construction site once a month during the wet season, from October through April, if the site disturbs one acre or more of land or has been identified by the County as high priority. Violations found during inspections must be corrected within 10 business days or by the next rain event to be considered corrected in a timely manner. This requirement in the MRP is also established in the County's Stormwater Enforcement Response Plan (ERP) for the Municipal Stormwater Program (revised May 17, 2013).

The County identifies construction sites that must be inspected through their plan approval and permitting process. The Building Department is responsible for inspecting private construction sites and DPW Construction Management or Watershed Protection Inspectors are responsible for inspecting County public construction sites.

5.1.2. Industrial Facilities

Industrial facilities that meet the requirements of the Statewide Industrial Stormwater General Permit (Order 2014-0057-DWQ to become effective July 1, 2015) must file a Notice of Intent (NOI) to be covered under the permit. The MRP requires that these NOI facilities be inspected by the Permittees as part of their Commercial/Industrial Site Control Program. The prioritization and frequency of inspection is documented in a Business Inspection Plan. The County's Business Inspection Plan requires that NOI facilities be inspected annually. These inspections are conducted by County Environmental Health (CEH) Department inspectors at the same time as the Certified Unified Program Agency (CUPA) hazardous materials/waste inspections.

5.1.3. Commercial Businesses

The MRP requires Permittees to inspect commercial facilities that could reasonably be considered to cause or contribute to pollution of stormwater runoff. The business types and individual businesses identified by the County for stormwater inspections are documented and prioritized for inspection in their Business Inspection Plan. High priority businesses are inspected annually, medium priority businesses are inspected once every two years and low priority businesses are inspected at least once during the five year MRP permit term. These inspections are coordinated, if possible, with the CUPA hazardous materials/waste inspections or food service establishment inspections.

5.1.4. Storm Drain Outfalls

The MRP Collection System Screening Program requires Permittees to conduct a survey of strategic collection system check points once each year during dry weather conditions. Routine surveys that occur during regular conveyance system maintenance inspections count toward this requirement.

5.2. Summary of Recent Relevant Changes

The Special Protections require an inspection program with minimum inspection frequencies for construction sites, industrial and commercial facilities, and storm drain outfalls in the ASBS watershed. In most cases, Special Protections inspections are more frequent than those required under the MRP or other programs. In 2014, the County updated their various inspection plans to make them consistent with Special Protections requirements.

5.2.1. Construction Site Inspection Program

The Special Protections require weekly inspections at construction sites during the rainy season. The County's program to meet MRP requirements required monthly inspections during the rainy season with a follow-up inspection conducted within 10 business days (or before the next rain event) if the site has a violation. There is no ordinance change necessary to meet the new Special Protections requirement. However, the additional inspections increase the work load of Building Department staff, necessitating adjustments in the number of staff conducting these inspections and/or staff workloads, and possibly the inspection fee program.

The MRP requires monthly inspections at sites disturbing 1 acre or more and high priority sites as determined by the County. The threshold for the ASBS inspections is construction sites that involve soil disturbance and are subject to a building or grading permit. Weekly inspections during the entire rainy season are typically required for sites that have grading permits. Building permits can be issued for projects with minimal ground disturbance where the duration of ground disturbance is typically less than one week (e.g., footings for a new deck). For sites triggered by a Building permit where the ground disturbance is minimal, the duration of disturbance is estimated to be less than one week, the area of work is flat, and proper erosion control measures are proposed, the County relies on Building (or Planning) Department staff to verify the area of work is stabilized prior to final building inspection. Given the number of construction projects with a grading permit or building permit in the Fitzgerald ASBS watershed in past several years, it is estimated there is likely to be 3 - 6 construction sites that require weekly inspections during the rainy season and 3 - 5 sites that require limited inspections due to the minimal scope of the project in any given year.

5.2.2. Industrial Facilities Site Inspection Program

The Special Protections require monthly inspections at industrial facility sites during the rainy season. The County's program to meet MRP requirements required annual inspections. Ordinance or staffing changes have not been needed to meet the new Special Protections requirements since currently there are no NOI facilities in the Fitzgerald ASBS watershed.

5.2.3. Commercial Business Site Inspection Program

The Special Protections require two inspections of each commercial business, including restaurants, during the rainy season. There are approximately 35 commercial businesses in the Fitzgerald ASBS watershed. The County's program to meet MRP requirements required, at a maximum, annual inspections at 6 of these commercial sites (5 restaurants and 1 gas station). There is no ordinance change necessary to meet the new Special Protections requirement. However, the additional inspections increases the work load of CEH staff, necessitating adjustments in the number of staff conducting these inspections and/or staff workloads.

Currently the ASBS inspections for the 35 commercial sites are conducted by a single inspector who is solely responsible for stormwater-related inspections. The results of these inspections are recorded in an Excel spreadsheet. This inspector is not a permanent employee of the County and it is unknown how long this option for conducting inspections will remain viable.

5.2.4. Storm Drain Outfall Inspection Program

The Special Protections require two inspections annually, before and during the rainy season at storm drain outfalls 18 inches or greater in diameter. The County has five outfalls in the Fitzgerald ASBS watershed that are greater than 18 inches.

Similar to the MRP Collection System Screening Program, routine maintenance surveys that occur during regular conveyance system inspections count toward this requirement. The inspection of the outfalls prior to the rainy season is coordinated with the dry weather survey required by the MRP Collection System Screening Program. The second inspection conducted during the rainy season is coordinated with any routine maintenance or inspections that happen to occur during that period. If no routine activities have occurred at the outfalls an inspection for the outfalls is scheduled. ASBS discharge inspections and the collection system screening inspections are documented on the SMCWPPP Collection System Screening Forms.

The DPW Road Services Division conducts inspections at these five discharge outfalls and removes trash and other anthropogenic debris according to the Special Protections. Currently, County DPW staff assigned to ASBS compliance track ASBS outfall inspection needs and inform Road Services Division staff via email communication.

5.3. Recommendations for Potential Future Improvements

The following sections discuss potential future improvements to the construction site, industrial facility, commercial facility, and storm drain outfall inspection programs.

5.3.1. Construction Site Inspection Program

The County is currently conducting the weekly construction site inspections by simply adding the additional inspections onto the site's assigned inspector. Currently the Building Department has five building inspectors that cover nine inspection areas throughout the County. It is not uncommon for an inspector to cover, on average, 10 construction sites per day over more than one inspection area. Thus

adding even a small number of sites to an inspector's schedule can make an inspector's workload challenging.

Other ASBS jurisdictions have found it efficient to conduct all of the required inspections on a single day by a single inspector. For example, one inspector conducts all of the ASBS required inspections on Friday every week. Other jurisdictions have found it possible to conduct more than 20 sites in a day. The number of sites that can be inspected per day depends on the locations of the sites and how close together they are located. Jurisdictions that currently bill sites for an inspector's time to conduct construction site inspections are continuing to bill this way even though going from monthly to weekly inspections may result in approximately a 400% increase in the total fee. Some jurisdictions are hoping such increases in permit fees will provide an incentive for projects to conduct earth moving activities during the dry season.

5.3.2. Industrial Facilities Site Inspection Program

At this time improvements to this inspection program are not applicable because there are no NOI Industrial Permit facilities in the Fitzgerald ASBS watershed.

5.3.3. Commercial Business Site Inspection Program

The County uses commercial site inspections as an opportunity to verbally educate businesses regarding stormwater pollution prevention. During future inspections, the County will also provide applicable BMP brochures to businesses that can be shared with all employees. This will enhance the public outreach aspect of the inspections.

Currently the County inspects all 30 commercial businesses in the Fitzgerald ASBS watershed twice during the rainy season using a dedicated stormwater inspector. The County has found that 24 of these sites have land uses such as office space that are unlikely to cause or contribute to pollution of stormwater runoff. It is recommended that after the 2014-15 rainy season the County removes these 24 sites from the ASBS Special Protections inspection list. At that time the 24 sites will have been inspected at least twice and received general stormwater public outreach materials. If there is a change in the site activity or owner, indicated during the business licensing process or by other means (e.g., by an inspector driving by the businesses), the County could inspect the business to confirm the site is still not reasonably considered to cause or contribute to pollution of stormwater runoff and provide the new owners and/or operators with general outreach material on stormwater pollution prevention.

The County will continue to inspect the 6 remaining commercial sites (5 restaurants and 1 gas station) twice during each rainy season. The County may continue to have a dedicated stormwater inspector conduct the inspections at these sites. Alternatively, the County may choose to coordinate at least one of the Special Protections-required inspections each year with the routine MRP stormwater inspections conducted concurrently with food service establishment health or CUPA inspections.

The County may explore contracting the second Special Protections-required stormwater inspections for restaurants to the Sewer Authority Mid Coastside (SAM). Moss Beach and Montara, which contain all of the commercial businesses that have Special Protections inspection requirements, are served by the SAM wastewater treatment plant. SAM requires restaurants in their service area to install grease removal devices. SAM is developing a program to inspect these devices annually, at a minimum. The inspections may be conducted by SAM or SAM may contract with another local wastewater treatment plant's Fats, Oil and Grease (FOG) program to conduct the inspections. It may be possible for the County to work with SAM to have the second stormwater inspection during the rainy season be conducted by the same inspector that will be at the facility to inspect its grease removal devices.

5.3.4. Storm Drain Outfall Inspection Program

Regional Water Board staff has indicated that the reissued municipal stormwater permit (referred to as MRP 2.0) will likely discontinue the requirement for a Collection System Screening Program. If so the County will need to develop a new process to conduct and document the two annual inspections (before and during the rainy season) required by the Special Protections, at the five stormwater outfalls in the ASBS watershed that are greater than 18 inches in diameter. The existing Collection System Screening Forms could be modified for this purpose.

6.0 PUBLIC OUTREACH AND EDUCATION

6.1. Summary of Existing Relevant Policies and Programs

Public outreach and education measures address all pollutants of concern in the ASBS watershed and other issues such as hydromodification management. A major driver of public outreach and education is the MRP. MRP Provision C.7, Public Information and Outreach, requires that the County and other San Mateo County Permittees to a) educate target audiences about the causes of stormwater pollution and its adverse effects on water quality in receiving waters, and b) encourage residents to adopt less polluting and more environmentally beneficial practices. Subsections of Provision C.7 require specific activities (with various compliance deadlines) designed to meet these goals, including: storm drain inlet marking, advertising campaigns, media relations, stormwater point of contact, public outreach events, watershed stewardship collaborative efforts, citizen involvement events, school-age children outreach, and outreach to municipal officials. SMCWPPP assists with these activities through an extensive countywide Public Information and Participation (PIP) program performed on behalf of the County and other San Mateo County Permittees in coordination with BASMAA outreach programs. Other activities consistent with the MRP cover topics such as reusable bag ordinances, household toxics disposal, car care, coastal cleanup days, litter, and integrated pest management (IPM). Most related educational materials are made available on the SMCWPPP website (www.flowstobay.org).

The County implements several additional countywide stormwater-related education and outreach programs, such as the Department of Public Works' RecycleWorks Program (www.recycleworks.org), the County Environmental Health's Toxics and Household Hazardous Waste program, and school training programs. Consistent with Provision C.7, the County participates in multiple watershed stewardship programs overseen by the San Mateo County Resource Conservation District.

The Parks Department maintains webpages dedicated to the Fitzgerald Marine Reserve (https://parks.smcgov.org/fitzgerald-marine-reserve) and the Bluff Trail (http://parks.smcgov.org/bluff-trail). These webpages and participation in the recreational opportunities that they promote raise awareness about the valuable resources in the ASBS watershed. Furthermore, the Fitzgerald Marine Reserve webpage provides links to the Fitzgerald Pollution Prevention Program and related BMP projects.

6.2. Summary of Recent Relevant Changes to Policies and Programs

In 2011, in order to comply with the Special Protections, the County began a targeted education and outreach program for the Fitzgerald ASBS watershed aimed at pollution reduction. The targeted education and outreach is part of the Fitzgerald Pollution Reduction Program, which was initiated with Proposition 84 grant funding. Completed tasks under the Fitzgerald Pollution Reduction Program are summarized in the sections below.

6.2.1. Website Development

As part of the Proposition 84 grant-funded work, the DPW and CEH created a website dedicated to the Fitzgerald Pollution Reduction Program at www.smchealth.org/asbs. Links to this website are prominently posted on other County websites addressing stormwater runoff, such as the SMCWPPP website at www.flowstobay.org. The website serves as a platform to inform readers about ASBS and the Fitzgerald Pollution Reduction Program with links to BMP factsheets, key regulations, grant reports, and the Fitzgerald Special Edition Newsletters (described below).

Planning also has a webpage dedicated to compliance with the Special Protections at http://planning.smcgov.org/san-mateo-county-fitzgerald-asbs-pollution-reduction-program. This webpage is focused on educating private landowners on ASBS-specific regulations such as the prohibition of non-stormwater discharges, new point sources, pool and spa discharges; architectural copper BMPs; siting of car wash facilities; erosion and sediment control plan approval; construction site inspections; and landscape irrigation.

6.2.2. Fitzgerald Special Edition Newsletters

Since 2012, the County has published three annual Fitzgerald Special Edition Newsletters describing various aspects of the Fitzgerald Marine Reserve, ASBS, watershed, regulatory setting, and the Fitzgerald Pollution Reduction Program, as well as measures that local residents and businesses can take to eliminate non-stormwater discharges and reduce pollutants in stormwater runoff. Specific topics include:

- General stormwater education.
- Bacteria impairments of local waters and potential sources.
- Non-chemical pest control options.
- Awareness of copper in architectural features.
- LID and GI techniques such as permeable pavements, rain gardens, vegetated swales, and rain barrels.

Annual newsletters are posted on the Fitzgerald Pollution Reduction Program website and distributed electronically and via hardcopy to key stakeholder groups. Hardcopies are also left at select locations in the ASBS watershed such as coffee shops and the post office to increase awareness.

6.2.3. Flyers, Factsheets, and Checklists

As part of the Proposition 84 Fitzgerald Pollution Reduction Program, the County collaborated with the RCD, SMCWPPP, and/or BASMAA to generate and distribute several flyers, factsheets, and checklists addressing specific pollutants of concern or activities.

- "Get the Scoop of Pet Poop" addresses bacteria by reminding pet and domestic animal (e.g., horses) owners about the consequences of pet waste on receiving waters (i.e., pathogens) and the need to pick it up. These flyers were distributed through the Fitzgerald Special Edition Newsletters and the SMCWPPP Team Effort campaign (http://www.flowstobay.org/teameffort).
- "Where to Find…." addresses all pollutants of concern by directing residents and business owners in the ASBS watershed to water pollution prevention websites and listing related BMPs. These flyers were distributed through the Fitzgerald Special Edition Newsletters and the SMCWPPP Team Effort campaign (http://www.flowstobay.org/teameffort).
- "Backyard Habitat Checklist" addresses nutrients, pesticides, sediment, over-irrigation, and other landscape pollutants by encouraging private property owners to assess the sustainability of their gardening practices. The RCD distributed this checklist from the Bay-Friendly Landscaping and Gardening Coalition to promote healthy soils, reduce waste, conserve water, create wildlife habitat, protect receiving waters, and save energy. This checklist was distributed with a County-specific Native Plant List and several BASMAA Factsheets (e.g., Rain Barrels, Rain Gardens, Landscape Dispersion, Pervious Paving).

6.2.4. Workshops

As part of the Proposition 84 Fitzgerald Pollution Reduction Program, the County and SFEI hosted a Low Impact Development Workshop on August 25, 2012, entitled "Protecting Coastal Watersheds: with Focus on Residential Low-Impact Development." The workshop covered topics including rain gardens and bioswales, pervious pavement, irrigation and pesticide use, rainwater harvesting, and permits and requirements. The presentations are available on the Fitzgerald Pollution Reduction Program website - http://smchealth.org/asbs. It is recommended that the County continues to promote residential LID and GI in the ASBS watershed.

6.2.5. Planning and Building Permit Counter

See Section 4.2.1.

6.3. Recommended Improvements to Policies and Programs

The County is committed to further developing a comprehensive public outreach and education program for the ASBS, as detailed in the ASBS Compliance Plan (County 2014). Recommendations for future education and outreach activities are listed below. Many of these will involve coordination with SMCWPPP, the San Mateo County Resource Conservation District (RCD), and/or BASMAA.

- Continue to update the Fitzgerald Pollution Reduction Program website (http://www.smchealth.org/asbs) and maintain it beyond the completion of the Proposition 84 grant. Improve usability of the website and organize it in a manner that allows for easier access to materials.
- Seek funding to continue the development and distribution of the annual Fitzgerald Special Edition Newsletters.
- Address potential microbial pathogen sources (based on routine beach water quality fecal indicator bacteria monitoring data and the Microbial Source Tracking study) by coordinating/partnering with SMCWPPP, the RCD, and possibly BASMAA to develop an enhanced pet waste public information and outreach effort. Potential activities may include continuing the pilot area-wide email alert reminders to pick up backyard pet waste before wet weather events, conducting local school programs, initiating a pledge effort, and installing signage and bag dispensers. These efforts would inform residents about how waste enters waterways, how contamination can result in beach closures and threaten human health and wildlife, and remind people to clean up waste in their yards and where dogs are walked. These activities would result in increased awareness and will be prompts for direct action. The Clear Choices Clean Water program developed in Indiana may serve as an example (http://indiana.clearchoicescleanwater.org/).
- Address microbial pathogens by coordinating with the RCD on development of an enhanced outreach effort to provide information to residents with livestock on ways to reduce potential water quality impacts related to animal feces. The effort may include technical assistance about BMPs (e.g., installing roofs over chicken coops) and development of site-specific manure management plans for residents or property managers. Outreach efforts may also include "get out of manure free" days to help reduce manure loads in the ASBS watershed. Outreach is a needed step to achieve sustained, long-term reductions in pollutant sources through behavioral and structural changes in manure management. Educational materials developed through this effort could be distributed during annual inspections at permitted facilities and triennial inspections at exempt facilities.

- Add an ASBS and Special Protections component to the training program for construction site, industrial facility, commercial business, and storm drain outfall Inspectors. Require that inspectors distribute educational materials during inspections.
- Implement new rebate programs to incentivize retrofitting existing properties (e.g., rain barrels, rain gardens, pervious pavement, and green roofs), including associated outreach components. See Section 4.3.
- Develop an LID/GI guidance brochure or booklet primarily targeted to small-scale and residential projects. See Section 4.3.
- Continue to work with Farallone View Elementary (e.g., Ocean's Week pollution prevention activities) and enhance other school watershed education programs (e.g., Banana Slug String Band). See Section 4.3.
- Enhance architectural copper vendor/installer outreach. See Section 4.3.
- Continue to promote residential LID and GI in the ASBS watershed.
- Provide better coordination of existing programs (e.g., consistent messaging, cross posting).

7.0 SUMMARY OF RECOMMENDATIONS

This report examines the key County policies, plans, ordinances, and/or programs that address several topics related to the protection and enhancement of water quality in the Fitzgerald ASBS watershed. Overall, the County has many progressive and constructive strategies already in place, many of which have seen improvements in recent years. Key recommendations and considerations for potential future improvements are listed below. See the specific sections referenced for more detail.

- **Confined Animal Ordinance** (Section 2.0) – The current Confined Animal Permit process requires submittal of detailed drainage and manure management plans along with compliance with several criteria related to land use. Permitted facilities are reviewed every three years and exempt facilities are not reviewed after certificates of exemption are issued. It is recommended that the frequency of permit reviews is increased to annually and that triennial reviews are implemented for exempt facilities. An education component should be added to the review process. As a related measure, it is recommended that the County develop a new ordinance or update an existing ordinance to address management of excreta from other domestic animals such as dogs and cats.

- **Public Green Infrastructure** (Section 3.0) – Current policies in the County follow the MRP which requires incorporation of GI in the public right-of-way on new roads and widened roads that are replacing or creating over 10,000 square feet of contiguous impervious surface. The County has also gone beyond this requirement by implementing Green Street BMP projects in the ASBS watershed. The next MRP, expected to be adopted by the end of 2015, will likely include more requirements for public GI planning and initial early implementation, including opportunistic retrofitting of existing roadways. It is recommended that the County add GI information to department websites, train employees on Bay-Friendly Landscaping practices, continue to implement GI BMPs in the ASBS watershed, and add GI policies to County plans.

- **Private Green Infrastructure** (Section 4.0) – Current policies in the County follow the MRP which requires that private development projects use GI and LID-based design strategies and source control measures. It is recommended that the County continue to refine its stormwater management review process for development projects, implement new and modify existing regulatory mechanisms to increase the pace of GI conversion and retrofitting on private property, and develop GI incentive and outreach programs targeting private properties within the ASBS watershed community.

- **Inspections** (Section 5.0) – The frequencies of construction site, industrial facility, commercial business, and storm drain outfall Inspections in the ASBS watershed were recently increased to comply with the Special Protections. It is recommended that the County consider strategies used by other ASBS jurisdictions to fund additional staff or improve efficiencies. In addition, the County may choose to coordinate selected Special Protections-required inspections each year with the routine MRP stormwater inspections conducted concurrently with food service establishment health or CUPA inspections. The County may also explore contracting selected Special Protections-required stormwater inspections for restaurants to the Sewer Authority Mid Coastside (SAM), in coordination with SAM's Fats, Oil and Grease (FOG) program inspections.

Inspectors should distribute brochures and other educational materials during all of the above types of inspections.

- **Public Outreach and Education** (Section 6.0) – The County partners with SMCWPPP and implements several programs (e.g., RecycleWorks) to comply with public information and outreach requirements of the MRP. Since 2012, several ASBS-specific materials and programs have been developed through the Fitzgerald Pollution Reduction Program. It is recommended that the County continue to develop and improve those new programs (e.g., Fitzgerald Special Edition Newsletters, website, pet waste alerts), identify outreach opportunities through other programs (e.g., GI guidance, rebate programs, inspections), and work to better coordinate these programs.

8.0 REFERENCES

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Appendix C

Pre-Rain Pet Waste Alert

The San Mateo County Resource Conservation District delivers local solutions and real results for natural resource conservation in partnership with landowners, farmers, public agencies, non-profit organizations, and more.

View this email in your browser

ALERT

RAINS ARE COMING, TIME TO CLEAN UP PET WASTE!

Did you know:

- that recent water quality monitoring on the Coastside has shown that dog and other pet waste across the landscape, even in backyards, is affecting the health of our local creeks and the ocean?
- that we are expecting rain tonight?

NOW is the time to clean up pet waste in your backyard! Spend a few minutes today picking up what your pet left behind, and help prevent waste from entering creeks and the ocean!

Was this message helpful to you? Please let us know at brittani@sanmateorcd.org.

ALERT: Rains are coming, time to clean up pet waste!

SAN MATEO COUNTY
RESOURCE
CONSERVATION
DISTRICT

Facebook Website

Appendix D

Fitzgerald Special Edition Newsletters

Fitzgerald Special Edition

PROTECTING THE MARINE RESERVE TOGETHER

SUMMER 2012

Fitzgerald ASBS
POLLUTION PREVENTION

LEARN MORE ONLINE:

- See maps of the Reserve, the ASBS, and the pilot projects
- View photos of the Reserve and the incredible sea life there, plus before-during-and-after shots of swale construction
- Read about the Reserve's history
- Find links to more great resources online, local groups, and upcoming events

For all this and more, visit

www.smchealth.org/asbs

INSIDE THIS ISSUE:

Partnering to Protect a Special Area

Have you visited the James V. Fitzgerald Marine Reserve (Reserve), and felt the ocean breeze, listened to the surf, or enjoyed looking at the birds, seals, tidepool creatures, and surrounding landscape?

It's an area worth protecting; and several different legal structures are in place to help do that (see page 3 article).

The Reserve includes 370 acres of intertidal and subtidal marine habitat below the high tide line and 32 acres of upland coastal bluffs with elevations up to 100 feet. San Mateo County Parks manages the Reserve area beginning 3 miles south from Point Montara to the south end of Pillar Point and 1,000 feet west into the ocean from the mean high tide line. The Department of Fish and Game has authority below the mean high tide line.

The State Water Resources Control Board oversees the larger Area of Biological Significance (ASBS) that the Reserve fits within.

Because everyday upstream activities may affect the incredible diversity of life within the ASBS, the County is now partnering with UC Davis, San Francisco Estuary Institute, and the San Mateo County Resource Conservation District on the Fitzgerald ASBS Pollution Reduction Program. Projects through 2015 will focus on keeping stormwater draining to the Reserve from nearby properties as clean as possible.

We need your help too.

Pollution Prevention Tips

If you visit, live, or work in Moss Beach or Montara, you can help protect the Reserve. How?

By remembering that everything that touches the ground can wash down storm drains to the ocean.

Tips:

- Garden with non-toxic pesticides and fertilizers
- Take your car to a commercial car wash
- Dispose of motor oil, paint and other chemicals properly
- Keep all dirt from construction projects on your property
- Pick up litter
- Pick up after your pet

Visit www.flowstobay.org for more!

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

How is this Special Area Protected?

Different sets of laws and regulations protect the Fitzgerald Marine Reserve and may affect you even when you aren't at the beach.

On the Shoreline

- Only visit the Reserve between sunrise and sunset
- Don't camp, set fires, or smoke
- No dogs or pets on the beach
- No collecting! Leave pails and nets at home, and shells and other keepsakes on the beach.
- No fishing
- Don't disturb plants or animals
- Don't turn over rocks— the creatures underneath are delicate
- Walk around tidepools, not through them
- Keep 300 feet from harbor seals
- Leave no trace behind

In Your Neighborhood

If you live upstream from the Reserve, there are steps you can take to make sure that rain, landscape irrigation, or car washing from your property does not impact the Reserve.

Visit www.flowstobay.org or www.smchealth.org/asbs for more!

Take a quick survey about the Reserve and enter to win prizes!

www.smchealth.org/asbs

Fitzgerald Pollution Reduction Program

Grant funding for this program is being provided by the State Water Resources Control Board. Three projects have already begun: stormwater management pilots, a storm drain inventory, and microbial source tracking study.

What Filters Best?

A variety of best management practices (BMPs) for stormwater are being installed and tested at ten locations near the Reserve. Vegetated swales and water filter devices are in place now, with a green parking lot makeover planned at the Reserve.

Which Storm Drains?

A Storm Drain Inventory and Assessment was recently conducted by BKF Engineers, a local engineering firm. The study involved detailed GPS/GIS mapping and hydraulic modeling of the County storm drain system.

The goal of the study was to identify priority locations within the Reserve and ASBS watershed for installation of storm water filtration BMPs to remove pollutants from storm water and to identify storm drain locations that are prone to flooding. The report was completed in May 2012 and will be used to help the County select BMP locations for the second phase of the grant.

What's the Source?

For the Microbial Source Tracking (MST) study, researchers from UC Davis will collect water samples from Martini, Kanoff, Montara, Dean/Sunshine Valley, and San Vicente Creeks. Genetic analysis will help to identify potential sources of fecal contamination (human, dog, bird, cow, or horse).

What Do All those Letters Stand For?

The James V. Fitzgerald Marine Reserve is an ASBS, part of an MPA, and part of a MS too! So?

ASBS stands for **Area of Special Biological Significance**. There are 34 ocean areas along the California coastline designated as an ASBS, which are monitored and maintained for water quality by the State Water Resources Control Board. ASBS cover much of the length of California's coastal waters. They support an unusual variety of aquatic life, and often host unique individual species. ASBS are basic building blocks for a sustainable, resilient coastal environment and economy.

MPA stands for **Marine Protected Area**. California maintains three kinds of MPAs: state marine reserves, state marine parks and state marine conservation areas. They are designated specifically to protect aquatic life, and often are associated with ASBS. MPAs are designated by the California Department of Fish & Game and the California Department of Parks and Recreation.

Marine Sanctuaries (MS) are federally designated areas similar to national parks. They often cover vast areas and offer another layer of special protection for the aquatic life and water within their boundaries. They are managed by the National Oceanic and Atmospheric Administration (NOAA). There are four National Marine Sanctuaries off the coast of California. They often are associated with ASBS.

Vegetated Swales - Beauty in Action

For the full list of native species used in the swales and more photos of all four sites, visit www.smchealth.org/asbs

Problem: when water runs off of streets, parking lots and sidewalks quickly, it carries all sorts of pollutants to the nearby creeks and ocean with it, and can cause erosion as well.

Solution? Create a shallow ditch filled with native plants, called a vegetated swale. The swale will slow down and partially absorb the flow of stormwater, and remove pollutants before they reach the open waters nearby.

As part of the Fitzgerald ASBS Pollution Reduction Program, the County is testing different ways of constructing vegetated swales at four locations in Montara and Moss Beach.

Ocean Boulevard

The County contracted with Blue Sky Designs to design and install a vegetated swale. In the fall of 2011, gravel, dirt, and non-native plants were replaced with native grass sod.

By this spring, the swale was lush and green, blending in beautifully and doing its work as a filter.

Before

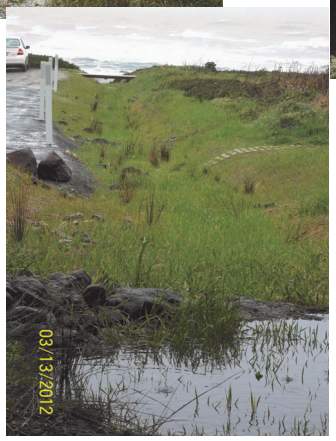
After

Juliana Avenue

The County contracted with Go Native to design and install a swale using an under drain system, permeable pavers, and a mix of native plants including grasses and wetland species.

Before

During reconstruction



At work on a rainy March day

Kids' Corner

Spotlight on Harbor Seals

Word Search

H	A	U	L	O	U	T	Z	A	W
B	R	O	T	J	H	U	E	X	A
M	P	I	M	V	C	F	V	K	T
A	N	Q	S	E	A	L	G	W	E
M	H	X	W	B	L	I	T	S	R
M	Y	P	I	U	D	P	U	P	I
A	O	Z	M	G	Y	P	T	O	L
L	F	O	R	A	G	E	F	T	Q
C	E	S	D	N	J	R	K	S	X
S	A	L	M	O	N	W	R	F	M

Can you find these?
Seal, flipper, pup, forage, water, haulout, salmon, swim, spots, mammal

Find more games online!
www.smchealth.org/asbs

Seals catching some rays

FUN FACTS

How big are they?
From 4 to 6 feet long, and up to 310 pounds

What do they eat?
Rockfish, cod, herring, flounder, and salmon

Where do they sleep?
They can sleep under water (coming up for air every 30 minutes); but they like to doze in safe spots on land, called haulouts.

Quick Quiz

What should I do if I find a seal pup alone at the Fitzgerald Marine Reserve, or on any beach?

A. Take it home
B. Sing it a song
C. Keep your distance
D. Take a photo

For the right answer, check the bottom of this page

2012 Coastside Events

Half Moon Bay July 4th Parade

Dress as your favorite tidepool creature!

with Friends of Fitzgerald Reserve

Coastal Cleanup Day Sept 15

Pitch in to pick up litter at Mirada Surf or another Coastside beach.

Visit flowstobay.org for full details

Pumpkin Festival Parade Oct 13

Dress as your favorite tidepool creature!

with Friends of Fitzgerald Reserve

Stewardship Work Parties

First Saturdays and third Wednesdays, May through August.

Organized by Coastside Land Trust

Rangers unlock tidepool secrets

Workshop August 25

Protecting Coastal Watersheds

(Residential low impact development — LID)

Cypress Meadows 10 am - 1pm

343 Cypress Avenue, Moss Beach

Five focus areas:

1. Bioswales and Rain Gardens
2. Pervious Pavements and Permeable Pavers
3. Irrigation and Pesticide Use
4. Rainwater Harvesting and Gray Water Reuse
5. LID Features for Small Projects and MRP Requirements

Check online for additional events in your area
www.smchealth.org/asbs

Quiz Answer: C - stay back! Its mother is off finding food; and it needs to rest.

Fitzgerald Special Edition

PROTECTING THE MARINE RESERVE TOGETHER

SUMMER 2013

Fitzgerald ASBS
POLLUTION PREVENTION

LEARN MORE ONLINE:

- **See maps of the Reserve, the ASBS, and the pilot projects**
- **View photos of the Reserve and the incredible sea life there, plus before-during-and-after shots of swale construction**
- **Read about the Reserve's history**
- **Find links to more great resources online, local groups, and upcoming events**

For all this and more, visit

www.smchealth.org/asbs

INSIDE THIS ISSUE:

What's in the Water?

During the 2012-2013 rainy season, rainwater runoff from properties and streets in Montara and Moss Beach was sampled to determine the quality of stormwater draining to the Fitzgerald Marine Reserve (Reserve) and to assess the effectiveness of Best Management Practices (BMPs) designed to remove pollutants from the stormwater runoff.

This effort is part of a larger project called the *James V. Fitzgerald Area of Special Biological Significance Pollution Reduction Program* (Fitzgerald Project) that is led by the County of San Mateo, in collaboration with the San Mateo County Resource Conservation District (RCD) and the San Francisco Estuary Institute (SFEI).

A total of 82 samples were collected from six pilot BMP locations in Montara and Moss Beach where roadside ditches have been converted to vegetated swales, and where storm drain filtration devices have been installed. Based on water quality testing results prior to treatment, pollutants of concern include metals (copper, lead, nickel, zinc), polycyclic aromatic hydrocarbons (PAHs), permethrin pesticides, sediment, and fecal indicator bacteria (FIB).

Where do these pollutants come from?

Many of these pollutants are related to vehicles and combustion. For example, copper from brake pads and zinc from tire wear can end up in stormwater. PAHs from fuel burning (i.e., engine combustion, wood), diesel particulates, fluid leaks from cars, and the breakdown of the roadway surfaces can also end up in the storm drain system.

Elevated levels of FIB, such as *E. coli*, a bacteria found in feces from humans, pets, and wildlife, can leak from septic lines or wash off from yards.

Other pollutants such as sediment can result from erosion due to bare soil that is exposed to rainfall during the winter (i.e., from improper grading & construction practices, trails, rural roads). Contaminants can also come from building materials (i.e., roofs and gutters) and household products used in the yard.

Read more in this issue to find out how you can help and what the County is doing to reduce stormwater pollution.

Antsy? Get Better Pest Control

Water quality monitoring results revealed elevated levels of permethrin in stormwater at several of the sampled BMP locations. Permethrin is a type of pyrethroid pesticide that is found in many of the leading bug sprays sold at nursery or hardware stores for control of common pests such as ants, cockroaches, grubs, termites, and wasps. These products can be highly toxic to aquatic organisms, cats, and beneficial insects that naturally keep pest populations under control.

Common pest control products

Fortunately, there are effective alternatives to these chemicals and products. For ant control, learn more at:

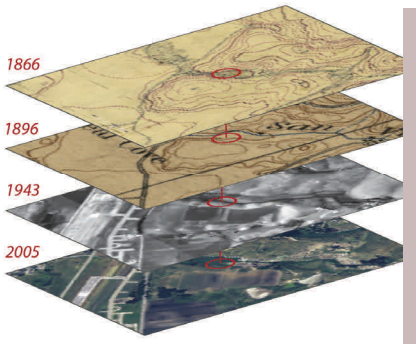
www.GotAntsGetSerious.org

For other pests, visit:

www.flowstobay.org/pestcontrol

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Fitzgerald 100+ Years Ago: Historical Ecology



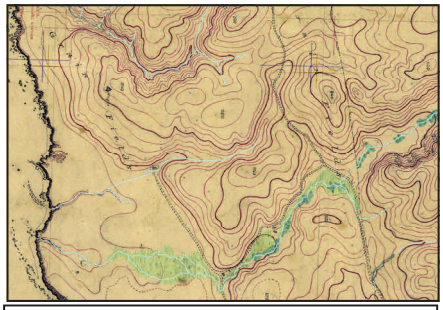
Photos courtesy of San Francisco Estuary Institute

What if we could see the Fitzgerald Marine Reserve (Reserve) as it existed a decade ago? A century ago?

Understanding the historical landscape and how it has changed over time can help address many of the challenges associated with managing and planning for the future of local watersheds. The study of how the system functioned often reveals ways to restore native habitats within our developed landscape to create a healthy ecosystem with both wildlife and recreational benefits.

Because local scientists have been visiting the Reserve for over 100 years, we have good documentation of changes since 1911. And other sources let us look back even further, to times when only native inhabitants used the Reserve area resources.

Visit the San Francisco Estuary Institute's project online at www. sfei.org/node/1368 and learn how their research can be used to set priorities for the Reserve area's preservation and restoration.



San Vicente creek in 1866. Freshwater marsh (light green) merges into willow riparian forest (dark green) along the creek.

Updates: Pollution Reduction Program

www.smchealth.org/asbs

Flume filter box, 14th Street, Montara

Since the pilot phase of the Fitzgerald Project began in June 2011, the County has installed four vegetated swales and three storm drain filtration devices to filter out pollutants in roadside drainages before they reach the Reserve.

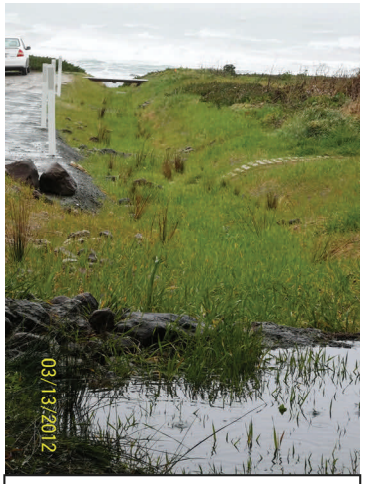
Two vegetated swale designs were implemented. One design involved the use of a native grass sod for biofiltration. The other design involved an under-drain system coupled with permeable pavers, rock weirs, and a mixed palette of native plants including grasses and wetland species.

The filtration devices included two designs, a box unit filled with granular filter material and a catch basin replacement vault with filtering cartridges . For more photos of these BMPs, visit www.smchealth.org/asbs

Water quality monitoring by SFEI showed that the vegetated swales reduced pollutant levels by 30% to 100%, depending on the type of pollutant and site characteristics. The filtration devices were also effective at removing pollutants but were generally more costly due to the need for increased maintenance such as sediment removal and filter replacement.

In August 2012, the County hosted a residential low impact development (LID) workshop. Topics included bioswales, rain gardens, pervious pavements and permeable pavers, irrigation and pesticide use, and rainwater harvesting.

The County is now preparing for Phase 2 of the Fitzgerald Project where additional roadside ditches in Montara and Moss Beach will be converted to vegetated swales designed to help remove pollutants from storm-water runoff. County planning efforts are continuing to retro-fit the Reserve parking lot in order to treat runoff before it enters San Vicente Creek and the Reserve.

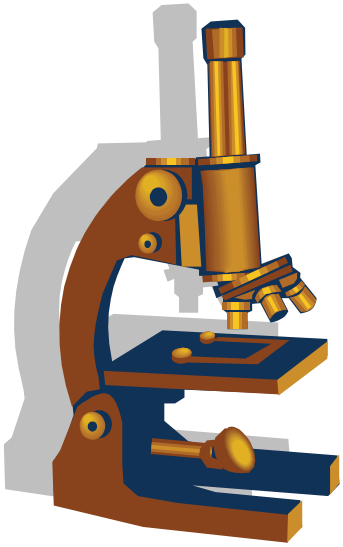


Vegetated swale, Moss Beach

Phase 2 of the project will also involve work by the RCD on private and open space properties throughout the ASBS watershed (Read more on Page 3).

Visit www.smchealth.org/asbs for a list of Phase 2 sites and to view presentations from the LID workshop.

What's the Source of that Bacteria?



Have you ever noticed a sign at the Fitzgerald Marine Reserve near San Vicente Creek warning visitors that creek water and beaches are contaminated and may not be suitable for swimming or other contact recreation?

Did you know that San Vicente Creek and the Reserve are listed by the Regional Water Quality Control Board as impaired due to coliform bacteria?

With the help of scientists from UC Davis and SFEI, the County is looking into the sources of the bacteria. Genetic analysis was performed to determine the prevalence of a universal *Bacteroidales* genetic marker and host-specific genetic markers from human-, bovine-, dog-, and horse-associated *Bacteroidales*.

This evolving watershed management tool, called Microbial Source Tracking (MST), is used to help determine potential sources of fecal contamination in our waterways. MST based on genetic analysis of *Bacteroidales* (a specific type of fecal bacteria) is considered a state-of-the-art methodology, and UC Davis is at the forefront in the development and use of it.

For this study, UC Davis scientists collected a total of 58 samples (water, sediment, and biofilm on plants) from Martini, Kanoff, Montara, Dean/Sunshine Valley, and San Vicente Creeks just upstream of the confluence with the Pacific Ocean. SFEI researchers collected additional samples at multiple sites within the same five watersheds and tested them for the standard fecal indicator bacteria (FIB) – coliform bacteria, *E. coli*, and *Enterococcus*.

The MST results showed that FIB levels were highest during the rainy season. Results also confirmed the presence of fecal contamination in the tested creeks from human, dog, bovine, and horse sources.

Of the four markers that were tested, dog appears to be the most prevalent source during the rainy season. There may be other more significant sources of fecal pollution present that were not characterized as part of this study, such as wildlife or other domestic animals, but more research is needed. For the full report, visit www.smchealth.org/asbs.

What You Can Do to Help

- Pick up after your pets. Pet feces left in the backyard during rain can lead to increased fecal bacteria counts in our creeks and ocean.
- Make sure your sewer laterals and septic systems are working properly and do not have cracks or leaks.

Free Technical Assistance to Homeowners

The San Mateo County Resource Conservation District (RCD) works with landowners to achieve conservation through voluntary actions. The RCD provides free and confidential technical assistance to private and public landowners and currently has a grant to help fund improvements that benefit the Fitzgerald ASBS watershed.

RCD CAN:

- Help residents interested in landscaping with native plants or harvesting rainwater
- Help residents with manure management
- Raise awareness about the importance of cleaning up dog waste and help organize clean-ups
- Help residents improve drainage to minimize runoff of water contaminated by common household pollutants (e.g. pet waste, pesticides, metals)
- Help landowners improve rural roads or trails so there is less sediment or pollutant runoff entering the Fitzgerald ASBS

If you live in the Fitzgerald ASBS watershed (nearly all of Moss Beach and Montara) and are interested in talking with the RCD about potential projects on your property, please contact Irina Kogan by email: Irina@sanmateorcd.org or phone 650-712-7765 x107.

How Does Your Garden Score?

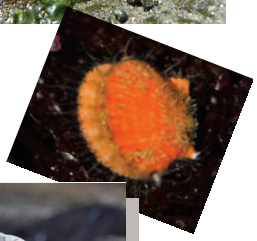
- Building healthy soil
- Reducing waste in the garden
- Conserving water
- Creating wildlife habitat (for birds and pollinators)
- Protecting local watersheds and the ocean
- Contributing to a healthy community
- Saving energy

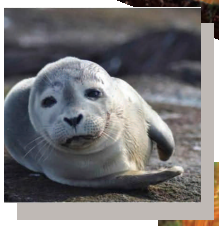
The RCD will provide FREE backyard habitat/garden assessments to homeowners. Some funds will also be available to help implement improvements!
Contact Chelsea Moller by email: Chelsea@sanmateorcd.org or phone 650-712-7765 x105.

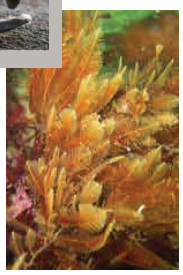
Kids' Corner

Spotlight on Tide Pool Critters

Connect the Critter







Draw a line from the name of the tidepool creature to its picture.

Starfish

Sea lemon

Sunburst anenome

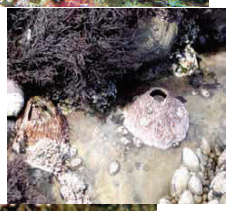
Kelp scallop

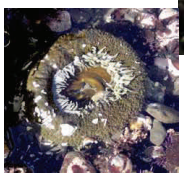
Ostrich-feather hydroid

Hermit crab

Red barnacles

Harbor seal pup





Quick Quiz

You can protect these tidepools critters by:

A. Washing your car at the carwash
B. Always putting litter in the trash can
C. Cleaning up after your dog
D. Controlling bugs without pesticides

For the right answer, check the bottom of this page

Find these critters and more online at www.fitzgeraldreserve.org (and thank Friends of Fitzgerald Reserve for the photos)

2013 Coastside Events

Coastal Cleanup Day — Sept 21

Pitch in to pick up litter at Mirada Surf or another Coastside beach.

Visit flowstobay.org for full details

Volunteering at the Reserve

Friends of Fitzgerald trains volunteers to help out at the tidepools. For details,

visit www.fitzgeraldreserve.org

or

Partner with a park ranger to help educate visitors. Visit the County Parks volunteer page for more details.

www.smcgov.org/parks

Coastside Cleanup Days and Educational Events

Organized by Coastside Land Trust

Visit www.coastsidelandtrust.org for details.

First Flush

Late September/ early October

Volunteers sample local storm drains during the first big rain of the winter season.

Contact the RCD for more information and to sign up. (650-712-7765)

Check online for additional events in your area

www.smchealth.org/asbs

Quiz Answer: All of these are good choices for water quality protection.

Fitzgerald ASBS
POLLUTION PREVENTION

JAMES V. FITZGERALD ASBS
POLLUTION PREVENTION PROGRAM

Protecting the Marine Reserve Together

Get the Scoop on Pet Poop

I would never leave a mess on the beach. I trained my owner right.

You scoop up after your dog on walks, right?
Excellent!

Don't forget to scoop up after pets in your yard, too.

Clean up on the trail, in the barn, and in the paddock. I have a reputation to maintain.

Why?

- Pet waste is like raw sewage.
- It contains fecal coliform bacteria and other disease-causing organisms such as salmonella, roundworms and giardia.
- When it rains, bacteria and organisms in pet waste are carried by runoff to storm drains and creeks that flow to the beach and ocean.
- High quantities of these bacteria and organisms contaminate water used by swimmers, surfers, boaters, and sea life.
- Testing of Coastside creeks and beaches during storms has indicated high levels of bacteria.

Me? A threat to harbor seals? OK, I'll use the litterbox.

Help keep the Coastside safe and clean for everyone to enjoy!

Clean Water.
Healthy Community.
It's a Team Effort.

Together, we've banned plastic bags and polystyrene, installed over 800 trash capture devices in storm drains, and cleaned more than 30 hotspots. 1,000's of friends and neighbors joined in cleanups at our beaches, parks, and neighborhoods, collecting over 30,000 lbs of trash in 2012 alone!

Together, our efforts made a significant dent in the amount of trash on our streets, in our communities and in the environment, but more work is needed. Join us in this Team Effort!

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INSIDE THIS ISSUE:

Preventing Pollution at Home

Did you know that there are actions you can take at home to prevent stormwater pollution? Common activities like car washing, yard care, and pest control can result in polluted stormwater, which may impact special areas like the Fitzgerald Marine Reserve. Recent water quality monitoring results in the MidCoast area showed elevated levels of pollutants such as fecal coliform bacteria, permethrin pesticides, and metals like copper, lead, nickel, and zinc. Below are a few ways you can help prevent stormwater pollution.

Go the Extra Yard. Clean water starts in your backyard. Many common insecticides like wasp or ant sprays have harmful ingredients, such as permethrin, which are very toxic in the aquatic environment. Try using less pesticides and fertilizers, or switch to less toxic products. Even pet waste from backyards impacts stormwater when runoff from these areas enters the storm drains or creeks and increases levels of fecal bacteria. Always clean up after your pets and dispose of the waste in the garbage.

Only Rain in the Storm Drain. Did you know that vehicles are a common source of pollutants? Fluid leaks from your vehicle are carried by rainwater from your driveway into the storm drain. Be sure to inspect for leaks regularly. Copper dust from brake pads accumulates on your wheels, and when it rains, the dust and other pollutants wash off of your car. However, higher

concentrations are released when cars are washed and scrubbed with water under higher pressure. If you wash your car in the driveway, these pollutants and soap wash into the storm drain. Taking your car to a commercial car wash ensures that wash water is captured and treated through the sanitary sewer system.

Please see the Team Effort Insert for more tips, coastside hardware stores that carry less-toxic products, car wash coupon info, and more!

Copper: The Untold Story

Most of us appreciate the natural beauty of copper in the form of jewelry, artwork, and other decorative applications. One of those applications is architecture. It is often used for roofs, flashing, rain gutters, and downspouts because of its beauty and durability.

Copper is naturally occurring in the earth, but high concentrations in water can be toxic to aquatic life. When used for architectural features, it is often patinated to produce a desired color. Patination involves acids that, when applied

and rinsed, can end up in the storm drain and increase copper levels in water. While copper does not rust, it does corrode, creating by-products such as copper oxide, sulfides, and copper dust that are released as rain water passes over the surface of the architectural features.

The best way to prevent copper pollution is to choose another material for your project. If you must use copper, try these best management practices to prevent pollution: 1) purchase copper materials that have been patinated at the factory, 2) if patinating or washing onsite, collect rinse water and off-haul for proper disposal, or direct rinse water to landscaping and block off nearby storm drains, or 3) apply a coating to prevent corrosion.

Please see the Team Effort Insert for more ways to prevent copper pollution.

RCD Projects: Keeping the LID On

When rain falls in an undeveloped area, the ground will soak up much of it. Runoff from saturated earth flows downhill in the form of a creek or stream, leading to other water bodies such as lakes, bays, and oceans. When water soaks into the ground, it is naturally filtered by the soil, and pollutants generally break down in the process.

When rain falls onto the hard surfaces of streets, driveways, patios, and rooftops, it picks up pollutants in its path such as backyard pet waste, motor oil from leaking vehicles, copper from vehicle brakes, household and garden pesticides and herbicides, metals from roofing and gutter materials, and street litter. Runoff from these hardscapes flows to roadside gutters and storm drains. The storm drains collect this polluted rainwater and carry it directly into our creeks, oceans, and the Fitzgerald Area of Special Biological Significance (ASBS), where it can negatively impact aquatic life and water quality. It can also lead to erosion, localized flooding, reduced groundwater levels, and local beach closures. What can be done to prevent this?

Low Impact Development (LID) is a technique now being used for new and redevelopment projects that utilizes nature to manage stormwater and prevent pollution at the source. LID ranges from small scale backyard projects to larger municipal development and retrofit projects where streets are redesigned to capture and naturally treat stormwater. Examples of LID techniques include using permeable pavements and paving stones, rain gardens, rain barrels, grassy swales, and native and drought tolerant plants.

There are two primary LID treatment approaches. The first involves capturing all of the stormwater onsite and allowing for evaporation, infiltration, and/or rainwater harvesting. The second approach involves treatment where stormwater is slowed and filtered by plants and bio filtration soils to remove pollutants before some or all of the water enters the storm drain system. This approach often involves the use of an under drain system beneath the soils to deliver the treated water to the storm drain system.

You can implement LID at home without having to rebuild or remodel your house! Installing a rain barrel is

a good example. These are specially designed barrels placed underneath the downspouts of your house to capture rainwater from your roof. A hose can be attached so you can use it to water your yard! Another example of LID is a rain garden – a planted area of your yard where water either accumulates or slowly passes on its

way to the storm drain. Rain gardens allow the water to collect and percolate through special bio filtration soils that help filter out pollutants. And of course, if you are building a new house or remodeling an existing one, consider LID techniques in the process, such as a new driveway or walkways with paving stones that allow water to soak into the ground. Some of these techniques are now being required by planning and building departments, so it is good to learn about them before developing your plans.

As part of the ASBS Pollution Reduction Program, San Mateo County Resource Conservation District (RCD) and Natural Resources Conservation Service (NRCS) staff visited residents in Montara and Moss Beach over the past year to provide free technical assistance and make recommendations for LID practices on each property. The goal is to achieve sustainability and improve water quality. On-site technical assistance involved landowners and RCD/NRCS staff identifying concerns such as erosion, poor drainage, or the presence of pollutants, and landowners being provided with customized strategies to address those issues.

From these site assessments and recommendations, properties were selected to have engineered designs developed. The designs for each property were recently completed and include LID combinations of rainwater catchment systems, vegetated swales, rain gardens, replacing driveways with permeable pavement, and strategies to direct flow to vegetated areas. Construction and planting of these LID projects is planned for early Fall 2014. These sites will demonstrate how private landowners can improve water quality in the ASBS watershed.

For more information on LID and related resources, see the following link: www.sanmateorcd.org/LID.html. If you are interested in implementing LID strategies, helping conserve water, and protecting water quality in your watershed, contact Brittani Bohlke with the RCD at Brittani@sanmateorcd.org or at 650-712-7765 ext. 104. The RCD provides ongoing, free and confidential technical assistance for public and private landowners to achieve conservation.

See the Team Effort insert for more information, and help keep the LID on water pollution!

Updates: Pollution Reduction Program

Phase 2 of the Fitzgerald ASBS Pollution Reduction Program is underway! The grant-funded project began in 2011 with the County's installation and testing of pilot storm drain best management practices including roadside vegetated swales and storm drain filtration devices throughout Montara and Moss Beach. Based on the water quality monitoring results, the vegetated swales were effective at reducing pollutants, and they provide a greener, more natural approach to stormwater treatment. So, with financial assistance from the State Water Resources Control Board, the County is installing more. Three roadside vegetated swales were installed in 2013, and eleven more will be installed this summer and fall. Green stormwater treatment features will also be constructed at Fitzgerald Marine Reserve parking lot and along Carlos Street in Moss Beach. Visit http://smchealth.org/asbs for more information and updates on the Fitzgerald ASBS Pollution Reduction Program.

Top left: A vegetated swale on Wienke Way in Moss Beach, before the project. Center: Workers installing vegetated swale. Above: The completed project.

2014 Coastside Events

Ongoing watershed hikes
www.openspace.org

Pacifica Beach Cleanups
www.pacficabeachcoalition.org

First Flush

Late September/ early October

Volunteers sample local storm drains during the first big rain of the winter season.

Contact the RCD for more information and to sign up. (650)712-7765)

Coastal Cleanup Day **Sept 20**

Pitch in to pick up litter at Mirada Surf or another Coastside beach.

Visit www.flowstobay.org/ccd for full details

Coastside Cleanup Days and Educational Events

Organized by Coastside Land Trust

Visit www.coastsidelandtrust.org for details.

Volunteering at the Reserve

Friends of Fitzgerald trains volunteers to help out at the tide pools. For details,

visit www.fitzgeraldreserve.org

or

Partner with a park ranger to help educate visitors. Visit the County Parks volunteer page for more details.

www.parks.smcgov.org

Kids' Corner

Banana Slugs invade local school!

The 21st annual Oceans Week titled, "Tidepools: Marine Magic in Our Own Back Yard" took place at Farallone View Elementary School in Montara during the week of May 19th. The event was sponsored by the Friends of Farallone View Parent Teacher Organization who partnered with the County of San Mateo's Parks Department and the Department of Public Works, the San Mateo Countywide Water Pollution Prevention Program, and other local organizations to design activities to teach students about tidal ecosystems and pollution prevention.

The event kicked off with an assembly entitled "We All Live Downstream" presented by the Banana Slug String Band. The assembly was an interactive performance involving music, singing, and dancing on the topics of storm drains, recycling, and keeping water clean. The band has performed in schools all over the County for the last several years and was thrilled to be part of Oceans Week for a second time. Check out the band and their songs at www.bananaslugstringband.com.

Fitzgerald Marine Reserve Park Ranger Cala helped lead a school-wide assembly where his video "A Universe in a Tide Pool" was screened, and he shared his passion for tidal creatures. Log on and check out the video at: parks.smcgov.org/fitzgerald-marine-reserve

Students also participated in the school's "Be Seen Keepin' It Clean Event." As part of a homework assignment, approximately 220 students, with the help of family members, collected about 250 bags of litter from neighborhoods, beaches, creeks, and parks from Half Moon Bay to Montara. As a result, students protected ecosystems by preventing litter from entering the local waterways and ocean. The San Mateo County Office of Education Safe Routes to Schools Program and the County of San Mateo RecycleWorks Program provided support and incentives to students for participating in this Earth-friendly event. In addition, Recology of the Coast provided the school with a recycling truck demonstration for the transitional kindergarten, kindergarten, and first grade classes.

Other events included tide pool field trips and a tide pool learning lab. On the last day of tide pooling, students observed THREE octopuses! During the lab, students made a pledge to "Protect the Marine Reserve Together" by taking steps to prevent pollution such as always cleaning up after their pets and never littering. Visit smchealth.org/asbs to take the pledge too. The Department of Public Works also sponsored a tide pool drawing contest. All of the artwork was great! See below for a few of our favorites.

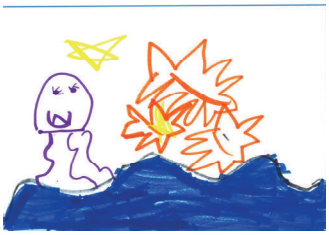
Educating the next generation about pollution prevention is critical to the success of future efforts. *Keep up the good work Farallone View Elementary!*

The Banana Slug String Band performs "We All Live Upstream" at a local school

Want to learn about the Fitzgerald Marine Reserve?
Visit:
http://parks.smcgov.org/fitzgerald-marine-reserve

Samples from the

Tide pool Drawing Contest!



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Clean Water. Healthy Community. It's a Team Effort.

Water quality affects everyone – humans, pets, livestock, and wildlife. That's why it's so important for everyone to make an effort to maintain good water quality. Federal, state, and local government agencies have regulations in place to protect water quality, as well as programs and grants to educate and encourage people to use best practices at home and work. Government programs also fund municipal improvements geared toward stormwater management, but government can only do so much. It is up to residents and businesses to help the effort by using best practices daily to prevent water pollution.

What's the Problem with Runoff?

Many people don't realize that when it rains, polluted stormwater flows into storm drains and directly to the creeks and ocean without filtering or treatment. Many things we do can negatively impact the cleanliness of stormwater runoff, including common activities you might not expect. This is why stormwater is a significant ongoing source of pollution in our water bodies.

Infrastructure Solutions

Local county and city governments are implementing new techniques in urban planning to capture and treat stormwater runoff. These techniques use natural processes to filter polluted water and allow it to recharge groundwater. Examples of this can be seen in the "San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook," in which rain gardens and bio retention areas are used to manage stormwater runoff from streets and parking lots. These are important opportunities for managing stormwater because pavement constitutes as much as 70 percent of the impervious surfaces in an urban area that prevent water from soaking into the soil. Innovative use of these design approaches can enhance pedestrian and bicycle access and safety, calm traffic, add urban green space and wildlife habitat, enhance neighborhood livability, increase community and property values, help deepen connections to the natural environment, and control localized flooding. Green street and parking lot projects have been constructed in Brisbane, Burlingame, Daly City, San Bruno, San Carlos, Montara, Moss Beach, and San Mateo, and more are in the works.

What You Can Do

There are opportunities every day to take action when it comes to protecting water quality, from cleaning up pet waste, to washing the car more responsibly (see back). It may not seem like much, but the more people who make the effort, the more the pollution will be prevented at the source. This helps save government funds for other improvements, and results in a cleaner overall environment. Modeling behavior for your children and making others aware of pollutant sources, water quality problems, and solutions makes a big difference. Use your voting power to approve funding for green initiatives. Use your buying dollar to support products and services that are eco-friendly. Taking action in little ways helps a bigger cause. For more information, or to sign up for the Team Effort e-newsletter, go to www.flowstobay.org or call (650) 372-6200.

JAMES V. FITZGERALD ASBS
POLLUTION PREVENTION PROGRAM

Protecting the Marine Reserve Together

Where to Find .....

Want to learn more about water pollution prevention?
Check out these locations and websites, or call San Mateo County Environmental Health at (650) 372-6200.

Household Hazardous Waste

- Properly dispose of household chemicals: www.flowstobay.org/toxic

Projects and Programs

- Water quality sampling: www.smchealth.org/environ/beaches
- Fitzgerald ASBS water quality sampling: www.smchealth.org/asbs
- Green streets and parking lots: www.flowstobay.org/greenstreets
- Recycling, waste reduction, and other sustainability programs: www.recycleworks.org/

Best Practices

- Bay Friendly Landscaping Guide: www.Bayfriendly.org
- Car wash discount coupon: email pollutionprevention@smcgov.org
- Automotive care: www.flowstobay.org/autocare
- Water conservation and gardening classes: www.bawsca.org

Get Involved

- Online Calendar of Events: www.flowstobay.org/calendar
- Team Effort newsletter: email pollutionprevention@smcgov.org
- Kids activities related to stormwater: www.flowstobay.org/kids

Low Impact Development (LID)

- LID fact sheets: Architectural copper, rain barrels, rain gardens, permeable pavers: www.flowstobay.org/newdevelopment
- Resource Conservation District LID information: www.sanmateorcd.org/LID.html
- Fitzgerald ASBS LID workshop presentations: www. smchealth.org/asbs

What You Can Do....

Here is a list of things you can do at your home or business to help protect and improve water quality. Choose just one or do them all!

- Pick up pet waste
- Use less toxic gardening products
- Install low-flow sprinkler lines
- Plant native plants that use less water
- Wash your car at a car wash
- Recycle used motor oil and filters
- Maintain your car to prevent leaks
- Dispose of household chemicals properly
- Keep the lid on your trash can at all times
- Pick up litter whenever you see it
- Participate in a cleanup event
- Make your own household cleaners
- Bring your own bag to the store
- Purchase products in bulk, using less packaging
- Make full use of curbside recycling
- Recycle batteries or purchase rechargeables
- Teach your children and friends
- Install rain barrels on your downspouts
- Install rain gardens on your property
- Report illegal dumping to your local authority
- Learn about your watershed and where it drains to at http://museumca.org/creeks/

Pest Management

- Less toxic pest control in the home and garden: www.ourwaterourworld.org, Ant control: www.gotants.org
- Participating Our Water Our World (OWOW) Coastside stores that sell less toxic gardening products: Hassett Hardware, Half Moon Bay; El Granada Hardware, El Granada; Linda Mar Ace Hardware, Pacifica

Go to www.flowstobay.org/pestcontrol for a complete list of OWOW participating stores in San Mateo County.