

California State University San Marcos Storm Water Management Plan



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ACRONYMS

°C	Degrees Celsius
°F	Degrees Fahrenheit
3D	Three dimensional
ASBS	Areas of Special Biological Significance
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
Basin Plan	Water Quality Control Plan for the San Diego Basin
BAT	Best Available Technology
BCT	Best Conventional Pollutant Control Technology
Bldg	Building
BMPs	Best Management Practices
BPJ	Best Professional Judgement
CaCO ₃	Calcium carbonate
CASQA	California Stormwater Quality Association
CCTV	Closed Circuit Television
CDFG	California Department of Fish & Game
CFR	Code of Federal Regulations
CGP	Construction General Permit
CSMP	Construction Site Monitoring Program
CSU	California State University
CSUSM	California State University of San Marcos
CTR	California Toxics Rule
CWA	Clean Water Act
DCV	Design Capture Volume
DDD	Dichloro-diphenyl-dichloroethane
DDE	Dichloro-diphenyl-dichloroethylene
DDT	Dichloro-diphenyl-trichloroethane

EDN	Earth Day Network
ELAP	Environmental Laboratory Accreditation Program
EOC	Emergency Operation Center
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
FY	Fiscal year
HA	Hydrologic Area
HMBP	Hazardous Materials Business Plan
HU	Hydrologic Unit
IDDE	Illicit Discharge Detection and Elimination
IMPs	Integrated Management Practices
IRWMP	Integrated Regional Water Management Plan
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LRP	Legally Responsible Person
LUP	Linear Underground/Overhead Project
MBAS	Methylene Blue Activated Substances
MEP	Maximum Extent Practicable
mg/L	Milligrams per liter
mi ²	Square miles
MS4	Municipal Separate Storm Sewer System
NA	Not Applicable
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric turbidity unit
O&M	Operation and Maintenance

OES	Office of Emergency Services
PAH	Polycyclic Aromatic Hydrocarbon
PCBs	Polychlorinated biphenyls
PD&C	Planning, Design and Construction
PEAIP	Program Effectiveness Assessment and Improvement Plan
pH	Potential Hydrogen
PRD	Permit Registration Documents
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
RCP	Reinforced Concrete Pipe
RWQCB	Regional Water Quality Control Board
SH&S	Safety, Health, & Sustainability
SMARTS	Storm Water Multiple Application and Report Tracking System
SPCCP	Spill Prevention Control and Countermeasure Plan
Sq-ft	Square-feet
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDLs	Total Daily Maximum Loads
U.S.	United States (of America)
uS/cm	MicroSiemens per centimeter
USEPA	United States Environmental Protection Agency
WDID	Waste Discharge Identification Number
WDRs	Waste Discharge Requirements
WEF	Water Environment Federation
WLA	Waste Load Allocation
WQBELs	Water Quality Based Effluent Limits
WQO	Water Quality Objectives

1.0 INTRODUCTION

1.1 Regulatory Background

In 1990, EPA (Environmental Protection Agency) promulgated rules establishing Phase I of the NPDES (National Pollutant Discharge Elimination Program) storm water program. The Phase I program for MS4s (municipal separate storm sewer systems) requires operators of “medium” and “large” MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a storm water management program as a means to control polluted discharges from these MS4s. In December of 1999, the Storm Water Phase II regulations extended coverage of the NPDES storm water program to certain “small” MS4s but takes a slightly different approach to how the storm water management program is developed and implemented.

Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local waterways (rivers, streams, lakes, and bays) without treatment. EPA’s Stormwater Phase II Rule establishes an MS4 storm water management program that is intended to improve the nation’s waterways by reducing the quantity of pollutants that storm water picks up and carries into storm sewer systems during storm events.

In California, The State Water Resources Control Board (SWRCB) implements the EPA’s Stormwater Phase II Rule by issuing a Water Quality Order (WQO) through the NPDES program. SWRCB WQO No. 2013-0001-DWQ was originally issued on February 5, 2013 and went into effect on July 1, 2013 and represents the core of the Phase II Permit. The WQO or Phase II Permit has been through a number of amendments including WQ 2015-0133-EXEC, WQ 2016-0069-EXEC, WQ Order 2017-XXXX-DWQ (Pending), WQ 2018-0001-EXEC, and WQ 2018-0007-EXEC. As of February 13, 2019, the latest version of the WQO is an “Unofficial Draft – Not Certified by Clerk” and is the basis for the updates to CSUSM’s 2019 SWMP.

Per the Findings listed in the Phase II Permit:

1. Storm water is a resource and an asset and should not be treated as a waste product. Managing rainwater and storm water at the source is a more effective and sustainable alternative to augmenting water supply, preventing impacts from flooding, mitigating storm water pollution, creating green space, and enhancing fish and wildlife habitat. California encourages alternative, innovative, multi-objective solutions to help use and protect this valuable resource, while at the same time controlling pollution due to urban runoff.
2. As human population increases, urban development creates new pollution sources and brings with it proportionately higher levels of car emissions, car maintenance wastes, municipal sewage, pesticides, household hazardous wastes, pet wastes, trash, etc. which can either be washed or directly dumped into the MS4. As a result, the runoff leaving the developed urban area is greater in pollutant load than the pre-development runoff from the same area. Also, when natural vegetated pervious ground cover is converted to impervious surfaces such as paved highways, streets, rooftops, walkways and parking lots, the natural absorption and infiltration abilities of the land are lost. Therefore, runoff leaving developed urban area

is significantly greater in runoff volume, velocity, peak flow rate, and duration than pre-development runoff from the same area. The increased volume, velocity, rate, and duration of runoff greatly accelerate the erosion of downstream natural channels. In addition, the greater the impervious cover the greater the significance of the degradation.

3. Pollutants of concern found in urban runoff include sediments, non-sediment solids, nutrients, pathogens, oxygen-demanding substances, petroleum hydrocarbons, heavy metals, floatables, polycyclic aromatic hydrocarbons (PAHs), trash, pesticides and herbicides.

NPDES Phase II regulations require operators of small MS4s to develop a program in order to:

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the Clean Water Act (CWA) and Regional Water Quality Control Board Basin Plan (Basin Plan)

1.1.1 Effluent Limitations

Effluent limitations are defined in the Phase II Permit, Section C, as follows:

1. Permittees shall implement controls as required by this Order¹ to reduce the discharge of pollutants from their MS4s to waters of the U. S. to the MEP². Permittees shall additionally reduce the discharge of pollutants (1) to achieve applicable TMDL³ waste load allocations (WLAs) in accordance with Sections E.15.a and F.5.i.1 of this Order and (2) to comply with the Special Protections for discharges to ASBS⁴ in accordance with Section E.4 of this Order.
2. Storm water discharges regulated by this Order shall not contain a hazardous substance in amounts equal to or in excess of a reportable quantity listed in 40 C.F.R. Part 117 or 40 C.F.R. Part 302.

1.1.2 Receiving Water Limitations

Receiving Water Limitations in the Phase II Permit, Section D, are designed so that:

¹ Refers to the Phase II Permit as Order No. 2013-0001-DWQ and as amended.

² MEP is Maximum Extent Practicable. See Phase II Permit Glossary (of Terms).

³ TMDL stands for Total Maximum Daily Load. See Phase II Permit Glossary (of Terms).

⁴ ASBS stands for Areas of Special Biological Significance. Attachments C and D of the Phase II Permit. Not applicable to CSUSM.

Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable Basin Plan.

The Permittee shall comply with Receiving Water Limitations through timely implementation of control measures/best management practices (BMPs) and other actions to reduce pollutants in the discharges and other requirements of this Order including any modifications. The storm water program shall be designed to achieve compliance with Receiving Water Limitations. If exceedance(s) of water quality objectives or water quality standards persist notwithstanding implementation of other storm water program requirements of this Order, the Permittee shall assure compliance with Receiving Water Limitations by complying with the following procedure:

1. Upon a determination by either the Permittee or the Regional Water Board that MS4 discharges are causing or contributing to an exceedance of an applicable water quality standard, the Permittee shall promptly notify and thereafter submit a report to the Regional Water Board that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of water quality standards. The report shall include an implementation schedule. The Regional Board may require modifications to the report;
2. Submit any modifications to the report required by the Regional Water Board within 30 days of notification;
3. Implement the actions specified in the report in accordance with the approved schedule;
4. So long as the Permittee has complied with the procedure set forth above and is implementing the actions, the Permittee does not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the State Water Board or the Regional Water Board to develop additional BMPs.

In reference to TMDLs it states:

If a Permittee fully complies with the applicable requirements and deadlines in Attachment G for a specific pollutant and water body, including the requirement to demonstrate attainment of the applicable wasteload allocation in accordance with sections E.15.a or F.5.i.1 of this Order, the Permittee is deemed to be in compliance with this section's requirement that discharges not cause or contribute to an exceedance of water quality standards for that specific pollutant and water body.

1.2 Purpose of the SWMP

This Storm Water Management Plan (SWMP) was prepared to describe the program to comply with State Water Resources Control Board Water Quality Order No. 2013-0001-DWQ, National Pollution Discharge Elimination System (NPDES) General Permit No. CAS000004, Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) as amended. In this SWMP referred to as the Phase II Permit.

California State University, San Marcos (CSUSM) is listed in the Phase II Permit as a non-traditional MS4 and the requirements are presented in Permit Provision F.

This SWMP has been developed to comply with Environmental Protection Agency Phase II National Pollutant Discharge Elimination System requirements promulgated under the Clean Water Act.

The purpose of the SWMP is to:

- Identify pollutant sources potentially affecting the quality and quantity of storm water discharges;
- Define the minimum BMPs applicable to CSUSM based on specific site conditions and practices; and
- Establish the required minimum documentation and tracking requirements to complete annual program effectiveness assessment and improvement, and reporting.

This SWMP covers the CSUSM main campus located in San Marcos, California. A complete list of these facilities and description is included in Section 9.

1.3 SWMP Leadership Team

The SWMP was developed with input from representatives from various campus departments that present a potential to impact surface water quality and have a role in the implementation of this SWMP. The campus' key representatives in the implementation of the SWMP are listed in Table 1.1.

SMARTS Annual Reporting and Certification

The Phase II Permit requires continued implementation of the SWMP and annual program effectiveness assessment and improvement of the SWMP and its implementation to demonstrate improvements in its effectiveness to reduce pollutants to the Maximum Extent Practicable.

Table 1.1: Key CSUSM SWMP Representatives

Name, Position Title/Department	Responsibilities	Contact Information
Regina Frasca, Director Office of Safety, Health, & Sustainability (SH&S)	SWMP Audit Activities & Oversight Regulatory Agency Liaison Public Education and Outreach Public Involvement/Participation	(760) 750-4502 rfrasca@csusm.edu
Graham Gilchrist, Director Planning, Design & Construction Department	Post Construction: New Development/Re-development Construction Site Storm Water	(760) 750-4660 ggilchrist@csusm.edu
Floyd Dudley II, Director Facility Services Department	Illicit Discharge Detection and Elimination Pollution Prevention / Good Housekeeping	(760) 750-4624 fdudley@csusm.edu

1.4 SWMP Public Access

This SWMP is intended for use by CSUSM and CSUSM staff and is a public document. Any request for a copy of the SWMP by the SWRCB/RWQCB, other governmental agency, or citizen is to be forwarded to the CSUSM Office of Safety, Health, & Sustainability (SH&S) or the SH&S website. The document is uploaded to SMARTS and as such is readily available to the public by accessing the SWRCB SMARTS' website.

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2.0 LEGAL AUTHORITY

Permit requirement found in F.5.a.1.

2.1 Legal Authority Requirements

The Phase II Permit requires that CSUSM have adequate legal authority to meet the requirements. Specifically, the Phase II Permit required and it completed (by June 30, 2015), a review, revise or adopt new relevant policies, contractual provisions, base orders, resolutions or other regulatory mechanisms, to the extent allowable under state or local law, to ensure it has at a minimum the legal authority to (listed as applicable to CSUSM):

- (a) Effectively prohibit non-storm water discharges through the MS4. Exceptions to this prohibition are NPDES-permitted discharges of non-storm water and non-storm water discharges from Provision B.3 that are considered non-significant contributors of pollutants.⁵
- (b) Detect and eliminate illicit discharges and illegal connections to the MS4. Illicit connections include pipes, drains, open channels, or other conveyances that have the potential to allow an illicit discharge to enter the MS4. Illicit discharges include all non-storm water discharges not otherwise authorized in the Phase II Permit, including, but not limited to discharges from mobile cleaning and pressure washing operations.
- (c) Respond to spills, and prohibit dumping or disposal of materials other than storm water into the MS4.
- (d) Require vendors, contractors and operators of commercial facilities to minimize the discharge of pollutants to the MS4 through the installation, implementation, and maintenance of BMPs consistent with the CASQA Best Management Practice Handbooks or equivalent.
- (e) Ensure construction site operators provide or CSUSM obtain a Waste Discharge Identification Number for coverage under the Construction General Permit and comply with that permit⁶.
- (f) Review designs and proposals for new development and redevelopment to determine whether adequate BMPs will be installed, implemented, and maintained during construction and after final stabilization (post-construction).
- (g) Promptly cease and desist discharges and/or cleanup and abate a discharge, including the ability to:
 - 1) Effectively require the discharger to abate and clean up their discharge, spill, or pollutant release within 72 hours of notification;

⁵ Description excludes Areas of Special Biological Significance (ASBS) as they are not applicable to CSUSM.

⁶ The Construction General Permit is Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002 issued by the State Water Board and as amended by orders 2010-0014-DWQ and 2012-0006-DWQ. See SWMP Section 7 for further details. Description excludes industrial facilities and the Industrial General Permit as not applicable to CSUSM.

- 2) Require abatement, within 30 days of notification, for uncontrolled sources of pollutants that could pose an environmental threat;
- 3) Perform the cleanup and abatement work and bill the responsible party, if necessary;
- 4) Provide the option to order the cessation of activities until such problems are adequately addressed if a situation persists where pollutant-causing sources or activities are not abated;
- 5) Require a new timeframe and notify the appropriate Regional Water Board when all parties agree that clean-up activities cannot be completed within the original timeframe and notify the appropriate Regional Water Board in writing within five business days of the determination that the timeframe requires revision.

2.2 Legal Authority Implementation

CSUSM, as well as all other campuses covered by the Phase II Permit, are unique institutions that have been classified as non-traditional since they do not fit the most common type of municipal storm water program permittee which would be city or county government. CSUSM does not have external entities to regulate or to which the requirements apply in the same manner that municipal permittees have. CSUSM is also one of a number of California State University institutions listed as non-traditional permittees in the Phase II Permit.

SMARTS Annual Reporting and Certification

The implementation of legal authority is reported annually. Provide any revised documentation as part of Annual Report.

Therefore, the certification statements included in Appendix A are: 1) applicable to the entire CSU system of campuses that are subject to the Phase II Permit, and 2) applicable to CSUSM.

3.0 SITE INFORMATION

CSUSM is one of twenty-three California State Universities (CSU) campuses governed by the Chancellor of the CSU System and is an internationally recognized public teaching and research institution.

The CSUSM Main Campus is situated in the San Marcos, California, in northern San Diego County. The City of San Marcos has an estimated population of 96,188 as of 2017. The campus address is 333 S. Twin Oaks Valley Road San Marcos, California 92096-0001. The facility is generally bounded by E. Barham Drive to the North, The Coronado Hills to the South, La Moree Road to the East and S. Twin Oaks Valley Road to the West as show in Figure 3-1.

Figure 3.1: CSUSM Overview Map



CSUSM is a 304-acre suburban campus which is conveniently located near highway 78 and 30-miles north of San Diego. As of Fall 2019, the campus population, which includes students, faculty, staff, visiting scholars, researchers, is approximately 16,410.

3.1 Facility Operations

The CSUSM employs skilled trades, grounds, and custodial staff for day-to-day operations. Typical duties include building maintenance, plumbing and electrical repairs, sanitary sewer

operations and maintenance, cleaning of sewer lines and storm drain clean-outs and general grounds and landscape maintenance.

CSUSM employs maintenance, custodial, and grounds staff for day-to-day operations. This includes building maintenance (cleaning, painting, repairs), completion of department work requests for repairs and minor maintenance, daily cleaning of common buildings, grounds maintenance, small construction jobs, and various other common area repair and maintenance activities. Central Plant staff and outside contractors complete electrical, plumbing, roofing, asphalt, exterior building painting, sewer line cleaning, utility repairs, and janitorial duties.

This SWMP covers all facilities on CSUSM owned land and/or operated by CSUSM and CSUSM Corporation located within the City of San Marcos.

University Police Department operates on campus and is responsible for Parking and Commuter Services. Emergency Management and the Emergency Operation Center (EOC) handle emergencies. The SH&S Department provides the expertise for occupational and environmental safety, and sustainable practices, as well as provides guidance and instruction on how to keep a safe campus environment for students, faculty and staff.

3.2 Land Use

Urbanized areas in the watershed include institutional, residential, commercial and recreational land uses. The developed area in the watershed is dominated by institutional activities. CSUSM accounts for most of this area. Buildings, parking lots, small lawn and open areas, as well as roadways and walkways are included in this category. Recreational land uses consist of pervious surfaces such as the soccer field, multipurpose fields, and baseball and softball fields

3.3 Facility Drainage

Storm water is generated on-site and routed through a series of water conveyance structures including desilting basin(s) and various treatment control BMPs including a wetland preserve, grass or rock swales, and a hydro-dynamic separator. The CSUSM campus has approximately four main discharge points from campus. The points of connection to the public storm drain conveyance system range from 18-inches to 48-inches.

On-site storm water flows generated on the eastern portion of campus includes the University Fleet Maintenance Services Building, Center for Children and Families, and the Public Safety Building. Storm water is collected by this area's drains and routed through a network of drainage swales, a desilting basin and pipelines that tie into a 30-inch line that discharges to the City of San Marcos MS4 (a Phase I Permittee) on Barham Drive. Off-site storm water flows from the southeast are intercepted by an inlet headwall and conveyed in a 30-inch and 36-inch storm drains which also intercept storm water flows from parking structure PS-1, parking lot O, and the University Village Apartments prior to discharging to the City's 48" storm drain on Barham Drive.

The central portion of campus also collects offsite runoff in a debris basin located southeast of the Arts building. Runoff from this basin is conveyed in a 30-inch storm drain which intercepts storm water flows from the Arts building, Science Hall II, as well as surface runoff from Campus View Drive and Campus Way. The 36-inch storm drain in Campus Way also intercepts storm water flows from Clark Field House and Lot L prior to connecting to the existing public 48-inch

storm drain on Barham Drive. Storm water is generated in the upper portions of the campus and traverses through a system of conveyance structures to a wetland preserve. The wetland preserve overflows into a 48" RCP (Reinforced Concrete Pipe) that runs along Barham Drive that is owned and operated by the City of San Marcos.

The southern central portion of campus collects and conveys storm water flows on campus and along Carven Drive enter into a series of 18", 30" and 36" RCPs. This portion of the campus, including Academic Hall, Markstein Hall, Craven Hall, and Science Hall I drains to a 30-inch RCP along Palm Canyon Drive and to a 36-inch RCP in Craven Drive. This system also intercepts all surface storm water runoff from Palm Canyon Drive and Craven Drive. Upstream, the 2-acre open space area discharges storm water through a series of concrete lined ditches, swales and a debris basin. The drainage structures connect to the stormdrain lines along Craven Drive and southern portion of Palm Canyon Drive then ultimately into the stormdrain the 48" stormdrain line along Twin Oaks Valley Road. The southwestern portion of the campus including parking lots B and C discharges storm water flows into an on-site 48" RCP stormdrain line adjacent to the Soccer Field that connects to the 48" stormdrain line along the Twin Oaks Valley Road.

The City of San Marcos maintains the stormdrain lines along Barham Drive and Twin Oaks Valley Road. The stormdrain lines carry storm water discharges to San Marcos Creek and discharges to Lake San Marcos. The San Marcos Lake is located approximately 1.7 miles southwest of the CSUSM campus. Storm water and overflows from Lake San Marcos are conveyed to Batiquitos Lagoon. The Batiquitos Lagoon is located at the Pacific Ocean and approximately 7.33 miles from the CSUSM campus.

Trash full capture devices were placed on six (6) catch basins near or at the point of connection with the City of San Marcos MS4 to comply with the state's Trash Provisions. Locations and details of the units are included in the storm drain system map and table provided in Appendix B.

3.4 Regional Climate and Rainfall

San Diego County, including San Marcos, is described as an arid Mediterranean climate. Meteorological conditions at CSUSM are influenced heavily by its proximity to the Pacific Ocean. The climate is characterized by warm, dry summers and mild winters. The prevailing winds along the shoreline are westerly with an average wind speed of seven to nine miles per hour but are subject to wind gusts. Average annual daily temperatures for San Marcos range from 56 degrees Fahrenheit (°F) in the winter, to 75 °F in the summer. During the "May gray/June gloom" period, a thick marine layer cloud cover will keep the air cool and damp within a few miles of the coast but will yield to bright cloudless sunshine. Sometimes the June gloom can last into July, leading to overcast skies.

Most of the annual precipitation falls between December and March during the cooler months. The wet period, for regulatory purposes, is considered to be October 1 through April 30 although rain events have been known to take place in May through October due to tropical influence weather systems from the south. The months of December through March supply most of the rain, with February the only month averaging 2 inches or more of rain and considered the wettest month. The months of May through September tend to be almost completely dry. Though there are few wet days per month during the rainy period, rainfall can be heavy when it does fall. Rainfall can vary greatly in higher elevations. Average total precipitation is 14 inches annually, with approximately 75% of the annual rainfall occurring during December through March.

3.5 Carlsbad Watershed

The CSUSM campus is located within the Carlsbad watershed. The Carlsbad watershed is approximately 210 square miles (mi²) and extends from the headwaters above Lake Wohlford in the east to the Pacific Ocean in the west, and from the cities of Vista and Oceanside in the north to Solana Beach, Escondido, and the community of Rancho Santa Fe to the south. There are numerous important surface hydrologic features within the Carlsbad watershed including four unique coastal lagoons, three major creeks, and two large water storage reservoirs.

The largest jurisdictions in terms of land area in the Carlsbad watershed are the unincorporated San Diego County areas (66 mi²). Approximately 48% of the Carlsbad watershed is highly urbanized. The major urban cities within the watershed include Carlsbad (39 mi²), San Marcos (24 mi²), and Encinitas (27 mi²). The dominant land uses within the Carlsbad watershed are residential (29%), commercial/industrial (6%), freeways and roads (12%), agriculture (12%), and vacant/undeveloped (32%). Major impacts within the Carlsbad watershed include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species and eutrophication.

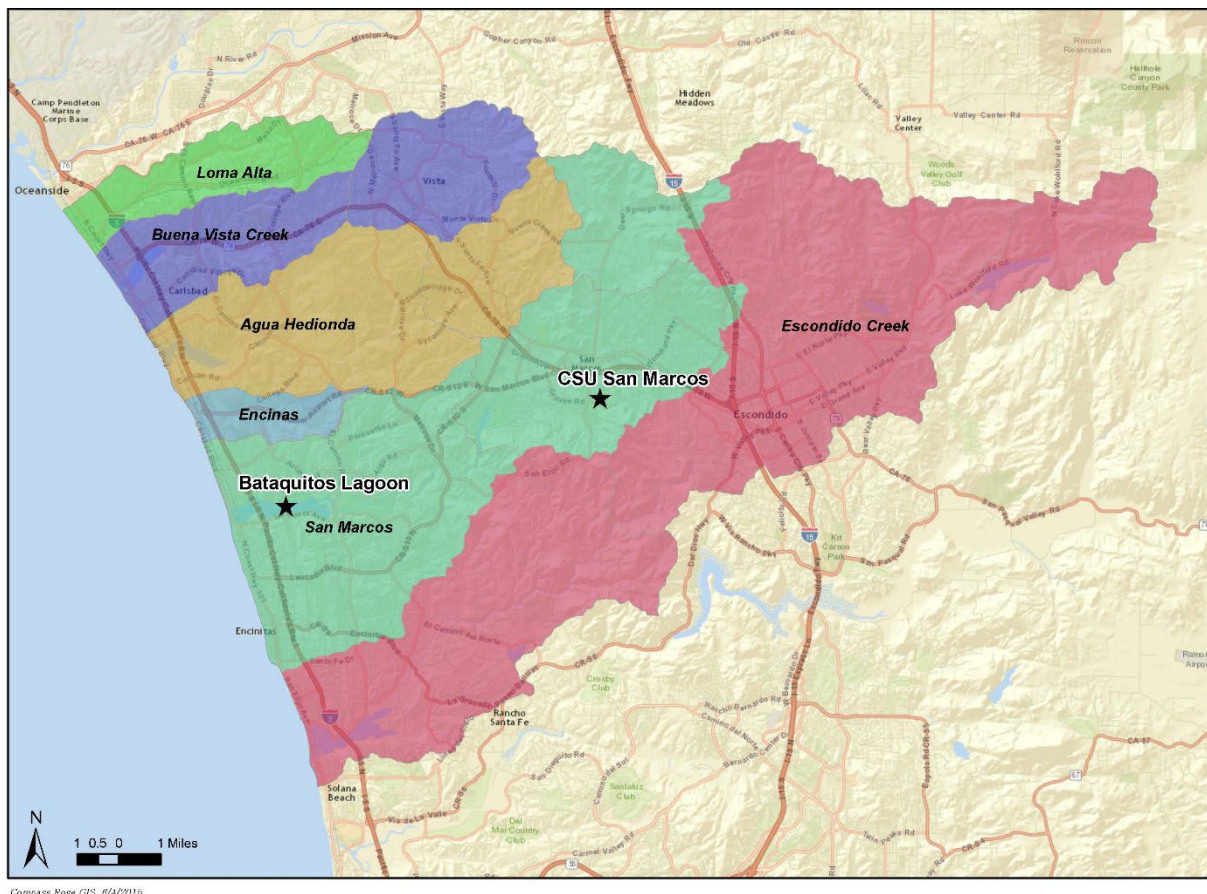
Downstream of the Carlsbad watershed are unique coastal lagoons. The Agua Hedionda, Buena Vista, and San Elijo lagoons are experiencing impairments to beneficial uses due to excessive coliform bacteria and sediment loading from upstream sources. These coastal lagoons represent critical regional resources that provide freshwater and estuarine habitats for numerous plant and animal species.

3.6 San Marcos Creek Sub-watershed

The CSUSM campus is located within the San Marcos sub-watershed of the Carlsbad watershed (Figure 3-1). The San Marcos sub-watershed is approximately 24 square miles (mi²) in area extending from the western slope of the Merriam Mountains down to Lake San Marcos. The San Marcos Creek watershed is the second largest watershed within the Carlsbad Hydrologic Unit. The watershed, dominated by San Marcos Creek, extends approximately 14.11 miles inland from the coast and is about 36,050 acres in area, comprising 27% of the Carlsbad Watershed. The form of the San Marcos Creek watershed is fairly typical of most of the other watersheds within the Carlsbad Hydrologic Unit in that it is long and narrow. Notable features of the lower basin include the deep rocky gorge formed by San Marcos Creek in the east central portion of the basin.

San Marcos Creek originates on the western slopes of the Merriam Mountains, in west central San Diego County and discharges into the Pacific Ocean via Batiquitos Lagoon. Encinitas Creek originates in the hills southwest of Questhaven Road and parallels El Camino Real before its confluences with San Marcos Creek at the southeastern corner of Batiquitos Lagoon. Lake San Marcos is the largest impoundment within the watershed. The San Marcos basin is ovoid in shape and at its lower end. The San Marcos Creek was impounded to create Lake San Marcos. Overflow from Lake San Marcos discharges to the Batiquitos Lagoon. The Batiquitos lagoon is currently managed by the California Department of Fish and Game (CDFG) as a biological reserve. The San Marcos Creek provides for sedimentation as a significant problem within Batiquitos Lagoon.

Figure 3.2: Carlsbad Hydrologic Basin and San Marcos Sub-Watershed



3.7 Local Geology

The geology of the inland portion of the watershed is dominated by Jura-Trias metavolcanic rocks, upper Jurassic marine rocks and Cretaceous granodiorites. The bluffs surrounding Bataquitos Lagoon in the lower basin are composed primarily of Pleistocene marine and marine terrace deposits with some Eocene marine sandstone.

3.8 Soils

The majority of the soil series are categorized as severely erodible in the Carlsbad Hydrologic Unit. Due to the prevalence of these highly erodible soils, agricultural land uses, grading associated with development projects, and the removal of native vegetation may all above or continue to contribute to significant sedimentation problems within the watershed.

3.9 Water Quality Impairments

The San Marcos Creek is listed on the 2014-2016 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report, per the website interactive map, for arsenic, benthic community effects, bifenthrin, cadmium, chlordane, Chlorpyrifos, chromium, copper, cyfluthrin, Cyhalothrin

Lambda, Cypermethrin, DDD (Dichlorobiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD), deltamethrin, diazinon, dieldrin, endrin, Esfenvalerate/Fenvalerate, fenpropathrin, fipronil, fipronil sulfide, fipronil sulfone, indicator bacteria, lead, lindane/gamma hexachlorocyclohexane (gamma-HCH), malathion, nickel, oxygen demand, permethrin (total), pH, phosphorus, selenium, sediment toxicity, temperature (water), total dissolved solids, turbidity, and zinc. It should be noted that 24 miles of San Marcos Creek are included in the listing and some of the pollutants may be found in segments upstream of CSUSM and not all pollutants are suspected to originate from storm water or urban runoff.

For example, Category 5 of the 303(d) List requiring a TMDL only lists phosphorous for San Marcos Creek as originating from known urban runoff/storm sewers.

San Marcos Lake is listed for ammonia as nitrogen, copper, foam/floc/scum/oil slicks, indicator bacteria, lead, nickel, nutrients, oxygen (dissolved), pH, phosphorous, total dissolved solids, and zinc. Lake San Marcos experiences regular algal blooms and other water quality conditions that are being evaluated in a collaborative effort under the oversight of the San Diego Water Board. Further downstream, Batiquitos Lagoon is listed for 2-Methylnaphthalene, antimony, arsenic, benzo(a)anthracene, cadmium, chlordane, chromium, chrysene (C1-C4), copper, dibenz[a,h]anthracene, endrin, lead, lindane/gamma hexachlorocyclohexane (gamma-HCH), mercury, PAHs, PCBs, phenanthrene, pyrene, silver, toxicity, and zinc.

Other 303(d) listed segments in the watershed are located upstream of CSUSM including some un-named tributaries at Twin Oaks Valley Road to San Marcos Creek (north of Interstate 78) and tributaries to San Marcos Lake.

The 303(d) list of impaired water quality segments, as noted above, is subject to the implementation of TMDLs (Total Maximum Daily Loads). TMDL requirements are described in Section 11 of this SWMP as required by the Phase II Permit.

4.0 EDUCATION AND OUTREACH PROGRAM

Permit requirement found in F.5.b.

4.1 Permit Requirement Overview

Section F.5.b.1 of the Permit requires the selection of an education and outreach program option that may include regional participation with other permittees. Section F.5.b.2 of the Permit describes the Education and Outreach Program requirements.

4.2 Education and Outreach Participation Options

Phase II Permit Section F.5.b.1 requires that the Permittee select one out of four options available for compliance with the Education and Outreach Program (F.5.b) requirements.

The options listed in Section F.5.b.1 and available to CSUSM are:

- a) Contributing to a countywide storm water program, as determined appropriate by the Permittee members, so that the countywide storm water program conducts education and outreach on behalf of its members; or
- (b) Contributing to a regional education and outreach collaborative effort (a regional education and outreach collaborative effort occurs when all or a majority of the Permittees collaborate to conduct regional education and outreach. Regional education and outreach collaboration includes Permittees defining a uniform and consistent message, deciding how best to communicate the message, and how to facilitate behavioral changes. Then collaboratively apply what is learned through local jurisdiction groups, pooling resources and skills.); or
- (c) Fulfilling education and outreach requirements within their jurisdictional boundaries on their own. Some level of coordination of education and outreach efforts with an adjacent Phase I MS4 Permittee is recommended/anticipated for watershed/region-wide consistency; or
- (d) A combination of the previous options, so that all requirements are fulfilled.

4.2.1 Status Description

In Year 1 of implementation, CSUSM elected option F.5.b.1(c) and fulfill education and outreach requirements solely, independently and within its jurisdictional boundaries. CSUSM may coordinate education and outreach efforts with the Phase I MS4 Permittee, the City of San Marcos, and/or the San Diego Regional Copermittees as identified in the Phase I MS4 Permit for the San Diego Region (R9-2013-0001) for the purposes of implementing and disseminating watershed or region-wide information with consistent messages to achieve common water quality goals.

SMARTS Annual Reporting and Certification

Annual reporting and certification of the Education and Outreach option is required.

4.3 Education and Outreach Program

The public is defined in Section F.5.b.2 of the Phase II Permit for Non-Traditional MS4 Permittees, for CSUSM it includes the following:

- Faculty
- Residents (students)
- Students
- Staff
- Visitors

CSUSM's storm water and urban runoff program will focus its educational efforts on these targeted audiences as outlined in this section of the SWMP.

The Phase II Permit has three core requirements for education and outreach that must be implemented:

- Public education and outreach for the targeted audiences defined above (F.5.b.2)
- Staff training and education on illicit discharge detection and elimination (F.5.b.3)
- Staff pollution prevention and good housekeeping (F.5.b.4)

Although all may not be applicable to CSUSM, the minimum requirements for the Education and Outreach Program (F.5.b.2(ii)) are the following:

(a) Develop and implement a public education strategy that establishes education tasks based on water quality problems, target audiences, and anticipated task effectiveness. The strategy must include identification of who is responsible for implementing specific tasks and a schedule for task implementation. The strategy must demonstrate how specific high priority storm water quality issues or local pollutants of concern are addressed.

(b) Implement BMPs that gauge level of awareness in target audiences and effectiveness of education tasks.

(c) Develop and convey a specific storm water message that focuses on the following:

- 1) Local pollutants of concern
- 2) Target audience
- 3) Regional water quality issues

- (d) Develop and disseminate appropriate educational materials to target audiences and translate into applicable languages when appropriate (e.g. the materials can utilize various media such as printed materials, billboard and mass transit advertisements, signage at select locations, stenciling at storm drain inlets, radio advertisements, television advertisements, and websites);
- (e) Distribute educational materials, using whichever methods and procedures determined appropriate during development of the public education strategy;
- (f) Develop and convey messages to explain the benefits of water-efficient landscaping;
- (g) Utilize information from storm water-friendly landscaping programs;
- (h) Develop and convey messages specific to reducing illicit discharges with information about how the public can report incidents to the appropriate authorities;
- (i) Develop and convey of messages specific to proper application of pesticides, herbicides, and fertilizers;
- (j) Within the Permittee's jurisdiction, provide independent, parochial and public schools with materials to effectively educate school-age children, if applicable, about storm water and how they can help to protect water quality habitat in their local watersheds. The Permittee is encouraged to use environmental and place-based, experiential learning materials that are integrated into school curricula and school facility management. In the case that a local program does not exist, the Permittee may use California's Education and Environment Initiative Curriculum or equivalent;
- (k) Develop or coordinate with existing effective programs and convey messages specific to reducing discharges from pressure washing operations and landscape irrigation;
- (l) If applicable, utilize storm water-friendly education for organized car wash participants and provide information pertaining to car wash discharge reduction. The Permittee may use the Sacramento Stormwater Quality Partnership's River Friendly Carwash Program, or equivalent, for guidance;
- (m) Conduct focused education in identified illicit discharge flow areas based on identified illicit discharge(s).

4.4 CSUSM Public Education Strategy

The goal of the Education and Outreach Program is to develop and distribute educational materials and perform outreach efforts to help inform students, faculty, resident students, campus staff, and visitors about the everyday activities that can lead to potential impacts and pollutants in storm water runoff. Secondly, to inform them on their role within the watershed and how to positively impact water quality. CSUSM at a minimum must educate its target audiences about the importance of the storm water program and the general public's role in program implementation.

Of the minimum Phase II Permit requirements listed in Section 4.3, the following are specifically addressed at CSUSM through the following storm water education efforts:

- F.5.b.2.(ii)(j): At the discretion of faculty and the administration, college courses may include curricula related to storm water resources, management, pollution prevent, and treatment.
- F.5.b.2.(ii)(l): Organized or benefit car wash activities are not permitted on campus.

As described below, CSUSM is implementing an education program to raise awareness by providing educational materials to the target audiences or conducting outreach activities about the impacts of storm water discharges on water bodies and the steps that the CSUSM public can take to reduce pollutants in storm water runoff.

Training is the primary education and outreach strategy to be used for CSUSM staff.

4.5 Education and Outreach Implementation

The CSUSM campus has developed a number of activities, as part of its implementation strategy, to help educate students, faculty, visitors, residents (resident students) and staff on the importance of storm water pollution prevention.

The general public education and outreach activity categories and specific goal for each are described in Table 4.1.

Table 4.1: Public Education and Outreach Activity Categories

Activity Categories	Description	Goal
Public Communications	Announce public education events with details for attendance, participation, dates, and times. Use media as available (news bulletins, website, radio, printed media, posters) to educate and promote storm water pollution prevention.	Increase public knowledge, awareness, and attendance
Website	Maintain education materials and information current for target audiences. Include BMP information and illegal discharge and illicit connection reporting.	Provide public education materials and increase communication, and reporting.
Events	Promote storm water pollution prevention and awareness events for target audiences.	Increase public knowledge, awareness, and participation.
Demonstration sites	Exhibit innovative technology and storm water treatment accompanied by signs, brochures, etc.	Increase public awareness, knowledge, and understanding
Printed and videotaped media	Provide printed and videotaped media/materials to target audiences, as appropriate. For example: Cougar Chronicles.	Public awareness, knowledge, understanding

Activity Categories	Description	Goal
Signage	Maintain signage that identifies storm drain inlets and other features as appropriate to prevent pollution.	Public awareness, knowledge, understanding
Staff Training	Staff training will focus on illicit discharge detection and elimination, pollution prevention, and good housekeeping activities tailored to the activity or task.	Knowledge, understanding, and reporting.

4.5.1 Pollution Prevention Media Materials

The CSUSM has a host of pollution prevention media materials for various campus activities and target audience.

The vast majority of media materials and communications will be through the SH&S website and public service announcements using social media and similar public communication appropriate for the target audiences.

The CSUSM campus has developed storm water pollution prevention media materials for dissemination to target audiences, has made pollution prevention materials available on the SH&S website, and utilizes permanent storm drain stenciling as a pollution prevention and educational activity and strategy.

As appropriate, CSUSM will conduct and coordinate watershed and campus cleanup efforts and coordinate public outreach activities and efforts with the City of San Marcos and other parties, including non-governmental organizations to further enhance its education and outreach efforts.

Due to the nature of modern social media, there are natural overlaps between education/outreach and public involvement/participation that provide opportunities for CSUSM to comply with both Phase II Permit requirements simultaneously.



4.5.2 Staff Training – Illicit Discharge Detection and Elimination

The Phase II Permit (F.5.b.3(i)) requires implementation of training on illicit discharge detection and elimination for staff and at minimum include the following topics:

- (a) Identification of an illicit discharge or illegal connection;
- (b) Proper procedures for reporting and responding to the illicit discharge or illegal connection;
- (c) Follow-up training provided as needed to address changes in procedures, techniques, or staffing;

- (d) Annual assessment of their trained staff's knowledge of illicit discharge response and shall provide refresher training as needed;
- (e) Training of new staff who, as part of their normal job responsibilities may be notified of, come into contact with, or otherwise observe an illicit discharge or illegal connection;
- (f) Contact information, including the procedure for reporting an illicit discharge, shall be included in each of the Permittee's fleet vehicles that are used by field staff.

CSUSM has developed a training program for staff to address the requirements and anticipates conducting the training on an annual basis. The general steps undertaken to prepare or revise training on illicit discharge and detection procedures to staff are:

1. Compile and/or prepare training materials, such as handouts and posters. Topics will include storm water quality requirements, types of illicit discharges/disposal, reporting procedures and forms.
2. Identify staff who conducts field activities and others who may benefit from training.
3. Present information on illicit discharges during regular safety and tailgate meetings.

The goal of the illicit discharge detection and elimination training is to inform and raise the awareness of CSUSM staff, to increase the detection of illicit discharges and enhance the notification and reporting of illicit discharges. The ultimate goal is to prevent and eliminate illicit discharges from entering the storm drain system to reduce pollutants from such discharge to the maximum extent practicable.

CSUSM field staff is trained to be proactive when observing, reporting, investigating and eliminating illicit discharges to the storm drain system. The standard procedures for these activities will be disseminated during training.

The baseline training topics include:

1. Describe what are illicit and prohibited non-storm water discharges and exempt discharges (See SWMP Section 6.1.1).
2. Discuss the process of reporting illicit discharges and illicit connections. Direct field staff to call and report any suspected illicit discharge to request an investigation and/or cleanup. Provide contact information.
3. Describe how the incident documented and how follow-up activities are managed, including new products, procedures or re-training as needed.
4. Communicate that depending on the nature and source of the discharge enforcement procedures may be initiated.

4.5.3 Staff Training – Pollution Prevention and Good Housekeeping

The Phase II Permit (F.5.b.4(i)) requires implementation of training on implementation of pollution prevention and good housekeeping practices for operations staff be conducted on a biennial basis for operations staff. It also requires evaluating if training is required on alternate years by evaluating employee knowledge of the practices (F.5.b.4(i)). Training must include the following (F.5.b.4(ii)):

- (a) General storm water education component, any new technologies, operations, or responsibilities that arise during the year and the permit requirements which apply to the staff being trained. Clear guidance on appropriate storm water BMPs to use at Permittee owned facilities and during typical Operation and Maintenance activities.
- (b) An assessment of trained staff's knowledge of pollution prevention and good housekeeping and shall revise the training as needed.
- (c) A requirement that any contractors hired by the Permittee to perform Operation and Maintenance activities shall be contractually required to comply with all the storm water BMPs, good housekeeping practices, and standard operating procedures described above.
- (d) The Permittee shall provide oversight of contractor activities to ensure that contractors are using appropriate BMPs, good housekeeping practices and following standard operating procedures.

CSUSM has developed a training program for staff to address the requirements listed above and intends to conduct this training in conjunction with the illicit discharge detection training (Section 4.5.1 above) on an annual basis.

Contractor oversight is performed on a routine basis by both the Facilities Department and Office of SH&S.

4.6 Education and Outreach Activities and Schedule

Planned campus public education and outreach activities are specifically listed in Table 4.2 with the frequency. Some activities may be subject to funding and resources and initiated by other outside organizations as noted. Additional activities not listed in Table 4.2 may take place as opportunities or needs arise during the reporting year and will be reported as noted in Section 4.7.

Table 4.2: Public Education and Outreach Activities

Activity	Description	Responsible Department	Schedule	Effectiveness Metric
Kick Butt Event	Cigarette butt litter collection event on campus to demonstrate the amount of cigarette butt litter left on the ground and its impact on the environment	SH&S	Annually – April	Number of event volunteers and number of butts collected
Public Service Announcements	Prepare and publicize pollution prevention messages using website, social media, radio, printed materials (newsletter, newspaper, bulletins)	SH&S	Annually – April and/or September	Number of announcements
Awareness Survey	Conduct a target audiences storm water pollution prevention survey	SH&S	FY 18-19 and FY 20-21	Percent of correct responses, participation levels, awareness
Earth Day Event and/or Clean-up Event	Participate and/or promote regional events in the watershed and/or on campus	SH&S	Annually – As regionally available	Number of events promoted and participation levels
Illicit Discharge Reporting	Promote illicit discharge reporting through website or phone line	SH&S	On-going	Number of reported incidents and confirmed incidents
Campus Activity	Find opportunities for campus-wide storm water pollution prevention activities (e.g. student projects)	SH&S	On-going	Number of activities conducted and participation levels
Employee Training	Provide storm water-related addressing key elements of the program through annual employee training in person or through on-line course/materials	SH&S	Annually	Number of employees trained during the reporting year

(Note: also see Section 5 – Public Involvement and Participation Program. Permit requirements may overlap between Education and Outreach, and Public Involvement and Participation and may be accounted under either or both sections; e.g. kick butt campaign).

4.7 Recordkeeping and Annual Reporting

SWMP record keeping and annual reporting is included in Section 12. In summary, annual reporting for the Education and Outreach Program is completed in SMARTS by answering specific questions and uploading supporting documentation by the established reporting due date of October 15th for the previous reporting period that runs from July 1st through June 30.

The specific reporting metrics and requirements for the Education and Outreach Program include annual certification that an Education and Outreach option has been selected (F.5.b.1) and providing an explanation or description of the option, including collaborative efforts with countywide or regional programs as documented in an agreement or similar document.

SMARTS Annual Reporting and Certification

Reporting is required on the implementation and metrics of education and training activities annually by answering the questions in SMARTS and uploading supporting documentation.

Recordkeeping to complete reporting for the Education and Outreach Program includes information and data related to education and outreach efforts aimed at target audiences, water quality problems, and an assessment of effectiveness as outlined in Table 4.2 above. Efforts include developing a training program and implementing it by providing at minimum annual training to key staff that can have an effect on storm water and runoff compliance

As part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) and any Storm Water Program Modifications as required in the Phase II Permit (See Section 10), any Education and Outreach Program implementation and/or compliance deficiencies are identified as part of annual reporting and are reported as new or modified BMPs⁷ as part of the PEAIP section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Addition details on the PEAIP and program modifications are provided in Section 10.

Table 4.3: Summary of Annual Reporting Milestones for the Public Education and Outreach Program

Completion Date	Requirements		
Annually by 6/30	Provide a summary of reporting year activities (July 1 – June 30) in the comments section and upload supporting documentation in SMARTS	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

⁷ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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5.0 PUBLIC INVOLVEMENT AND PARTICIPATION PROGRAM

Permit requirement found in F.5.c.

5.1 Permit Requirement Overview

Section F.5.c of the Permit requires involvement by the CSUSM public or target audiences (defined in Section 4.3 above) in the development and involvement of activities related to the program. The Public Involvement and Participation Program must encourage volunteerism, public comment and input on policy, and activism in the community in accordance with Section F.5.c(ii) of the Phase II Permit and requires at a minimum the following:

- Ensure that high priority storm drain inlets include a labeled, stenciled or other effective method (e.g., clearly visible sign strategically placed in area of high pedestrian activity) of communicating a storm water awareness message such as “drains to creek” or “only rain in the drain”.
- Integrating storm water awareness messages and information on a publicly accessible website.

The goal of the CSUSM Public Involvement and Participation Program is to organize events to help education the student body, faculty and campus staff regarding storm water quality and the impacts to receiving waters through active participation and volunteerism. The events will focus on both campus wide and watershed activities and concerns. Also, this program will provide opportunities for students, faculty, and staff to participate in program development and implementation primarily through the CSUSM website and social media.

5.2 Public Involvement and Participation Activities

The CSUSM campus aims to promote and educate target audiences on the importance of storm water pollution prevention. The CSUSM campus uses storm water pollution prevention media materials for dissemination to faculty and staff, uploads current media pollution prevention materials to the SH&S website (as noted in Section 4.6 and Table 4.2), and utilizes permanent storm drain stenciling to educate its audience. CSUSM promotes watershed and campus cleanup efforts as opportunities arise and coordinates public outreach activities and efforts with the City of San Marcos when possible.

CSUSM will promote activities as they become available that may include the following:

5.2.1 San Marcos Creek or Beach Cleanup Event

The Environmental Stewards Association (ESA) at CSUSM is a club for all students, environmentalists, and those wanting to learn more about the environment and the impact on it. ESA has different sectors of the club including; sustainability, gardening, ocean conservation, and general environmental topics. We cater to everyone's interests and questions within



the environmental field. the club also posts about job, internship, and volunteer opportunities in the area and throughout the country all within the environmental field. ESA encourages many different perspectives about the environment and its relations to politics, society, and health. ESA typically conducts 7-8 beach clean-up events each academic year, each year.

5.2.2 Storm Drain Marking

CSUSM has permanently marked all storm drain inlets on campus with “No Dumping - Drains to the Ocean” or similar messages. The storm drain marking program uses a permanent message that will be easily identified and seen on the storm drain inlets throughout campus. The markings are a visual and permanent reinforcement of other messages and media used across campus and during other related activities.

5.2.3 Earth Day Event



The Earth Day Network's mission is to broaden, diversify and activate the environmental movement worldwide, driving action year-round through a combination of education, public policy, and consumer campaigns. April 22, 1970 marks the beginning of Earth Day and the modern environmental movement. Earth Day has become an annual event for people around the world to celebrate the earth and renew a commitment to building a safer, healthier and cleaner world for all. Founded by the organizers of the first Earth Day, Earth Day Network (EDN) promotes environmental stewardship and year-round progressive action worldwide.

EDN is a driving force steering environmental awareness around the world. Through EDN, activists connect, interact, and impact their communities, and create positive change in local, national, and global policies. CSUSM will promote local and regional Earth Day activities and events for participation by target audiences and link causes to current campus activities, as appropriate.

5.2.4 Alternative Transportation

Students, faculty and staff can reduce greenhouse gases and storm water pollution by walking, cycling, carpooling and using public transportation (Sprinter and bus). CSUSM is committed to maintaining campus bike lockers for use by students, staff and the public. The SH&S Department assists Parking and Commuter Services by sharing different ways the campus community can use alternative transportation. CSUSM encourages all non-Single-Occupant Vehicular driving and share opportunities for free transportation passes to save money and assist with CSUSM's sustainability goals.

5.2.5 Social Media

Social media provides the latest means of public communication used by CSUSM as part of its implementation strategy for both education/outreach and public involvement/participation.



Facebook, Twitter, Website and Other Media

CSUSM will use website, social media and public communication to disseminate special messages to students, faculty, and staff regarding the campus information and engage the target audiences in participation on current issues and events.

5.3 Recordkeeping and Annual Reporting

SWMP record keeping and annual reporting is included in Section 12. In summary, annual reporting is completed in SMARTS by answering specific questions and uploading supporting documentation by the established reporting due date of October 15th for the previous reporting period July 1st through June 30th.

The specific reporting metrics and requirements for the Public Involvement and Participation Program include annual verification that the public is involved in the development and implementation of activities related to the Storm Water Management Program per Section F.5.c(ii)(a-b).

SMARTS Annual Reporting and Certification

Reporting is required on the implementation and metrics of public involvement and participation in CSUSM's annual report by answering the questions in SMARTS and by uploading supporting documentation.

Recordkeeping to complete reporting for the Public Involvement and Participation Program includes information and data related to participation levels and CSUSM efforts aimed to encourage volunteerism and public comment by target audiences. Some overlap with Public Outreach and Education efforts may exist at CSUSM.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (See Section 10), any Public Involvement and Participation Program implementation and/or compliance deficiencies are identified as part of annual reporting and are included as revised or new BMPs⁸ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Addition details on the PEAIP and program modifications are provided in Section 10.

Table 5.1: Summary of Annual Reporting Milestones for the Public Involvement and Participation Program

Completion Date	Requirements		
Annually by 6/30	Provide a summary of a public participation and involvement activities (F.5.c) and upload supporting documentation in SMARTS	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

⁸ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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6.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Permit requirement found in F.5.d.

6.1 Permit Requirement Overview

The Phase II Permit requires implementation of an Illicit Discharges Detection and Elimination Program (IDDE Program). The goal of the IDDE Program is to develop and implement a plan to detect, investigate, and eliminate non-storm water discharges (illicit discharges) such as process water, wash water, chemical spills, dumping, and other non-storm water discharges to the storm drain system. The IDDE Program may also include coordination with the Phase I MS4 Permittee, that is, the City of San Marcos.

The Phase II MS4 Permit has three main requirements that are part of the IDDE Program:

- **Outfall Mapping** – develop and maintain an up-to-date MS4 outfalls map and a visual outfall inventory for field sampling (F.5.d.1) that includes:
 - Location of outfalls operated by CSUSM and drainage areas,
 - Individual alphanumeric identifier for each outfall mapped, and
 - Utilizing photographs or other electronic database to provide baseline information and track operation and maintenance needs over time.
- **Field Sampling to Detect Illicit Discharges** – to conduct field sampling to detect potential illicit discharges and conduct monitoring of the discharge for specific pollution indicator parameters and exceedance of specified action levels (F.5.d.2(ii)(a)), and
- **Illicit Discharge Detection and Elimination Source Investigations and Corrective Actions** – to have in place written procedures for conducting investigations into the source of all non-storm water discharges suspected to be illicit discharges, and to eliminate them, and to implement corrective actions (e.g., BMPs) for any detected illicit discharges in the MS4 (F.5.d.3(ii)).

The details of these three requirements and the implementation strategy adopted by CSUSM are described below in Sections 6.2 and 6.3 respectively.

6.1.1 Discharge Prohibitions

The Phase II Permit includes discharge prohibitions that are the basis for implementation of an IDDE Program. Discharge prohibitions along with Effluent Limitations and Receiving Water

Limitations⁹ are intended to provide protection of receiving waters and provide the framework for the IDDE Program.

Discharge prohibitions are defined by the Phase II Permit in Section B and included here for completeness.

1. Discharges of waste from the MS4 that are prohibited by Statewide Water Quality Control Plans or applicable Regional Water Quality Control Plans (Basin Plans) are prohibited.
2. Discharges of storm water from the MS4 to waters of the U.S. in a manner causing or threatening to cause a condition of pollution or nuisance as defined in Water Code § 13050 are prohibited.
3. Discharges through the MS4 of material other than storm water to waters of the U.S. shall be effectively prohibited, except as allowed under Provision B or as otherwise authorized by a separate NPDES permit. The following non-storm water discharges are not prohibited provided any pollutant discharges are identified and appropriate control measures to minimize the impacts of such discharges, are developed and implemented under the Permittee's storm water program. This provision does not obviate the need to obtain any other appropriate permits for such discharges.
 - a. water line flushing;
 - b. individual residential car washing;
 - c. diverted stream flows;
 - d. rising ground waters;
 - e. uncontaminated ground water infiltration
(as defined at 40 C.F.R. §35.2005(20)) to separate storm sewers;
 - f. uncontaminated pumped ground water;
 - g. discharges from potable water sources;
 - h. foundation drains;
 - i. air conditioning condensation;
 - j. springs;
 - k. water from crawl space pumps;
 - l. footing drains;

⁹ Effluent Limitations are found in Phase II Permit Section C and included in Section 1.1.1 of this SWMP. Receiving Water Limitations are found in Section D of the Phase II Permit and in Section 1.1.2 of this SWMP.

- m. flows from riparian habitats and wetlands;
- n. dechlorinated swimming pool discharges; and
- o. incidental runoff from landscaped areas
(as defined and in accordance with Section 4 below; from
Provision B.4).

Discharges or flows from firefighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the U.S.

If a Permittee or a Regional Water Board Executive Officer determines that any individual or class of non-storm water discharge(s) listed above may be a significant source of pollutants to waters of the U.S. or physically interconnected MS4, or poses a threat to water quality standards (beneficial uses), the Regional Water Board Executive Officer may require the appropriate Permittee to monitor and submit a report and to implement BMPs on the discharge.

4. Discharges in excess of an amount deemed to be incidental runoff shall be controlled. Regulated Small MS4s shall require parties responsible for such to implement 4.a-d below. Incidental runoff is defined as unintended amounts (volume) of runoff, such as unintended, minimal over-spray from sprinklers that escapes the area of intended use. Water leaving an intended use area is not considered incidental if it is part of the facility design, if it is due to excessive application, if it is due to intentional overflow or application, or if it is due to negligence.

Parties responsible for controlling runoff in excess of incidental runoff shall:

- a. Detect leaks (for example, from broken sprinkler heads) and correct the leaks within 72 hours of learning of the leak;
- b. Properly design and aim sprinkler heads;
- c. Not irrigate during precipitation events; and
- d. Manage pond containing recycled water such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater, and the appropriate Regional Water Board is notified by email no later than 24 hours after the discharge. The notification is to include identifying information, including the Permittee's name and permit identification number.

Non-storm water runoff discharge that is not incidental is prohibited, unless otherwise specified in Section 3 above.

Incidental runoff may be regulated by waste discharge requirements or, where necessary, waste discharge requirements that serve as a NPDES permit, including MS4 permits.

5. Discharge to Areas of Special Biological Significance (ASBS) is prohibited except in compliance with the ASBS Special Protection Provisions in Phase II Permit Attachment C. Regulated Small MS4s that discharge to an ASBS are listed in Phase II Permit Attachment D and are subject to the ASBS Special Protection Provisions¹⁰.

CSUSM implements an illicit connection/illicit discharge elimination program that includes the following core components:

- Illicit discharge detection and elimination
- Illicit connection detection and elimination
- Public reporting through various avenues
- Reporting hazardous substances and discharges entering or threatening to enter the City of San Marcos MS4 system and receiving waters
- Referring prohibited discharges to the City of San Marcos if originating from its jurisdiction or otherwise observed to enter the Phase I MS4

The following categories represent what experts believe are the most commonly occurring sources of illicit discharges:

- Incidental spills or disposal of wastes or non-storm water. These may be intentional, unintentional or accidental and would typically enter the storm drain system directly through drain inlets, catch basins or manholes or be deposited in the public right-of-way and be carried by rain water runoff to reach the storm drain system.
- Discharges of sanitary sewage due to overflows or leaks; usually unintentional or accidental, but may be continuous in cases where minor leaks go undetected for a lengthier amount of time.
- Continuous or intermittent discharges of prohibited non-storm water other than through an illicit connection. These typically occur as surface runoff from outside the public right-of-way (e.g., area wash down of a loading dock or a spill).
- Continuous or intermittent non-storm water discharges through an illicit connection.

Regardless of the source, type or characteristics of the illicit discharge or connection, CSUSM is committed to preventing, identifying, and correcting all non-storm water discharges and complying with discharge prohibitions through a proactive, multi-prong approach that includes outreach and education, visual observations and inspections of facilities and higher risk activities, inspection of

¹⁰ CSUSM does not discharge to an ASBS.

outfalls, sample collection and testing, implementation of good housekeeping and source control BMPs, and reporting by target audiences.

6.2 Illicit Discharge Detection and Elimination Program Requirements

6.2.1 Outfall Mapping

The Phase II Permit requires (F.5.d.1) the preparation and maintenance of an up-to-date and accurate outfall map that includes a visual outfall inventory to be used for site visits to each identified outfall as described in Section 6.1.

6.2.2 Field Sampling to Detect Illicit Discharges

The Phase II Permit requires (F.5.d.2) field sampling be conducted to detect potential illicit discharges at the outfalls inventoried per Section 6.2.1 and conduct sampling if water is flowing or ponded and it has been more than 72 hours since the last rain event.

6.2.3 Illicit Discharge Detection and Elimination Source Investigations and Corrective Actions

The Phase II Permit requires (F.5.d.3) the development of written procedures for conducting investigations into the sources of all non-storm water discharges suspected to be illicit discharges, including approaches to requiring such discharge to be eliminated, and procedures to implement corrective actions (e.g., BMPs).

6.3 Illicit Discharge Detection and Elimination Program Implementation

6.3.1 Outfall Map and Field Visual Observations Sites

The outfall map presented in Appendix B includes the required numeric identifiers for each location that has been designated as a visual observation site. A summary of each field visual observation site is provided in Table 6.1 and primary visual observation upstream investigation locations in Table 6.2. The map and inventory comply with section F.5.d.1(ii) of the Phase II Permit. The outfall map will be reviewed at least annually upon completion of the visual observation and field sampling event and updated as needed. All outfalls from CSUSM discharge to the City of San Marcos MS4 and eventually to San Marcos Creek (See SWMP Section 3).

SMARTS Annual Reporting and Certification

Implement an IDDE Program that includes an up-to-date outfall map, visual inspections and sampling of outfalls, and follow-up investigations. Include updated map and supporting documentation as part of Annual Report.

Table 6.1: Field Visual Observation Sites

Label	Location Description	Location Coordinates	Drainage Area
VOM-01	Manhole on West end of open field near SW corner of Lower Soccer Field. Inflow: three pipes (48", 3", 4") Outflow: 48" to City MS4	33° 7'35.90"N 117° 9'54.37"W	Drainage from Lower Lot B and Parking Lot C. Includes drainage from upstream areas via drainage channel on West side of Parking Lot C (VOM-01-I2)
VOM-02	Manhole on NW corner of Craven Dr. and S. Twin Oaks Valley Rd Intersection Inflow: inlet across street South (8-10"), North (6-8"), upstream line. Outflow: to City MS4	33° 7'38.79"N 117° 9'53.97"W	Surface flow down Craven Drive and Palm Canyon Drive and parking lots NE of Palm Canyon Drive. Includes drainage from areas surrounding Craven Hall (Bldg. 1), Science Hall (Bldg. 3), Markstein Hall (Bldg. 13), Academic Hall (Bldg. 14), University Hall (Bldg. 15), Palm Court plaza, Founders Plaza, and partial drainage from University Plaza.
VOM-03	Manhole on sidewalk on Barham Drive North of Wetland Area (Facility No. 64). Inflow: 3 pipes; one from street inlet.	33° 7'59.10"N 117° 9'39.14"W	Wetland area overflow. Drainage from sporting fields on the NW quadrant of campus bordered by Barham Drive on the North, Campus Way and Campus View Drive on the East and Craven Drive on the South. Includes: multi-purpose sports field, Softball, Baseball field, Track and Field complex. No street drainage.
VOM-04	Manhole on the sidewalk on the SE corner of the intersection of Barham Drive and Campus Way Inflow: two pipes on W and E; upstream 36".	33° 8'0.21"N 117° 9'33.56"W	Includes drainage from Campus Way, Campus View Drive, Craven Way Circle, Science Hall 2 (No. 37) areas, the Promenade, Social Behavioral and Sciences Bldg (Bldg.31), Arts (Bldgs 26 and 27), Lot L and Clarke Field House and surrounding areas, Kellogg Library (Bldg 27) and Plaza.
VOM-05	Manhole on inlet structure on NW corner of Parking Lot-O Inflow: East Outflow: North; "L" shape	33° 7'58.33"N 117° 9'32.02"W	Drainage from Bldgs 301 and 303 (student housing), the Parking Structure (Bldg. 103), Parking Lot N, Campus View Drive (East of Campus Way).
VOM-06	Manhole on the sidewalk just North of Bldg. 303. North Village Apartments Inflow: from South. Outflow to North	33° 8'2.53"N 117° 9'26.17"W	Drainage from North Village Apartments (Bldgs 305 and 307) and surrounding areas to the east, Maintenance Bldg and the upper East portion of the campus (Parking Lots J, and M) and the Center for Children and Families (Bldg 22) that drains to a natural swale prior to entering the underground storm drain at VOM-06-I1

Table 6.2: Primary Upstream Source Investigation Locations

Label	Location Description	Location coordinates	Drainage Area
VOM-01-I1	Manhole in open field just West of Lower Lot B	33° 7'35.44"N 117° 9'51.25"W	First manhole upstream of VOM-01.
VOM-01-I2	End of drainage channel at headwall; West of the Parking Lot C adjacent to Walkway to Lower Lot B.	33° 7'33.99"N 117° 9'42.06"W	Headwall downstream of drainage channel. May include urban runoff and/or groundwater flows from shallow groundwater table.
VOM-03-I1	Drainage pipe to vegetated swale adjacent to fence and 150 feet SW of the Baseball Field and adjacent to Parking Lot Z	33° 7'48.24"N 117° 9'49.60"W	Drainage from sports fields. May include groundwater infiltration from soils and possible irrigation runoff (deep well groundwater used for irrigation).
VOM-06-I1	Headwall at end of drainage channel; adjacent to North corner of Parking Lot N.	33° 7'58.88"N 117° 9'21.65"W	Headwall at end of drainage swale. May include shallow groundwater from upstream, undeveloped land/slopes

6.3.2 Field Visual Observation and Sampling at Field Observation Sites

As required in the Phase II Permit (F.5.d.2), field visual observations are conducted at the established sites (see Section 6.3.1) to detect potential illicit discharges. Visual observations are conducted at the sites annually, preferably during the dry season (April 1st through September 30th) to minimize the influence of rising groundwater from winter rains infiltrating the storm drain system or entering through storm drain inlets. Groundwater is prevalent on the campus property and has been documented on several occasions. Therefore, in addition to the recommended indicator parameters in Table 6.3 below (Section F.5.d.2, Table 1 of the Phase II Permit), the list has been customized using best professional judgment and CSUSM experience to include groundwater testing parameters when deemed appropriate (See Table 6.4).

Sample collection for testing for the indicator parameters provided in Table 6.3 is intended to assist in the identification of the discharge source and provides the action levels from the Phase II Permit where applicable. Several parameters (e.g., alkalinity, phosphorous), shown in italics have been added due to local, shallow groundwater conditions that can be prevalent in the storm drain system.

Table 6.3: Indicator Parameters for Detection of Illicit Discharges and Associated Action Level Concentrations

Phase II Permit ¹¹ Indicator Parameters Used to Detect Illicit Discharges and Associated Action Level Concentrations							
Parameter ¹²	Action Level	Test Method ¹³	Discharge Type It Can Detect				Laboratory or Analytical Challenges
			Sewage	Wash Water	Tap Water	Commercial Liquid Waste	
Alkalinity	NA	2320	○	Θ	○	Θ	<i>Alkalinity of many surface waters is primarily a function of carbonate, bicarbonate and hydroxide content. It is taken as an indication of the concentration of these constituents.</i>
Ammonia	≥ 50 mg/L	4500-NH ₃ B,C	●	Θ	○	Θ	Can change into other nitrogen forms as the flow travels to the outfall (nitrate, nitrite, organic nitrogen)
Color	≥ 500 units		Θ	Θ	○	Θ	Varies depending on source and proximity
Conductivity	≥ 2,000 μS/cm	2510B EPA 120.1	Θ	Θ	○	Θ	Ineffective in saline waters. Can be an indication for groundwater. Values < 750 uS/cm may indicate excessive potable water discharge or flushing.
Detergents-Surfactants (MBAS)	NA	5540C	●	●	○	Θ	Test reagent is a hazardous waste
Fluoride	NA	4500F C	○	○	●	Θ	Good in conjunction with other parameters (MBAS, ammonia and potassium) to distinguish between sewage and wash water

¹¹ Phase II Permit Table 1. Field Sampling Indicator Parameters and Table 2 Action Level Concentrations for Indicator Parameters.

¹² Includes parameters shown in italic font to assist CSUSM in the identification of groundwater infiltration to the MS4

¹³ Unless otherwise noted, methods referenced are from Standard Methods for the Examination of Waste Water

Phase II Permit ¹¹ Indicator Parameters Used to Detect Illicit Discharges and Associated Action Level Concentrations							
Parameter ¹²	Action Level	Test Method ¹³	Discharge Type It Can Detect				Laboratory or Analytical Challenges
			Sewage	Wash Water	Tap Water	Commercial Liquid Waste	
Hardness (as CaCO ₃)	≤ 10 mg/L or ≥ 2,000 mg/L	2340B	Θ	Θ	Θ	Θ	Hardness is usually associated with scale-forming in pipes or other surfaces, but it is influence by many factors. Under certain conditions water may have the characteristics that allow CaCO ₃ to be dissolved from surfaces.
pH	≤ 5 or ≥ 9	EPA 150.1	○	Θ	○	Θ	Elevated pH is especially problematic in combination with high ammonia.
Phosphorus	NA	4500-P	Θ	Θ	○	○	<i>Can be the result of fertilizer and raw or treated wastewater.</i>
Potassium	≥ 20 mg/L		Θ	○	○	•	May need two separate analytical techniques, depending on concentration
Turbidity	≥ 1,000 NTU	2130B	Θ	Θ	○	Θ	Must be determined as soon as possible after the sample is taken without altering the original sample conditions such as temperature or pH.

- Can almost always (>80% of samples) distinguish this discharge from clean flow types (e.g., tap water or natural water). For tap water can distinguish from natural water.
- Θ Can sometimes (>50% of samples) distinguish this discharge from clean flow types depending on regional characteristics or can be helpful in combination with another parameter.
- Poor indicator. Cannot reliability detect illicit discharges or cannot detect tap water.

Field visual observations and sampling is preferably conducted 72 hours or more after a rain event to minimize the appearance of ponded rainwater in the storm drain structure. Any field visual observation site found to have ponded or flowing water during a routine inspection is required to be sampled (Phase II Permit Section F.5.d.2(ii)).

During visual observations and sample collection, if groundwater is suspected as the source of ponded or flowing water, then Table 6.4 provides sampling parameters and data to consider obtaining to support those conclusions when applicable. The analytical results may eliminate the need to conduct extensive upstream investigation of sources, if there is evidence that the soured is local shallow groundwater.

Table 6.4: Groundwater Analytical Parameters and Typical Ranges at CSUSM

Parameter	Test Method ¹⁴	Local Groundwater Range (Low to High) ¹⁵		Typical Tap Water Concentrations		Notes
				Range	Average	
Alkalinity (mg/L) ¹⁶	2320B	149	198	142-287	230 ¹⁷	Alkalinity, carbonate, bicarbonate, and hydroxide are reviewed as a set
Calcium (mg/L)	3120B	95.3	104	32 - 68	57.5	Vallecitos Water District's 2013 Water Quality Analysis
Chloride (mg/L)	EPA 300.0	252	266	73 - 90	83	Vallecitos Water District's 2013 Water Quality Analysis
Carbonate (mg/L)	2320B	ND	ND			Alkalinity, carbonate, bicarbonate, and hydroxide are reviewed as a set
Conductivity (uS/cm)	EPA 120	1314	1390	NA	NA	Conductivity is generally higher with the presence of inorganic ions
Bicarbonate (mg/L)	2320B	149	198	NA	NA	Alkalinity, carbonate, bicarbonate, and hydroxide are reviewed as a set

¹⁴ Unless otherwise noted, methods referenced are from Standard Methods for the Examination of Waste Water

¹⁵ Based on limited data available from 2012-2014. On-going sampling will be used to refine data in this table.

¹⁶ Alkalinity has been found to be composed of bicarbonate with carbonate and hydroxide being ND.

¹⁷ Measured as Hardness.

Parameter	Test Method ¹⁴	Local Groundwater Range (Low to High) ¹⁵		Typical Tap Water Concentrations		Notes
				Range	Average	
Hydroxide (mg/L)	2320B	ND	ND	NA	NA	Alkalinity, carbonate, bicarbonate, and hydroxide are reviewed as a set
Nitrate (as N) (mg/L)	4500 NO3E	9.93	14.0	ND	ND	Vallecitos Water District's 2013 Water Quality Analysis
Magnesium (mg/L)	3120B	33.9	38.4	15-24	21	Vallecitos Water District's 2013 Water Quality Analysis
pH (units)	MS4500-H+B	7.5	7.5	7.5-8.8	8.3	Vallecitos Water District's 2013 Water Quality Analysis
Sodium (mg/L)	3120B	92.6	117	76-81	80	Vallecitos Water District's 2013 Water Quality Analysis
Sulfate (mg/L)	4500 SO4E	92.6	107	89 - 217	171	Vallecitos Water District's 2013 Water Quality Analysis

6.4 Routine Field Visual Observations and Sampling

General procedures to conduct routine field visual observation and sampling at field observation sites are described below.

The designated visual observation locations in Table 6.1 include manholes and other facilities that can be safely investigated from the surface and are visually checked for evidence of illicit discharges or upstream illegal connections discharging through the site. Entry into the storm drain is not required to visually inspect them. In general, the structures in Table 6.1 are considered a confined space and cannot be accessed without special training and equipment. A confined space is "confined" if it is not intended for human occupancy, has limited openings for entry or exit, and has insufficient natural or mechanical ventilation.

Equipment and tools needed to visually inspect the locations includes manhole access tools and safety equipment (e.g. gloves, steel-toed shoes), a mirror or powerful flashlight to illuminate the bottom of the structure. The standard log sheet found in Appendix B shall be used to document the findings that include weather conditions, flow conditions, odors, color, etc.

Samples shall be collected if there is evidence of ponding or flowing water, if a representative sample can be safely collected from the structure surface. Since every sampling location is unique, each may present different challenges in sample collection including the bottom of the structure or constraints within the structure (e.g., uneven bottom). There may be instances in which the amount of ponded water is minimal (less than a liter) or so shallow (a few inches) that it cannot be collected or may not be representative of the water's origin (stagnant water with altered characteristics due to biological growth or changes in chemistry, such as pH, due to contact with concrete pipes/manhole structures). These instances shall be noted on the visual observation form with appropriate details justifying that a representative sample could not be collected. Equipment and tools to collect a sample may include disposable latex or nitrile gloves, sampling pole, laboratory provided sampling bottles with appropriate preservatives, sample bottle labels, water resistant pens and markers, ice chest and ice (to preserve samples during transportation). A laboratory chain-of-custody form is also required and should be completed prior to arriving at the laboratory to drop-off samples or sample pick-up by the laboratory, if used. Analytical testing will be performed at minimum for the parameters shown in Table 6.3 above. Other parameters may be added based on observations, suspected discharges, and using best professional judgment. If groundwater is suspected as the main cause of water ponding or flow, the parameters listed in Table 6.4 may be considered for testing to verify groundwater as the source. Samples must be collected and preserved according to EPA or SWRCB approved laboratory protocols.

Field testing must be performed soon after sample collection for pH and conductivity to meet holding times of less than 15 minutes. Field instruments must meet the minimum requirements and shall be calibrated as recommended by the manufacturer to ensure proper and valid results. An instrument log sheet should be used to record field instrument calibration and maintenance.

The analytical testing laboratory shall be accredited by the State of California, Department of Health Services, Environmental Laboratory Accreditation Program (ELAP) for the results of the parameters being tested to be valid and acceptable for compliance reporting.

Analytical results for all samples collected shall be compared to the Phase II Permit Action Levels (Table 6.3) to determine if follow-up sampling and source investigations are required as described in Section 6.3.2. All testing data collected from both routine visual observation site visits and any source investigations shall be entered into a data spreadsheet or database to maintain a historical record of conditions in the storm drain system and facilitate future modifications to the program.

If an illicit discharge or illegal connection is suspected as the cause of flow during field visual observation and sampling activities, then field staff shall immediately initiate a source investigation and/or corrective actions (per SWMP Section 6.3.2.). Samples should be collected, if practical, but shall not significantly delay upstream tracking activities that may lead to identification of the source.

6.5 Description of Potential Sources of Pollution

A list of general activities on the CSUSM campus that could contribute to storm water pollution is provided in Table 6.5 - Potential Pollution Activities at CSUSM. To prepare the list of potential pollutant sources, CSUSM staff reviewed information on historic spills as well as knowledge of day-to-day operations to identify activities and sources of potential pollutants of concern using best professional judgment (BPJ). BMP to address potential pollutant sources and activities in Table 6.5 are found in Appendix E of this SWMP. Additional information on potential polluting

activities and applicable BMPs are identified under Pollution Prevention/Good Housekeeping in Section 9.

Table 6.5: Potential Polluting Activities at CSUSM

Activity/Source	Pollutants Sources	Primary Potential Pollutants
Building maintenance (washing, painting, graffiti abatement, repairs)	Wash water, paint chips, cleaning products, dirt and sediment	pH, detergents, solvents, metals, organic compounds, sediment, nutrients, trash
Chemical storage facilities	Cleaning compounds, fuels, paint, hazardous materials, vehicle fluids (oil, grease, antifreeze)	Oil and grease, pH, detergents, volatile organics, metals, inorganic compounds
Chemical spills	Cleaning compounds, diesel, paint, hazardous materials, vehicle fluids (oil, grease, antifreeze)	Oil and grease, pH, detergents, solvents, metals, organic compounds
Construction activities	Concrete, drywall, paint, sediment, gasoline, diesel, spills, cleaning	pH, sediment, trash organic compounds, metals, PAHs
Equipment storage	Cleaning compounds, diesel, paint, hazardous and non-hazardous materials, spills	pH, detergents, solvents, metals, organic compounds, sediment, PAHs, trash
Natural erosion	Sediment, organic matter - bare/exposed soil slopes	Sediment, nutrients, indicator bacteria
Food service operations	Food residue, oil/grease, storage, wash water, spills	Oil and grease, pH, nutrients, trash, indicator bacteria
Grounds maintenance (landscaping)	Green waste handling, fuel spills, landscaping materials, wash water	Oil and grease, pH, pesticides, herbicides, fertilizers, trash sediment, nutrients, sediment
Grounds maintenance (maintenance)	Cleaning compounds, hazardous and non-hazardous materials and waste, wash water, spills	pH, detergents, solvents, metals, organic compounds, sediment, nutrients, trash
Greenhouse	Sediment, organic matter, storage areas, over-irrigation, spills, waste management	Oil and grease, pH, pesticides, herbicides, fertilizers, trash, nutrients, sediment
Impervious areas	Increased flows, spills, leaks	Oil and grease, sediment, heavy metals, PAHs
Loading/unloading areas	Petroleum products, cleaning solutions, wash water, waste handling	Oil and grease, fertilizers, pesticides, herbicides, detergents, organic solvents, PAHs, trash
Outdoor storage of raw materials	Materials (e.g., sand, asphalt, soil), paint, solvents, diesel/gasoline, spills, leaks	Sediment, pesticides, herbicides, fertilizers, metals, organic compounds, oil and grease, pH, metals

Activity/Source	Pollutants Sources	Primary Potential Pollutants
Painting (indoor)	Paint, rinse water (oil and water based), thinner, paint chips	Oil and grease, pH, metals, organic compounds
Painting (outdoor)	Paint, rinse water (oil and water based), thinner, paint chips	Oil and grease, pH, metals, organic compounds
Parking lot runoff	Spills and leaks from vehicles, waste receptacles	Oil/grease, heavy metals, trash, PAHs
Roof runoff	Particulate matter and associated pollutants	Sediment, metals
Public buildings	Material and waste handling, spills, leaks, material finishes	Trash, debris, litter, organic compounds, detergents, metals
Sewer line blockages	Raw sewage spills	Nutrients, indicator bacteria, oil and grease, odors
Sewer line seepage	Raw sewage spills, leaks	Nutrients, indicator bacteria, oil and grease, odors
Solid waste containers	Litter, debris, solid waste	Trash, pH, metals, organic compounds, oil and grease, indicator bacteria
Trash storage areas	Organic materials, hazardous materials, litter, debris	Trash, pH, metals, organic compounds, oil and grease, indicator bacteria
Composting facility	Organic, nutrients, litter	Nutrients, indicator bacteria, oil and grease, odors
Vehicle and equipment washing (staff)	Cleaning products, oil/grease, vehicular fluids	pH, detergents, solvents, metals, organic compounds, sediment, nutrients, trash
Utility line maintenance and repairs (water/ irrigation/ sewer) and fire protection systems	Materials (e.g., adhesive cements, primers), heavy flows, erosion	Chloramines, chlorine, sediment, pH, detergents, solvents, metals, organic compounds
Wildlife	Fecal matter	Indicator bacteria
Swimming pool	Pool chemicals, high flow and erosion	Chloramines, chlorine, pH, Trihalomethanes, sediment
Fleet maintenance and repair	Wash down, spills, leaks	Oil and grease, litter, heavy metals
Recycling center	Waste and, organic materials handling, spills, leaks	pH, trash, debris, indicator bacteria, oil and grease

6.6 Illicit Discharge Detection and Elimination Source Investigations and Corrective Actions

The Phase II Permit (F.5.d.3(i)) requires that CSUSM have procedures in place to conduct investigations of illicit discharges (non-storm water discharges) to identify the source(s) and eliminate them. CSUSM must also implement corrective action procedures for any identified illicit discharges or illegal connections. Investigations to identify and located any source of any suspected illicit discharge is required within 72 hours of becoming aware of the suspected illicit discharge (F.5.d.3(ii)). If an investigation takes more than 72 hours, CSUSM shall identify and document the actions being taken to locate the source.

If multiple investigations are taking place or are underway simultaneously, they should be prioritized, and such prioritization documented. Any sources suspected of originating from sanitary sewer and/or significant contributors (of pollutants or flows) should be given higher priority for investigation over suspected sources like cooling water, wash water, or natural flows.

CSUSM will follow these procedures for conducting storm drain system source investigations when it is identified as part of routine visual observations at the pre-determined monitoring sites in Table 6.1:

- Inspect the pre-identified Primary Upstream Source Investigation Locations listed in Table 6.2 based on the location of the initial observation of the flowing or ponded water;
- Inspect underground storm drains further upstream, if needed;
- Inspect open conveyances (curb and gutter, ditches, detention/retention basins, wetland), if needed;
- Inspect high use areas for surface flows or discharges.

Catch basins, manholes and other facilities that can be safely investigated from the surface should be visually checked for evidence of flow or illicit connections. Confined space entry should not be attempted at any of the sites. Only qualified confined space entry personnel should access these types of structures. The sampling and testing protocols used for routine visual observations described in Sections 6.3.1 through 6.3.4 may be used to gather additional information about the source of the flow or discharge in upstream locations.

If a connection to the storm drain system is suspected or observed to be the source of an illicit discharge it should be investigated immediately to determine the specific source and nature of the discharge. The connection may be discovered while investigating a suspected illicit discharge or detected by field staff during routine visual observations. Once the illicit discharge and/or connection have been investigated, one of the following actions must take place:

- If the discharge is determined to consist only of an allowable non-storm water (see 6.1.1 above), or is authorized under a separate NPDES permit, then the connection or discharge is documented and no further action is required; or

- The discharge will be permitted through a separate NPDES permit if required (may be covered under a general permit issued by the San Diego RWQCB); or
- The connection will be terminated by CSUSM. If the source is an outside party (e.g., CSUSM contractor) immediate notification to cease the discharge shall be initiated and an enforcement action may be warranted depending on the conditions.
- If the discharge or source is identified to originate from a source outside of the campus' jurisdiction (e.g., adjacent residential properties) that drain to CSUSM property, then a referral to the agency having jurisdiction is warranted. In most cases, the referral will be to the City of San Marcos and should be documented.

In all cases the findings of the source investigation shall be documented in field forms or logs and made available for annual reporting and for inspection by regulatory agencies.

6.6.1 Reporting of Illicit Discharges

CSUSM shall immediately report any occurrence of illicit discharges it believed to be an immediate threat to human health or the environment to the local Health Department (F.5.d.3(ii)(a)). SH&S is responsible for documenting and reporting these discharges. CSUSM shall also report any non-storm water discharge suspected of being sanitary sewage and/or significantly contaminated to the City of San Marcos. Any illicit or suspicious flows entering campus property or illegal connections shall be referred to the City of San Marcos for investigation.

Contact information for reporting purposes is provided in Table 6.6.

Table 6.6: Spill and Discharge Notification Contact Information

Contact	Number
SH&S shall report evidence of an illicit spill that leaves the campus property to required agencies (i.e. OES, San Diego RWQCB)	(800) 852-7550 (858) 467-2952
City of San Marcos, Storm Water	(760) 752-7550 ext. 3314 (858) 756-3006 – after hours emergency
Campus Emergencies (Dialing from a campus phone)	4567
University Police/Emergencies	(760) 750-4567
Campus Emergency Hotline	(760) 750-4599
Campus Operator	(760) 750-4000

6.6.2 Illicit Connection Investigation

SH&S in conjunction with Facility Services will conduct routine site inspections and investigate connections that exhibit evidence of suspected illicit discharges. Facility Services may identify

illicit connections or potential illegal discharges during routine storm drain system operation and maintenance activities. In these cases, Facility Services shall contact SH&S to jointly investigate the source and take remedial action. Evidence of illicit discharges or connections may include:

- Residue on streets and/or within catch basins, storm drain manhole structures or storm drain lines.
- Tracking of materials on CSUSM campus streets, walkways, driveways, loading docks, etc.
- Reported sightings from students, faculty, field staff, on-campus police, or City of San Marcos

If evidence of an illicit discharge is detected, and the source does not appear to be evident or above ground, additional investigations can determine if the discharge is being conveyed through an illicit connection. Field staff shall document the type of connection, date/time/location(s), evidence of illicit discharge, action(s) taken, the date the incident was closed. CSUSM utilizes inspection forms and incident reporting forms to document and track illegal connections and illegal dumping.

Several techniques can be used to evaluate suspected illegal connections or cross-connections between the sanitary sewer and storm drain system. The most common techniques are described below.

6.6.3 Storm Drain Testing Techniques: Video Camera/Dye/Smoke

Video camera, also known as closed-circuit televising (CCTV), inspection can be the most cost-effective and environmentally safe investigative tool. Advances in technology allow for very small cameras mounted or integrated into remotely operated vehicles or on poles can be used to survey storm drain structures, pipes, and lines with little risk. The information obtain can include the exact location or point of the issue (line rupture, blockage) and reveal any sign of illicit connections in areas where the storm drain lines are interconnected. The equipment is also capable of taking video or still photos of the conditions and can be used to follow-up upon completion of repairs. Although the equipment can be expensive, numerous service providers are available to provide this service at reasonable cost.

Dye test is a simple method that may be used to evaluate discharge points during dry weather but must be used with precautions and good planning. Dye tests can reveal illicit connections in areas where storm drain flows are unexplained if CSUSM facility staff has access to suspect facilities. Typical dye tests consist of the addition of fluorescent dye to a floor drain or waste line from a domestic, commercial/industrial process, followed by monitoring for the dye in downstream storm drains. Because the dye is highly visible and may be considered a nuisance if it enters the receiving waters downstream, it requires that it be captured by blocking suspected storm drains and removing the water at the downstream location (using a vacuum truck or similar). This method can be labor intensive and should be coordinated with the City of San Marcos, if needed. Facility Services field staff should conduct dye testing facility by facility (in each area where unexplained flow exists) until all facilities in the area have been tested. General steps to this technique include:

- Review a sewer schematic to identify potential interconnections with the storm water drainage system.
- Release a dye pack into either the sanitary or process wastewater system and observation of the storm drainage system for discoloration throughout the system.
- Discolorations will show any potential leaks in the system and identify the source(s).

Smoke tests can reveal the existence of an illicit connection and reveal the source. Smoke testing of wastewater and storm water collection systems can detect connections between the two systems. Storm drains are sealed with sandbags or other devices (plugs, etc.) and smoking incendiary devices are ignited upstream of the seal. Simultaneous inspections inside area facilities should reveal illicit connections even in the absence of flow. As illicit discharges are intermittent, smoke tests offer real advantages over other types of illicit discharge source identification methods. General steps to this method include:

- During dry weather the storm water collection system is filled with smoke and then traced to sources.
- The appearance of smoke emitting from a manhole lid/cover may indicate that there may be a cross-connection between the sanitary and the storm water system.

6.6.4 Illicit Connection Termination

Once a suspected illicit connection has been located and the nature and source of the discharge has been identified, follow-up action will be initiated in one of the following ways:

- If the discharge is determined to be exempt or conditionally exempt, the connection may be left intact. Exempt discharges (non-prohibited) are found in SWMP Section 6.1.1. The connection must either be permitted or a record of the connection investigation will be kept on file.
- If the source is not exempt, it may require the discharger (i.e. CSUSM) to apply for and receives a separate NPDES permit to continue discharging to the storm drain system (and receiving waters).
- Upon confirmation of the illicit nature of a storm drain connection, the illicit connection will be terminated as soon as practical.

6.7 Recordkeeping and Annual Reporting

SWMP record keeping and annual reporting is included in Section 12. In summary, annual reporting for the Illicit Discharge and Detection Elimination Program is completed in SMARTS by answering specific questions and uploading supporting documentation by October 15th for the previous reporting period July 1st through June 30th.

The specific reporting metrics and requirements for the Illicit Discharge and Detection Elimination Program include certification that the Program is being implemented for the three core elements listed in Section 6.1 above.

Recordkeeping to complete reporting for the Illicit Discharge Detection and Elimination Program includes information and data related to routine visual observations of the storm drain system, public and staff reporting of suspected illicit discharges, findings, and corrective actions. Documentation of all related activities throughout the year is essential to accurate and complete reporting at the end of the year.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (See Section 10), any Illicit Discharge Detection and Elimination Program implementation and/or compliance deficiencies are identified as part of annual reporting and are reported as new or modified BMPs¹⁸ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Addition details on the PEAIP and program modifications are provided in Section 10.

Table 6.7: Summary of Annual Reporting for the Illicit Discharge Detection and Elimination Program

Completion Date	Requirements		
Annually by 6/30	Maintain up-to-date outfall map and visual outfall inventory (F.5.d.1). Provide summary of activities related to implementation of field sampling (visual observations) to detect illicit discharges (F.5.d.2). Provide summary of activities related to implementation of illicit discharge detection and elimination source investigation and corrective actions (F.5.d.3)	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

¹⁸ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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7.0 CONSTRUCTION SITE STORM WATER RUNOFF CONTROL PROGRAM

Permit requirement found in F.5.e.

7.1 Permit Requirement Overview

In accordance with Section F.5.e of the Phase II Permit, CSUSM must develop, implement, and enforce a program to prevent construction site discharges of pollutants and impacts on beneficial uses of receiving waters. The program shall include the development of contract language ensuring the Permittee's in-house construction operators and outside contractors comply with the State's Construction General Permit (CGP).

A copy of the CGP can be found at State Water Resources Control Board website:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Construction activities that result in land disturbance of greater than or equal to one (1) acre or less than one acre if part of larger common plan or development or sale are subject to the requirements of the State's Construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS000002) and any amendments issued thereafter. The main goal of this program is to develop, implement, and enforce an erosion and sediment control program for construction activities on campus.

The CSUSM Construction Program includes the minimum requirements of the Phase II Permit and includes additional measures to support water quality by overseeing the implementation of construction best management practices (BMPs) for minor projects not covered under the CGP.

The Construction Program includes the development and implementation of the following:

- Contract language ensuring in-house construction operators or outside contractors comply with the CGP;
- Contract language that includes CGP compliance requirements;
- Proper implementation of BMPs by construction operators and contractors;
- Procedures to verify compliance with CGP requirements and BMPs by construction operators or outside contractors;
- Procedures to track and report compliance with the requirements outlined in this program element;
- Procedures to report on construction program activities on an annual basis and assess long-term effectiveness of the program element;
- Enable annual report compliance certification or certify program improvements to meet requirements, and have the ability to describe the tasks and schedule necessary to achieve compliance with an estimated date for achieving full compliance.

7.2 Construction Contract Language

Contract language was reviewed and revised in early 2014 to go into effect on July 1, 2014 as required by the Phase II Permit Section F.5.e. The Planning, Design and Construction Department at CSUSM is responsible for preparing construction documents and including the required language. Contractor oversight for compliance with the contract language and the CGP is overseen by the Planning, Design and Construction Department and the Office of SH&S. References to the CGP are provided in this SWMP as an overview. The CGP shall be consulted for details on the requirements and provisions to comply.

SMARTS Annual Reporting and Certification

Report annually on the continued implementation of appropriate contract language related to the CGP.

7.3 Construction General Permit Implementation

CSUSM construction projects that disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities - Construction General Permit Order 2009-0009-DWQ*. Construction activities subject to this permit includes clearing, grubbing, grading and disturbances to the ground such as demolition, clearing, grading, stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The CGP requires projects to develop and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP). The CGP includes requirements for Linear Underground/Overhead construction projects, such as pipelines, that encompass an area greater than one acre. The SWPPP must contain site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list the BMPs the discharger will use and their placement to prevent soil erosion, prevent sediment discharge, and protect storm water runoff. Additionally, the SWPPP must contain a visual monitoring program; a monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs. The SWPPP includes inspections and other requirements implemented based on the project's sediment risk level (1, 2 or 3) that is based on the duration of the project, location, topography and potential to discharge to a sediment or turbidity impaired water body in accordance with the 303(d) list or an approved TMDL.

7.4 Construction General Permit Coverage

To obtain coverage under the CGP, the Permit Registration Documents (PRDs) have to be prepared and a Notice of Intent (NOI) and fee submitted to the State Water Resources Control Board (SWRCB) through the Storm Water Multiple Application and Report Tracking System (SMARTS). The PRDs include a copy of the SWPPP with map, certification statement and Risk Assessment submitted through SMARTS. The SWPPP shall conform to the requirements set forth in the CGP in accordance with the project's risk level or LUP type. At project completion, a Notice of Termination (NOT) is submitted through SMARTS. All SWPPP related documentation,

inspections and monitoring records, shall be retained for a minimum of three years from the time of NOT filing.

These specifications are set by CSUSM as minimum CGP requirements:

1. For the purpose of SWPPP development and implementation, CSUSM has identified the Legally Responsible Person (LRP), *as the CSUSM Director of the Planning, Design and Construction Department*. The designated LRP shall certify the final submittal of the PRDs utilizing the SMARTS database. The LRP may assign the CSUSM Construction Project Manager or CSUSM Project Manager as the Approved Signatory in SMARTS. The LRP may assign CSUSM staff as Data Submitters at his/her discretion.
2. The assigned contractor shall have a Qualified SWPPP Developer (QSD) available prepare, sign and update the SWPPP; and a Qualified SWPPP Practitioner (QSP) to implement the SWPPP as specified in the CGP.
3. The assigned contractor and QSD in coordination with the CSUSM Planning, Design and Construction Department shall prepare and submit the PRDs to the Planning, Design and Construction Department for review at the pre-construction meeting in accordance with project special provisions. The CSUSM approved SWPPP shall be uploaded as part of the PRDs into SMARTS by the Approved Signatory or Data Submitter. The PRDs will be reviewed, certified, and filed by the LRP or Approved Signatory. The proposed construction activities shall not commence without a valid WDID number. The contractor shall be given notice to proceed only when a copy of the WDID number authorization letter is provided by the Approved Signatory. The WDID number authorization letter shall be added to the approved SWPPP kept at the project site.
 - a. NOI Form. Shall be completed or information provided by the contractor to CSUSM Planning, Design and Construction Department to upload to SMARTS.
 - b. Site Map and Erosion & Sediment Control Plans. The contractor and/or contractor's QSD shall develop/modify/submit the erosion control map(s) with the PRDs as described in the CGP in accordance with the risk level or LUP type for the project.
 - c. Risk Level Calculations. The contractor and QSD shall develop/modify/submit the Risk Level Calculations to the CSUSM Planning, Design and Construction Department to upload to the SMARTS database.
 - d. SWPPP
 - i. SWPPP shall be prepared and signed by a QSD provided by the contractor. The SWPPP shall be uploaded to the SMARTS database by CSUSM Planning, Design and Construction Department once approved. The SWPPP shall be updated by the QSD as necessary to address site conditions and construction activities. The Contractor shall make the SWPPP available at the site during normal working hours and shall be made available upon request by CSUSM staff, a state inspector, or official staff.

- ii. The SWPPP and each amendment shall be signed by a QSD. The contractor shall allow a minimum of ten (10) working days for review by CSUSM of each submittal. If CSUSM requires extensive additions or corrections, the contractor will return the submittal with corrections and re-submission prepared by the QSD by the specified date. After the SWPPP is revised to the satisfaction of CSUSM, the SWPPP shall be uploaded to the SMARTS by CSUSM.
- e. Permit fees. The Planning, Design and Construction Department shall be responsible for paying the required CGP fee to the SWRCB.

Illegal discharges to CSUSM's storm drain system that are not composed entirely of storm water, or are prohibited by federal, state, or local laws, or degrades the quality of receiving waters in violation of any Basin Plan Water Quality Objective shall not be allowed.

CSUSM shall verify that all persons working for the contractor and responsible for compliance with the CGP have been appropriately trained in accordance with the CGP. This may include having a QSP on site to perform the required inspections and monitoring as required by the CGP and outlined in the SWPPP. Training shall be both formal and informal, occur on an on-going basis, and should include training offered to all sub-contractors by the project's QSD or QSP. The contractor shall provide documentation of all staff training as required by the CGP. Training records shall be kept as part of the SWPPP at the project site.

Qualified SWPPP Developer

The contractor shall appoint a QSD to prepare, sign, and certify the SWPPP in accordance with the project specific risk level, site specific BMPs and pertinent information in accordance with the CGP. The proof of the certification shall be submitted to the Planning, Design and Construction Department as part of the SWPPP. The QSD shall have the registration or certification, and appropriate experience, as identified in the CGP.

Qualified SWPPP Practitioner

The contractor shall appoint a Qualified SWPPP Practitioner (QSP). The QSP shall have the certifications and appropriate experience, as required by the CGP. The QSP shall be responsible for non-storm water and storm water visual observations, sampling and analysis, inspections, identifying and verifying completion of BMP corrective actions, preparation of the annual compliance evaluation, and the elimination of unauthorized discharges. The QSP or QSP Delegate trained by the QSP shall be on-site daily to evaluate the conditions of the site with respect to storm water pollution prevention.

CSUSM Qualified SWPPP Developer and/or Qualified SWPPP Practitioner

CSUSM may verify site conditions and implementation of the SWPPP at each construction site through an independent or in-house QSP or QSD not under contract with the construction contractor. The verification may include inspections of the construction site, the SWPPP, the BMPs, training and inspection logs, and monitoring/testing, if applicable.

Verification activities shall be recorded using the SWPPP inspection forms or other comparable form developed by CSUSM for these purposes. Any corrective actions to be undertaken by the

contractor or contractor's QSD shall be communicated to the CSUSM Planning, Design and Construction Department in a timely manner and verified to ensure compliance with the CGP.

Risk Levels and LUP Type

The contractor shall refer to the Risk Level or LUP Type identified by the project bid or contract documents and the following to determine the applicable requirements and appropriate SWPPP preparation:

Risk Levels

- Risk Level 1 in Attachment C of the CGP applies to Risk Level 1 projects.
- Risk Level 2 in Attachment D of the CGP applies to Risk Level 2 projects.
- Risk Level 3 in Attachment E of the CGP applies to Risk Level 3 projects

LUP Types are described and requirement outlined in Attachment A of the CGP

- Type 1 LUP establishes the baseline requirements for all LUP Types and the minimum requirements for Type 1 LUP projects.
- Type 2 LUP projects shall be subject to Type 1 and 2 LUP requirements.
- Type 3 LUP contracts shall be subject to Type 1, 2 and 3 LUP requirements.

7.5 SWPPP General Requirements

The CGP requires the SWPPP to be designed to address the following objectives:

1. Controlling all pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity;
2. All non-storm water discharges are identified and either eliminated, controlled, or treated;
3. Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the BAT/BCT standard;
4. Calculations and design details as well as BMP controls for site run-on are complete and correct, and
5. Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

The SWPPP shall include supporting information (e.g., the conclusions, selections, use, and maintenance of BMPs) to ensure compliance. A copy of the SWPPP and the BMP maps or Erosion Control Maps/Plans shall be kept at the site and be made available to the Planning,

Design and Construction Department staff or State authorized inspector immediately upon request. The specific requirements for controls and BMPs are specified by Risk Level or LUP Type in the CGP. A general description is provided below for each of the core CGP project types or categories.

7.5.1 Construction BMP Categories

Sediment Control

CSUSM shall ensure that the contractor maintains BMPs to control sources of sediment associated with construction activities. The contractor shall establish and maintain effective perimeter controls, the stabilization of construction entrances and exits, and the protection of storm drain inlets that have a potential to receive runoff from the construction activities. The storm drain inlet protection shall not be removed until the project is deemed complete and stabilized as identified in the CGP. The contractor shall be responsible for preventing flooding associated with storm drain inlet protection. The storm water around the inlet shall not be allowed to pond if the standing water impedes the safe flow of traffic. Any BMPs temporarily removed by the contractor to alleviate flooding shall be replaced or modified immediately as safety allows. The storm drain inlet sediment control measures shall be of sufficient weight so as not to shift out of place or shall be secured in place against movement. Inlet sediment control measures shall be maintained on a daily basis. Maintaining inlet sediment control measures shall include replacing damaged BMPs and removing and disposing of accumulated sediment, trash, and debris. Sediment control shall be implemented as a secondary control measure with erosion control as the primary means to achieve compliance.

Erosion Control

CSUSM shall ensure that the contractor maintains BMPs that control the construction activities that can cause or have a potential to cause erosion. The contractor shall implement effective soil and wind erosion control by covering exposed/inactive soil areas, all finished/exposed soil slopes, open space, and utility backfills. The SWPPP shall identify the sequencing of the construction activities and the implementation of effective erosion control BMPs while considering local climate (i.e. rainfall, wind patterns). Therefore, the goal is to reduce the duration of soil exposure to wind, rain, runoff, and vehicle tracking. Erosion control is the primary means to manage sediment on the project site and prevent release into the storm drain system. Effective erosion control can minimize the number and maximize the effectiveness of sediment control BMPs at the project site.

To effectively manage storm water pollution and their potential discharge, the SWPPP shall:

- a. Describe the construction activities that will be performed that could cause the discharge of pollutants in storm water;
- b. Describe the water pollution control practices associated with each construction phase; and
- c. Identify the soil stabilization/erosion control and sediment control practices for all disturbed soil area.

Non-Storm Water Management

CSUSM shall ensure that the contractor identifies all non-storm water discharges to reduce, eliminate, control, or treat the sources. The contractor shall implement BMPs to prevent unauthorized non-storm water discharges from reaching surface water or drainage conveyance systems as specified in CGP.

Run-on and Runoff Controls

The contractor shall effectively manage run-on, runoff within the construction site limits. Run-on from offsite shall be directed away from disturbed areas or shall collectively be in compliance with the CGP. Design calculations and BMP design for run-on and runoff controls shall be included in the SWPPP.

Good Site Management "Housekeeping"

CSUSM shall ensure that the contractor assesses all potential pollutant sources, identifies areas of the project site where additional BMPs are necessary, and assures BMP effectiveness. The contractor shall control potential sources of water pollution before they come in contact with storm water and storm water is discharged to storm drain systems or watercourses by implementing the measures specified in CGP for the following sources:

- a. Delivery, inventory, storage, stockpiling, and use of construction materials;
- b. A spill response and implementation plan shall be developed and included as part of the SWPPP. Spill response procedures and materials shall be identified for construction waste (e.g. concrete waste products, contaminated soil, hazardous materials, liquid waste products, solid waste products, sanitary or septic waste).
- c. On-site vehicle and equipment fueling, storage, and maintenance including any prohibited activities;
- d. Landscape materials storage and use (e.g., fertilizers, mulches, and topsoil);
- e. Air depositions from the construction activities which include pollutants (e.g. particulates as sediment, nutrients, trash, metals, bacteria, oil, grease, and organic matters).

7.5.2 BMP Inspection, Maintenance, and Repair

Inspection, maintenance, repair, and sampling activities on-site shall be performed or supervised by a QSP or appropriately trained QSP designee. The contractor is responsible for inspection requirement to comply with CGP. CSUSM shall verify that the contractor is meeting the requirements to inspect, maintain and repair the BMPs required to maintain compliance with the CGP.

- a. Inspections shall be performed weekly during dry weather and in accordance with the visual monitoring (inspection) requirements for qualifying rain events for the project risk level as specified in the CGP attachments.
- b. Inspections and observations shall identify BMPs in need of maintenance to operate effectively; have failed; or could fail to operate as intended.

- c. The contractor shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.
- d. If used, the contractor shall design the sediment basins according to the method provided in California Stormwater Quality Association's (CASQA) Construction BMP Guidance Handbook.
- e. BMPs shall be installed in accordance with November 2009 edition or latest version of the CASQA BMP handbooks available for purchase and download at www.camphandbooks.org. The contractor is responsible for obtaining and implementing the specifications for each BMP in the latest version of the CASQA BMPs.

7.5.3 Monitoring and Reporting

CSUSM shall verify that the contractor develops and implements a written site-specific Construction Site Monitoring Program (CSMP) as required by CGP. The CSMP shall be developed prior to the commencement of construction activities and revised as necessary to reflect project construction activities. The CSMP shall be a part of the SWPPP, included as an appendix. The CSMP shall address the objectives specified in CGP. The CSMP shall include monitoring procedures and instructions, sampling point location maps, forms, and checklists, which shall cover the following requirements:

- Visual Monitoring for Qualifying Rain Events
- Visual Observation Exemptions
- Monitoring Methods
- Non-Storm Water Discharge Monitoring
- Non-Visible Pollutant Monitoring
- Particle Size Analysis for Project Risk Justification, if applicable

7.6 Construction General Permit Annual Reports

If the construction project is enrolled for more than one continuous three-month period, CSUSM shall ensure that the contractor provides the Planning, Design, and Construction Department a draft electronic submittal of an Annual Report through SMARTS no later than 30 days or by July 30th following the reporting period (July 1st - June 30th). For example, the report is due to CSUSM on July 30, 2017 for the reporting period July 1, 2016 through June 30, 2017. The annual storm water construction reports are due no later than September 1st of each year to the SWRCB through SMARTS. The LRP will certify each Annual Report in SMARTS and shall retain it with the SWPPP for a minimum period of three (3) years. Planning, Design, and Construction Department staff may prepare the Annual Report in SMARTS in lieu of the contractor.

CGP Annual Reports serve as the basis for reporting compliance with the Phase II Permit and this SWMP.

7.7 SWMP Record Keeping and Annual Reporting

SWMP record keeping and reporting is included in Section 12. In summary, annual reporting for the Construction Program is completed in SMARTS by answering specific questions and uploading supporting documentation by October 15th for the previous reporting period July 1st through June 30th.

SMARTS Annual Reporting and Certification

Report on the implementation of construction program requirements on an annual basis.

The specific reporting metrics and requirements for the Construction Site Runoff Control Program includes certification that contract language has been developed and implemented that ensures that all outside contractors comply with the CGP and implement appropriate BMPs as specified in Phase II Permit Section F.5.e(ii). The Phase II Permit Section F.5.e(ii) specifically requires CGP compliance for all construction projects on CSUSM's campus.

Recordkeeping to complete reporting for the Construction Site Storm Water Runoff Control Program includes all CGP SWPPPs and Annual Reports to verify implementation of CGP requirements.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (See Section 10), any Construction Site Storm Water Runoff Control Program implementation and/or compliance deficiencies are identified as part of annual reporting and are reported as new or modified BMPs¹⁹ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Additional details on the PEAIP and program modifications are provided in Section 10.

Table 7.1: Summary of Annual Reporting Milestones for the Construction Site Storm Water Runoff Control Program

Completion Date	Requirements		
Annually by June 30	Provide a summary of past year's activities (F.5.e) and supporting documentation as applicable	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

¹⁹ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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8.0 POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

Permit requirement found in F.5.g.

8.1 Permit Requirement Overview

In accordance with Section F.5.g of the Phase II Permit, CSUSM must develop, implement, and enforce a program to address discharges of post-construction storm water runoff from impervious areas for new development and redevelopment project that meet certain criteria.

Post-construction storm water management controls for new development and redevelopment projects may include:

1. Site Design Measures (Permit Section F.5.g.1)
2. Low Impact Development Design Standards (Permit Section F.5.g.2)
3. Source Control Measures (Permit Section F.5.g.2.a)
4. Numeric Sizing Criteria for Storm Water Retention and Treatment (Permit Section F.5.g.2.b)
5. Site Design Measures (Permit Section F.5.g.2.c)
6. Storm Water Treatment and Baseline Hydromodification (Permit Section F.5.g.2.d)
7. Alternative Designs for Bioretention (F.5.g.2.d.(a)) and Adjustments to Bioretention Facilities (F.5.g.2.d.(b))
8. Alternative Post-Construction Storm Water Management Program (Permit Section F.5.g.3)
9. Operation and Maintenance (O&M) of Post-Construction Storm Water Management Measures (Permit Section F.5.g.4)

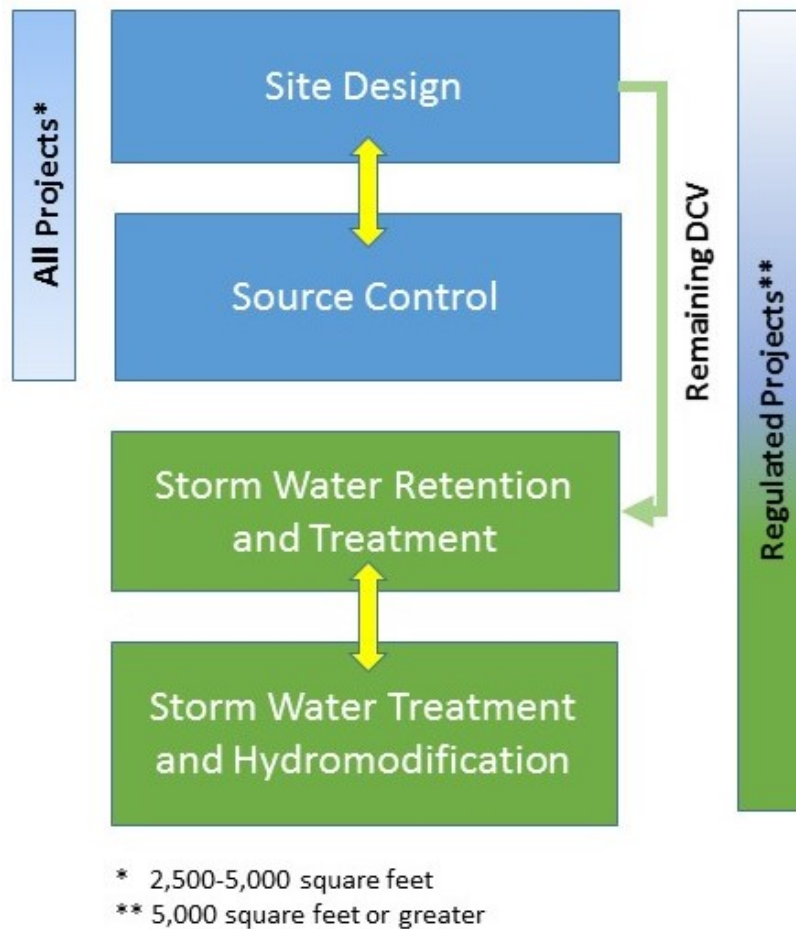
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The implementation of a Post-Construction Storm Water Management Program and the regulation of development projects to comply with the standards and BMPs is required annually.

The inter-relationship between all the post-construction storm water management control requirements in the Phase II Permit is illustrated in Figure 8.1. As shown, projects are required to implement site design and all Regulated Projects must implement source control measures and treatment control BMPs as applicable.

The information provided in this section is an overview of the requirements and possible design and BMP implementation options. For specific design requirements and other details, consult the manuals and standards referenced.

Figure 8.1: Inter-Relationship Between Storm Water Management Controls



8.2 Post-Construction Implementation Overview

CSUSM has a solid record of implementation of post-construction BMPs for projects and has an existing inventory of post-construction measures that include site design, Low Impact Development (LID) design, source control and storm water retention and treatment BMPs. These BMPs were implemented prior to the Phase II Permit requirements throughout the campus property and continue to be operated and maintained by the Facilities Department.

Recordkeeping and Data Management

Annually verify and/or update the treatment and hydromodification BMP inventory spreadsheet.

The post-construction BMP inventory is provided in Appendix C of this SWMP. The inventory will be updated annually as part of the annual reporting process or more often if needed.

To comply with Phase II Permit requirements, CSUSM has adopted the requirements as stated in the Phase II Permit under the guidance provided in this SWMP and the Office of the Chancellor of the California State University (CSU). The CSU Guidance Document for Post Construction BMPs (CSU Guidance) for Phase II Permit compliance is provided in Appendix C. Appendix C

may be modified and updated as materials become available in the future that will assist project planner and designers with additional guidance and tools. The CSU Guidance states the goals of the document as follows:

“This document is intended to provide California State University campuses with system-wide guidance for design, implementation, operation and maintenance of post-construction BMP elements. This document offers guidance to campus design and planning staff and maintenance staff to:

- Comply with the permit requirements,
- Develop campus design practices and principles that optimizes project costs and site impacts of structural BMPs,
- Develop principles for development of non-structural BMPs that use existing campus programs and materials to the maximum extent applicable.
- Establish consistency across the CSU system for MS4 permit compliance.”

Architects, engineers and designers shall follow the requirements listed in this section of the SWMP in conjunction with the CSU Guidance to comply with post-construction requirements. The selection of BMPs is recommended based on individual project needs, but additional resources that may be consulted to guide options may be consulted, they include:

1. California Storm Water Association (CASQA) BMP Guidance Documents (New Development and Redevelopment, and Municipal)²⁰
2. San Diego County Model BMP Design Manual (May 2018)
3. Other guidance and resources available consistent with the design requirements of the Phase II Permit.
 - a. State Water Board SMARTS Post-Construction Calculator, or equivalent to quantify the runoff reduction resulting from implementation of site design measures
 - b. Resources at:
https://www.waterboards.ca.gov/water_issues/programs/stormwater/ms4/phsii/postconstruction.shtml

It is important to note that CSUSM has a Sustainability Master Plan (July 1, 2014) that includes the following goals for PD&C are directly applicable to compliance with post-construction requirement in the Phase II Permit:

1. All new construction shall meet the Leadership in Energy and Environmental Design (LEED) Gold standards set forth by the U.S. Green Building Council. LEED certified buildings have specific and determined

²⁰ Subscription needed

standards with third-party verification to be considered “green” or environmentally friendly.

2. Projects of limited-scope and small-scope construction that do not qualify for LEED certified shall conform to campus sustainable design standards.
3. Require the design and construction teams to take a holistic approach to the design and construction of new facilities. Consultants are to provide life cycle cost analysis reviews to ensure the most sustainable systems for buildings. This ensures the highest quality learning and working environment possible, utilizing the most up-to-date technology and design techniques while reducing the cost of ownership and environmental impact to a minimum.
4. All construction and renovation projects shall achieve the goals set forth in other section of the plan for water management, energy conservation, environmental health, waste management, transportation, procurement and land management.
5. Support the training process and continuing education for PD&C department project managers who are LEED certified.

8.3 Post-Construction Site Design Standards

Permit requirement found in F.5.g.1.

The Phase II Permit requires the implementation of site design measures or standards for all projects that create and/or replace (including projects with no net increase in impervious footprint) between 2,500 square feet and 5,000 square feet of impervious surface.

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The implementation of Site Design for all projects between 2,500 – 5,000 square feet of impervious surface is reported annually.

8.3.1 Site Design Standards Project Criteria

Per the Phase II Permit, projects meeting these criteria shall implement one or more of the following site design standards to reduce project site runoff:

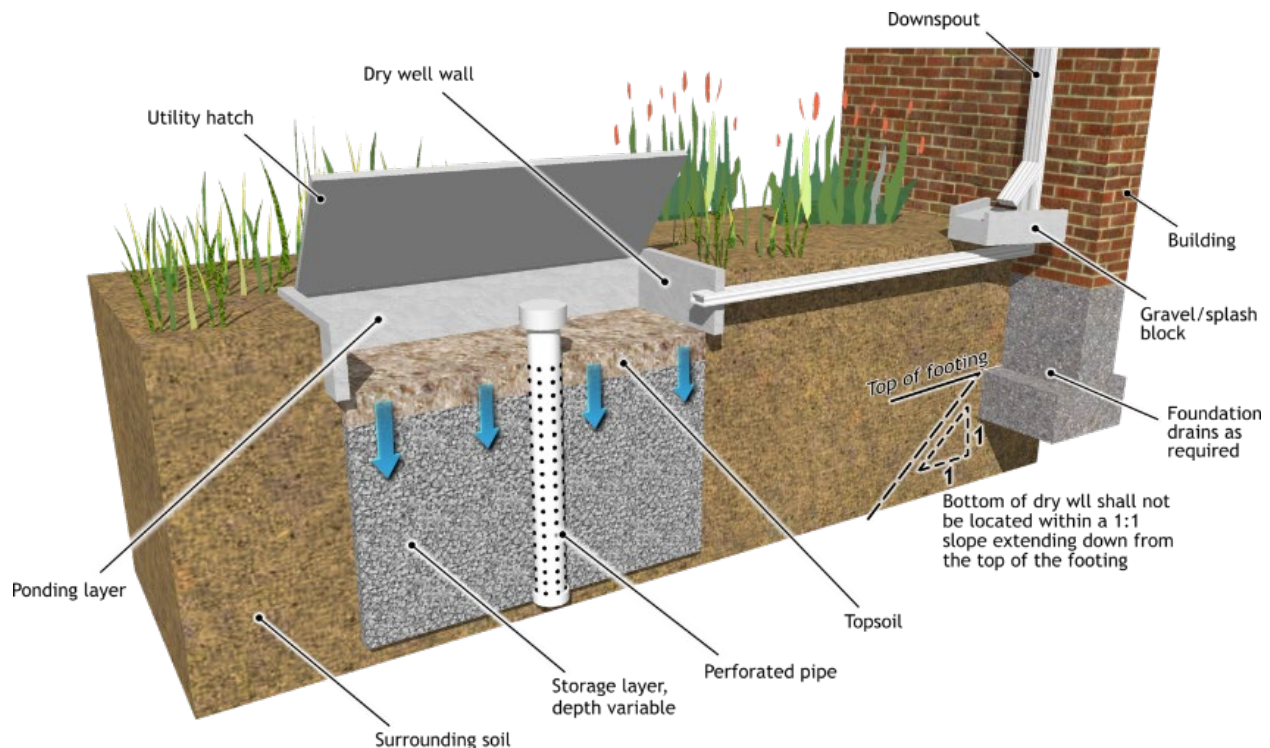
1. Stream Setbacks and Buffers – a vegetated area including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake reservoir, or coastal estuarine area;
2. Soil Quality Improvement and Maintenance - improvement and maintenance soil through soil amendments and creation of microbial community;
3. Tree planting and preservation – planting and preservation of healthy, established trees that include both evergreens and deciduous, as applicable;

4. Rooftop and Impervious Area Disconnection - rerouting of rooftop drainage pipes to drain rainwater to rain barrels, cisterns, or permeable areas instead of the storm sewer;
5. Porous Pavement - pavement that allows runoff to pass through it, thereby reducing the runoff from a site and surrounding areas and filtering pollutants;
6. Green Roofs – a vegetative layer grown on a roof (rooftop garden);
7. Vegetated Swales - a vegetated, open-channel management practice designed specifically to treat and attenuate storm water runoff;
8. Rain Barrels and Cisterns - system that collects and stores storm water runoff from a roof or other impervious surface.

Implementing and quantifying the site design standards described above can be used to reduce the amount of runoff, to the extent technically feasible, where retention and runoff is required (see Section 8.5 below).

The remaining runoff may be directed to bioretention BMPs as noted in Section 8.6 below.

Figure 8.2: Typical Infiltration Facility (San Diego County BMP Design Manual, 2015)



8.3.2 Site Design Standards Implementation

All development projects will be considered for implementation of site design as listed in Section 8.2.1 to the degree feasible. CSUSM's Planning, Design and Construction (PD&C) Department will provide engineers, architects and designers with site design standards to be considered for each project as may be deemed applicable based on the project site's or building's final use, location, conditions (soil, slope, drainage, etc.) and size.

Including site design features on a project site is highly encourage and desirable since it may reduce or eliminate the need for other BMPs, such as, LID or treatment controls described in the following sections.

CSU Guidance:

The Post Construction Calculator is an Excel® spreadsheet that can be used to implement the requirements. The CSU Guidance recommends the equivalent method of using the 85th percentile storm event. See below and section 8.6.1 in this SWMP for more information.

For projects meeting the criteria of impervious areas of at least 2,500 square feet and not more than 5,000 square feet, compliance can be achieved with the State Water Board SMARTS Post-Construction Calculator ²¹ or equivalent, to quantify the runoff reduction resulting from implementation of site design measures.

As stated in the CSU Guidance: "The Post Construction Calculator is an Excel® spreadsheet that accepts input of project data and returns options for measures that will re-create the pre-project hydrologic site conditions. The goal is to achieve no increase in runoff from the project site. The options provided by the calculator can be extensive and costly and the calculator ignores specific site conditions, and off-site conditions, that may provide mitigation that satisfies the permit requirements. For these reasons the Calculator is not always the best tool for permit compliance for projects of this size.

The permit allows the use of an "equivalent" method to quantify runoff reduction. This equivalent can be a simple hydrologic calculation based on an 85th percentile storm (the storm frequency that includes 85% of all storm events) and using basic runoff coefficients. For physical plant and facilities managers and directors who are responsible for maintenance work, this calculation can be done once and then applied to future projects with adjustments for project size and other factors."

To meet the Phase II Permit requirement to develop and implement an approach to apply LID Design Standards for Regulated Projects, CSUSM provides all project designers, architects and engineers with a copy of this section of the SWMP and the relevant appendices.

²¹

http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_a_pp_21.xls

PD&C verifies compliance with LID design standards noted in Section 8.4.1 and makes comments or requests edits to the design as needed.

8.4 Low Impact Development (LID) Design Standards

Permit requirement found in F.5.g.2.

In accordance with Section F.5.g.2 of the Phase II Permit, CSUSM must implement LID design standards to effectively reduce runoff and pollutants associated with runoff from development projects (including redevelopment).

8.4.1 LID Design Standards Project Criteria

CSUSM must implement LID design standards (Permit Section F.5.g.2.(ii)) on all development projects that create and/or replace 5,000 square feet or more of impervious surface (Regulated Projects). These Regulated Projects must implement measures for site design, source control, runoff reduction, storm water treatment and baseline hydromodification management as defined in the Phase II Permit and described in this SWMP section.

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The implementation of Site Design, Source Control and Treatment Control for projects 5,000 square feet or greater of impervious surface is reported annually.

Regulated Projects do not include: interior remodels; routine maintenance or repair such as: exterior wall surface replacement, roof replacement or pavement resurfacing within the existing footprint.

Regulated Projects do include:

1. Development of new and redevelopment project sites on public or private land that fall under the planning and permitting authority of CSUSM.
2. Redevelopment is any land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred.
3. Regulated Project requirements for redevelopment and road project apply to (generally known as the 50% rule):
 - a. Where a redevelopment project results in an increase of more than 50 percent of the impervious surface of a previously existing development, runoff from the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included to the extent feasible.
 - b. Where a redevelopment project results in an increase of less than 50 percent of the impervious surface of a previously existing development, only runoff from the new and/or replaced impervious surface of the project must be included.

4. Regulated Projects - Road Projects. Any of the following types of road projects that create 5,000 square feet or more of newly constructed contiguous impervious surface and that are public road projects and/or fall under the building and planning authority of CSUSM shall comply with LID design standards except that treatment of runoff of the 85th percentile 24-hour storm runoff event that cannot be infiltrated onsite shall follow U.S. EPA guidance regarding green infrastructure²² to the extent feasible.

10. Types of road projects include:

- a. Construction of new streets or roads, including sidewalks and bicycle lanes built as part of the new streets or roads which create 5,000 square feet or more of impervious surface.
- b. Widening of existing streets or roads with additional traffic lanes.
 - i. Where the addition of traffic lanes results in an alteration of more than 50 percent of the impervious surface (5,000 square feet or more) of an existing street or road, runoff from the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design.
 - ii. Where the addition of traffic lanes results in an alteration of less than 50 percent (but 5,000 square feet or more) of the impervious surface of an existing street or road, only the runoff equivalent from new and/or replaced impervious surface of the project must be included in the treatment system design.
- c. Specific exclusions are:
 - i. Sidewalks built as part of new streets or roads and built to direct storm water runoff to adjacent vegetated areas.
 - ii. Bicycle lanes that are built as part of new streets or roads that direct storm water runoff to adjacent vegetated areas.
 - iii. Impervious trails built to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas, preferably away from creeks or towards the outboard side of levees.
 - iv. Sidewalks, bicycle lanes, or trails constructed with permeable surfaces.

²² Title: Managing Wet Weather with Green Infrastructure, Municipal Handbook, Green Streets. EPA Publication Number EPA-833-F-08-009. December 2008. Additional resources can be found at: https://www.epa.gov/sites/production/files/2015-10/documents/gi_munichandbook_green_streets_0.pdf

8.4.2 LID Design Standards Implementation

The Phase II Permit (Section F.5.g.2.(ii)) requires that the applicable LID Design Standards described in Section 8.3.1 above be implemented by July 1, 2015 for new and redevelopment Regulated Projects.

LID Design Standards apply, as described above, to Regulated Projects:

1. That have not been deemed complete for permit processing,
2. Without vesting tentative maps that have not requested and received an extension of previously granted approvals, and
3. That have received Project Planning Guide funding.

Discretionary projects that have been deemed complete prior to July 1, 2015 are not subject to the Post-Construction LID Design Standards. The effective date of a Regulated Project shall be the date the CSUSM governing body or designee approves initiation of the project design. For Regulated Projects that require State of California approval, CSUSM shall implement post-construction BMPs if the approval is after July 1, 2015.

To meet the Phase II Permit requirement to develop and implement an approach to apply LID Design Standards for Regulated Projects, CSUSM provides all project designers, architects and engineers with a copy of this section of the SWMP and the relevant appendices.

PD&C verifies compliance with LID design standards noted in Section 8.4.1 and makes comments or requests edits to the design as needed.

8.5 Source Control Standards

Permit requirement found in F.5.g.2.a.

Regulated Projects with pollutant-generating activities and sources are required to implement standard permanent and/or operational source control measures as applicable.

8.5.1 Source Control Standards Applicable to CSUSM

The Phase II Permit requires source control measures or BMPs for a number of listed pollutant-generating activities that must be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment or equivalent manual²³. The pollutant-generating activities from the Phase II Permit are included in Table 8.1 with the determination of applicability to CSUSM. As an additional resource, the relevant CASQA BMP Handbook BMP Fact Sheet or Section is provided that may be consulted for additional concepts or implementation suggestions to be considered when preparing the design of the Regulated Project. Although not every Regulated Project will include all the pollutant-generating activities

²³ The Phase II Permit cites the CASQA New Development and Redevelopment handbook for source control BMP references, but these are incomplete compared to the activities listed. Additional information can be found in the CASQA Stormwater BMP Handbook for Municipal Activities. Both can be found at: <https://www.casqa.org/resources/bmp-handbooks>

listed, each Regulated Project will be evaluated to determine the applicability and need for source control BMPs.

Table 8.1: Summary of Source Control BMPs by Pollutant Generating Activity

Pollutant-generating Activity	Applicable to CSUSM	CSUSM BMP No.	CASQA Handbook Section or Fact Sheet No. ²⁴
Accidental spills or leaks	Yes	NS06	SC-11
Interior floor drains	Yes	FH02, NS06	SC-10
Parking/Storage area maintenance	Yes	G05	SC-43
Indoor and structural pest control	Yes	G06, LA01	SC-60
Landscape/outdoor pesticide use	Yes	LA01	SC-73
Pools, spas, ponds, decorative fountains, and other water features	Yes	NS02	SC-72
Restaurants, grocery stores, and other food service operations	Yes	FH01, FH02, NS01, NS03, NS06	SC-75
Storage and handling of solid waste	Yes	G08	3.2.9, SD-32, SC-75
Outdoor storage of equipment or materials	Yes	G07	3.2.6, SD-34, SC-33
Vehicle and equipment cleaning	Yes	FU02	3.2.10, SD-33, SC-21, SC-32
Vehicle and equipment repair and maintenance	Yes	FU03	3.2.6, SC-22, SC-32
Fuel dispensing areas	Yes	FU01	3.2.11, SD-10, SC-20
Loading docks	Yes	FU04	3.2.8, SD-31, SC-30
Fire sprinkler test water	Yes	NS01, NS03	SC-10
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	Yes	NS01, NS03	SD-11
Unauthorized non-storm water discharges	Yes	NS03	SC-10
Building and grounds maintenance	Yes	G10	SC-41, SC-60

²⁴ Handbook sections refer to the New Development and Redevelopment; BMP Fact Sheets with an “SD” are found in the same handbook; BMP Fact Sheets with an “SC” are found in the Municipal handbook. Some BMP references are the best possible match only.

8.5.2 Source Control Standards Implementation

To meet the Phase II Permit requirement to develop and implement an approach to apply Source Control Standards for Regulated Projects, CSUSM provides all project designers, architects and engineers with a copy of this section of the SWMP and the relevant appendices.

PD&C verifies compliance with LID design standards note in Section 8.4.1 above and makes comments or requests edits to the design as needed.

8.6 Numeric Sizing Criteria for Storm Water Retention and Treatment

Permit requirement found in F.5.g.2.b.

The Phase II Permit requires CSUSM to design retention and treatment facilities to meet specified numeric sizing criteria or standards. Facilities include those that evapotranspire, infiltrate, harvest/use, and biotreat storm water.

8.6.1 Numeric Sizing Criteria for Storm Water Retention and Treatment at CSUSM

The specified numeric sizing criteria can be either volumetric or flow-based and is presented in the Phase II Permit is as follows:

1. Volumetric Criteria

- a. The maximized capture storm water volume for the tributary area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998) pages 175-178 (that is, approximately the 85th percentile 24-hour storm runoff event); or
- b. The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology in Section 5 of CASQA's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data.

2. Flow-based Criteria

- a. The flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity; or
- b. The flow of runoff produced from a rain event equal to at least 2 times the 85th percentile hourly rainfall intensity as determined from local rainfall records²⁵.

²⁵ San Diego County Hydrology Manual and other references can be found at: <https://www.sandiegocounty.gov/content/sdc/dpw/flood/hydrologymanual.html>

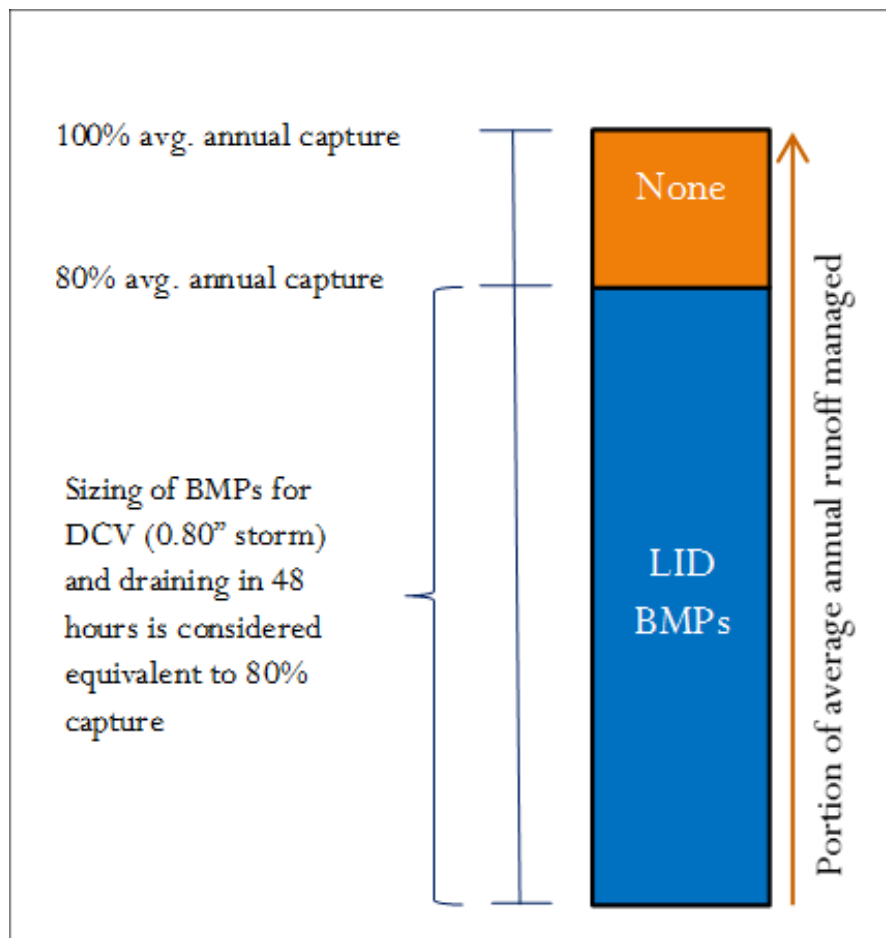
CSU Guidance:

The most direct method above is Option “a” under the Flow-based Criteria. This method requires no further research and no references. It is also unlikely any of the other options will produce significant cost savings because the numerical differences will be small and there will be no discernible size reductions in BMPs.

Note: If Option “b” under the Flow-based Criteria is considered, the San Diego County Hydrology Manual (June 2003) - Appendix B includes the 85th percentile 24-hour storm event isopluvial maps from which it was determined that for CSUSM the design capture volume (DCV) should use 0.80 inches for the storm depth.

Figure 8.3 illustrates the relationship between the two numeric sizing standards in the Phase II Permit.

Figure 8.3: Numeric Sizing Criteria - Design Capture Volume



8.6.2 Storm Water Retention and Treatment Implementation

To meet the Phase II Permit requirement to develop and implement an approach to apply Source Control Standards for Regulated Projects, CSUSM provides all project designers, architects and engineers with a copy of this section of the SWMP and the relevant appendices.

PD&C verifies compliance with LID design standards note in Section 8.4.1 above and makes comments or requests edits to the design as needed through the use of a project submittal checklist developed and implemented by PD&C.

8.7 Storm Water Treatment and Baseline Hydromodification Management Standards

Permit requirement found in F.5.g.2.d.

Storm water treatment facilities must be at least as effective as a bioretention system with the following design parameters to meet Phase II Permit requirements in Section F.5.g.2.d (in addition to the numeric sizing criteria listed in Section 8.5.1 above):

1. Maximum surface loading rate of 5 inches per hour, based on the flow rates calculated. A sizing factor of 4% of tributary impervious area may be used.
2. Minimum surface reservoir volume equal to surface area times a depth of 6 inches.
3. Minimum planting medium depth of 18 inches. The planting medium must sustain a minimum infiltration rate of 5 inches per hour throughout the life of the project and must maximize runoff retention and pollutant removal. A mixture of sand (60%-70%) meeting the specifications of American Society for Testing and Materials (ASTM) C33 and compost (30%-40%) may be used.
4. Subsurface drainage/storage (gravel) layer with an area equal to the surface area and having a minimum depth of 12 inches.
5. Underdrain with discharge elevation at top of gravel layer.
6. No compaction of soils beneath the facility, or ripping/loosening of soils if compacted.
7. No liners or other barriers interfering with infiltration.
8. Appropriate plant palette for the specified soil mix and maximum available water use.

8.7.1 Alternative Bioretention Facility Design

An alternative design to the requirements listed in Section 8.6 above for one or a combination of facilities may be implemented (Permit Section F.5.g.2.d.a)) as long as the following equivalent effectiveness measures are demonstrated:

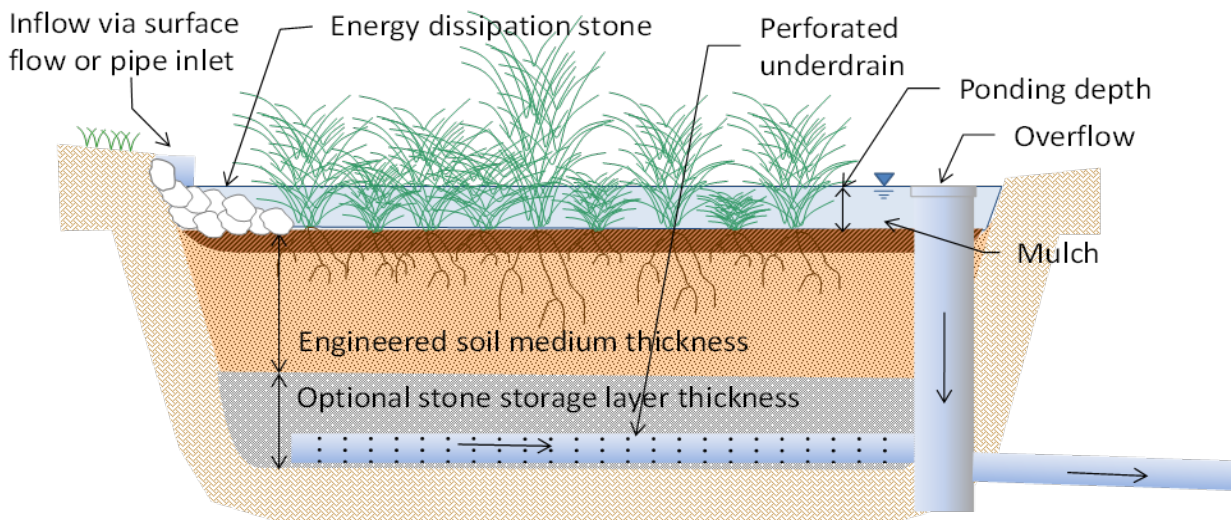
1. Equal or greater amount of runoff infiltrated or evapotranspired,
2. Equal or lower pollutant concentrations in runoff that is discharged after bioretention,
3. Equal or greater protection against shock loadings and spills,
4. Equal or greater accessibility and ease of inspection and maintenance.

8.7.2 Allowed Adjustments for Bioretention Facilities

The Phase II Permit (Section F.5.g.2.d.b)) also allows project proponents to adjust storm water treatment or bioretention facilities for special site conditions as long as the following conditions are met:

1. Facilities located within 10 feet of structures or other potential geotechnical hazards established by the geotechnical expert for the project may incorporate an impervious cutoff wall between the bioretention facility and the structure or other geotechnical hazard.
2. Facilities in areas with documented high concentrations of pollutants in underlying soil or groundwater.
3. Facilities located where infiltration could contribute to a geotechnical hazard.
4. Facilities located on elevated plazas or other structures may incorporate an impervious liner and may locate the underdrain discharge at the bottom of the subsurface drainage/storage layer (this configuration is commonly known as a “flow-through planter”; Figure 8.4).
5. Facilities located in areas of highly infiltrative soils or high groundwater, or where connection of underdrain to a surface drain or to a subsurface storm drain are infeasible, may omit the underdrain.

Figure 8.4: Bioretention Facility with Underdrain (San Diego BMP Design Manual, 2015)



8.7.3 Exceptions to Bioretention Facility Requirements

The Phase II Permit recognizes (Permit Section F.5.g.2.d.c) that site conditions may exist that make it infeasible to implement bioretention or equivalent facilities, as described in Sections 8.6.1 and 8.6.2 respectively. In these cases, other types of biotreatment or media filters (such as tree-box-type biofilters or in-vault media filters) may be used for:

1. Projects creating or replacing an acre or less of impervious area, and located in a designated pedestrian-oriented commercial district (i.e., smart growth projects), and having at least 85% of the entire project site covered by permanent structures;
2. Facilities receiving runoff solely from existing (pre-project) impervious areas;
3. Historic sites, structures, or landscapes that cannot alter their original configuration in order to maintain their historic integrity.

Although these exceptions to bioretention facilities are unlikely to occur at CSUSM, they are listed here for completeness.

8.7.4 Alternative Post-Construction Storm Water Management Program for Projects with Multiple-Benefits

Permit requirement found in F.5.g.3.

The Phase II Permit allows CSUSM to propose alternative post-construction measures in lieu of some or all of the post-construction measures in Permit Section F.5.g. for multiple-benefit projects.

Multiple-benefit projects include projects that may address any of the following, in addition to water quality:

- Water supply
- Flood control
- Habitat enhancement
- Open space preservation
- Recreation
- Climate change

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Proposed projects applying alternative post-construction to achieve multiple benefits are reported annually and require supporting documentation.

Multiple-benefit projects may be applied at various scales including project site, campus-wide or sub-watershed level. Multiple-benefit projects may include, but are not limited to:

- Projects developed under Watershed Improvement Plans (Water Code §16100 et seq.)
- IRWMP²⁶ implementation and green infrastructure projects.

Multiple benefit projects must be equally or more protective of water quality than post-construction requirements listed in the Phase II Permit.

The San Diego Water Board or the San Diego Water Board Executive Officer may approve alternative post-construction measures for multiple-benefit projects, as described above, after an opportunity for public comment, if the San Diego Water Board or San Diego Water Board Executive Officer finds that the alternative measures are consistent with the MEP standard.

8.7.5 Implementation of Storm Water Treatment, Alternatives, Adjustments or Exceptions

The CSU Guidance supports the use of alternative approaches especially in cases where storm water BMPs can support multiple projects or where BMPs can be implemented with equal benefit at alternative locations. The CSU Guidance states:

“In practice, this means that multiple small projects on a campus can be mitigated with a project on another part of the campus. For example, a recreation field or garden created in one part of a campus can be used to mitigate a project in another part of the campus. New building projects that include landscaping and that exceed their own mitigation requirements can be used for mitigation for other projects.

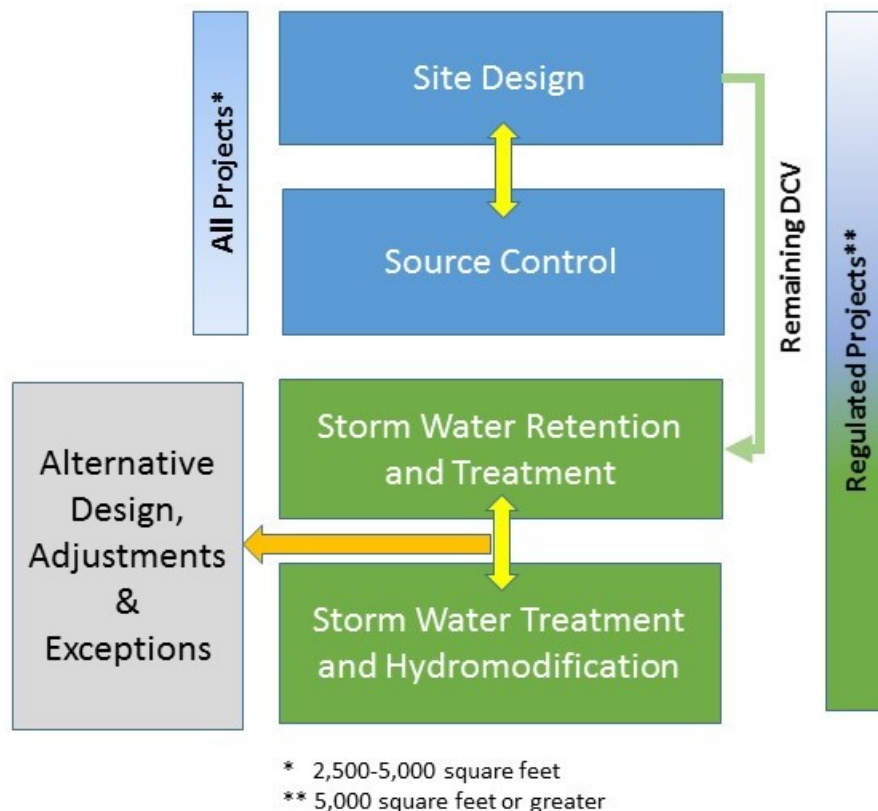
This will require advanced planning by the campus, but this work can be integrated into project planning and master planning. Non-traditional Phase II MS4 permittees are not required to create

²⁶ The Integrated Regional Water Management Plan (IRWMP) website for San Diego County is found at: <http://sdirwmp.org/>

a campus-wide water quality management plan; however, mitigation must be tracked and recorded to show compliance and effectiveness.”

The inter-relationship between required post-construction storm water BMP and the treatment alternatives, allowed adjustments and exceptions described in this section are illustrated in Figure 8.5.

Figure 8.5: Inter-Relationship of Core Post-Construction BMP Requirements and Alternative Programs



8.8 Operation and Maintenance of Post-Construction Storm Water Measures

Permit requirement found in F.5.g.4.

Phase II Permit Section F.5.g.4 requires the implementation of a verification program for the Operation and Maintenance (O&M) of treatment and hydromodification BMPs regulated under the Phase II Permit.

8.8.1 Requirements for O&M of Post-Construction Storm Water Measures

The Phase II Permit is very prescriptive regarding the elements that are required for the O&M Verification Program, not all of which are necessarily applicable to CSUSM.

According to the Phase II Permit, at a minimum, the O&M Verification Program shall include the following elements:

1. Projects shall at a minimum, require at least one of the following from all project proponents and their successors in control of the project or successors in fee title:
 - a. Written conditions in the sales or lease agreements or deed for the project that requires the buyer or lessee to assume responsibility for the O&M of the installed treatment system(s) and hydromodification control(s) until such responsibility is legally transferred to another entity;
 - b. Any other legally enforceable agreement or mechanism, such as recordation in the property deed, that assigns the O&M responsibility for the installed treatment system(s) and hydromodification control(s) to the project owner(s) or CSUSM.
2. Coordination with San Diego County Vector Control Program²⁷ to establish a protocol for notification of installed treatment systems and hydromodification management controls. On an annual basis, before the wet season, prepare a list of newly installed (installed within the reporting period) storm water treatment systems and hydromodification management controls to the San Diego County Vector Control Program and the San Diego Water Board. This list shall include the facility locations and a description of the storm water treatment measures and hydromodification management controls installed.
3. A database or equivalent tabular format of all projects that have installed treatment systems that includes the following information for each project:
 - a. Name and address of the project;
 - b. Specific description of the location (or a map showing the location) of the installed treatment systems and hydromodification controls;
 - c. Date the treatment systems and hydromodification controls were installed;
 - d. Description of the type and size of the treatment system and hydromodification control installed;
 - e. Responsible operator of each treatment system and hydromodification control;

²⁷ Best Management Practices for Mosquito Control on California State Properties" are available from the California West Nile virus website at <http://www.westnile.ca.gov/resources.php>. Please see Table 1, page 22, for a list of California mosquito control agencies or visit <http://mvlcac.org>

- f. Dates and findings of routine and follow-up inspections of the treatment system and hydromodification control; and
 - g. Any problems and corrective or enforcement actions taken.
4. Maintenance Approvals: CSUSM must have in place an O&M Plan or system so that all treatment systems and hydromodification controls installed at development sites are properly operated and maintained for the life of the site's use. In cases where CSUSM has worked diligently and in good faith with the appropriate State and federal agencies to obtain approvals necessary to complete maintenance activities for the treatment system or hydromodification management control, but these approvals are not granted, CSUSM shall be deemed to be in compliance with Phase II Permit provision F.5.g.(d) requiring operation and maintenance of these systems and controls.

8.8.2 Implementation of O&M for Post-Construction BMPs at CSUSM

In order to comply with the implementation requirements for O&M of post-construction BMPs, both treatment and hydromodification BMPs, CSUSM will implement the activities summarized in Table 8.2.

Table 8.2: O&M Plan Applicability and Implementation

O&M Requirement	Applicable?	How? Or Why?	Lead Department
Written conditions in the sales or lease agreements or deed	No	BMPs owned by Permittee (CSUSM)	Not Applicable
A legally enforceable agreement or mechanism (e.g., property deed recordation)	No	BMPs owned by Permittee (CSUSM)	Not Applicable
Annual reporting of treatment/hydromodification BMPs to Vector Control and Water Board	No	CSUSM is the local vector control enforcement agency	SH&S
Treatment/hydromodification BMP inventory updates	Yes	Provided to Facilities by PDC upon construction completion	Planning, Design and Construction, and Facilities
O&M Plan or system for treatment/hydromodification BMPs	Yes	Using work order system maintained by Facilities	Facilities

CSUSM has an existing treatment control BMP inventory included in Appendix C that meets the requirements of the Phase II Permit. The inventory is supplemented and documented with brief descriptions (see Appendix C) for the most significant treatment and hydromodification BMPs in the inventory. Additional information on the inventory can be obtained from PD&C and Facilities.

Future new development and redevelopment at CSUSM is led by the PD&C Department that oversees the design and development of new facilities including all types of BMPs. Management including inspections, operation and long-term maintenance of BMPs is overseen by the Facilities

Service Department. The oversight and reporting duties under the Phase II Permit are assigned to the Office of SH&S.

Upon completion of a project construction and any construction contract warranty, the PD&C Department transfers all project site documentation, including drawings, manuals, and operation and maintenance requirements to the Facilities Service Department. The Facilities Services Department prepares the information and data to be entered in the work order system. The work order system is used to set the inspection and maintenance frequency and requirements. It is routinely queried to create work orders for the inspections of the post-construction BMPs. Also see Section 9.7.1.3.

Operation and Maintenance activities, including all inspections and repairs or preventive maintenance can be verified as scheduled, pending or completed in the work order system.

8.9 SWMP Record Keeping and Annual Reporting

Permit requirement found in F.5.g.4.

SWMP record keeping and reporting is included in Section 11. In summary, annual reporting for the Post-Construction Program is completed in SMARTS by answering specific questions and uploading supporting documentation by October 15th for the previous reporting period July 1st through June 30th.

Post-Construction Program record keeping, data management and annual reporting is unique in that it requires specific data tracking, verification or self-auditing of the program, and external or other reporting that is not conducted through SMARTS as part of the Phase II Permit Annual Report.

SMARTS Annual Reporting and Certification

Implementation of the Post-construction program is reported on an annual basis and may require supporting documentation.

The specific reporting metrics and requirements for the Post-Construction Program includes certification for a number of elements. In order to effectively report and certify on the items listed in Table 8.3, CSUSM must continue to have a program in place to:

1. Implement site design, source control, treatment control, and hydromodification controls, as applicable.
2. Implement O&M of treatment and hydromodification control BMPs.
3. Audit and verify implementation and O&M of treatment and hydromodification BMPs.
4. Report the use of an alternative post-construction management program or BMPs, including allowable adjustments and exceptions to the prescribed standards.
5. Maintain an inventory of treatment and hydromodification BMPs.

6. Report or provide the inventory of treatment and hydromodification BMPs to the San Diego County Vector Control Program and San Diego Water Board.

Recordkeeping to complete reporting for the Post-Construction Program includes all of the items outlined above.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (see Section 10), any Post-Construction Program implementation and/or compliance deficiencies are identified as part of annual reporting and are reported as new or revised BMPs²⁸ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Additional details on the PEAIP and program modifications are provided in Section 10.

Table 8.3: Summary of Annual Reporting Milestones for the Post-Construction Program

Completion Date	Requirements		
Annually by June 30	Certify development and implementation of post-construction storm water management program (F.5.g)	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions
	Certify that development projects were regulated to comply with post-construction BMP requirements (F.5.g.1-4)	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions
	Certify implementation of site design for all projects (2,500-5,000 sq-ft)	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions
	Certify any proposed alternative post-construction BMP requirements – multiple benefits condition (F.5.g.3)	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions
	Implement an O&M verification program (F.5.g.4(ii)(a-d))	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

²⁸ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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9.0 POLLUTION PREVENTION / GOOD HOUSEKEEPING FOR PERMITTEE OPERATIONS PROGRAM

Permit requirement found in F.5.f.

9.1 Permit Requirement Overview

In accordance with Section F.5.f of the Phase II Permit, CSUSM must develop and implement a pollution prevention and good housekeeping program for operations to prevent or reduce pollutant runoff from CSUSM operation activities. Operation activities include facility maintenance performed by CSUSM staff and/or contractors. The program must include staff training on how to incorporate pollution prevention measures and techniques or BMPs into Permittee operations (e.g., regular street sweeping, pesticide use). The pollution prevention program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, equipment and building maintenance, and storm water drainage system maintenance.

The core components of the pollution prevention and good housekeeping program, as they apply to CSUSM, are:

1. Creating and maintaining a facility inventory and map (Section 9.2)
2. Assessing on an annual basis each facility's potential for pollutant discharges or pollutant hot spots – identify them as high priority sites (Section 9.3)
3. Development of a SWPPP for pollutant hotspots at high priority sites (Section 9.4)
4. Inspections, visual monitoring and remedial actions of facilities (Section 9.5)
5. Storm drain system assessment and prioritization (Section 9.6)
6. Maintenance of the storm drain system (Section 9.7)
7. CSUSM operations and maintenance activities (Section 9.8)
8. Pesticides, herbicides, and fertilizer application and new landscape design and maintenance management (Section 9.9)

9.2 Inventory and Map of Permittee-Owned or Operated Facilities

Section F.5.f.1 of the Phase II Permit requires preparation of an inventory of CSUSM-owned or operated facilities on the property that pose a threat to water quality and are not covered by another storm water General Permit (meaning construction or industrial).

Section F.5.f.2 of the Phase II Permit requires preparation of a map of the urban area that includes CSUSM-owned or operated facilities. The map must show the storm water drainage system for

each of the facilities, the receiving waters to which they discharge. The Phase II Permit also requires that the map show the manager for each facility with contact information. CSUSM has elected to present this information as part of the inventory prepared under Section F.5.f.1 to facilitate timely revision and updates to the information and better access to the information in case of an emergency.

9.2.1 Facility Inventory Implementation

The CSUSM facility inventory is presented in Appendix D, and is updated periodically or at minimum annually, as needed. A facilities map with 3D capabilities and many other features can be found online on the CSUSM website (<https://www.csusm.edu/map/>).

9.2.2 Facility Map Implementation

The CSUSM interactive facility map is constantly updated and can be found online as noted above. The online mapping website and inventory in Attachment D are intended to be used jointly to meet the Phase II Permit requirements of Section F.5.f.1 and F.5.f.2. The information required for the facility manager's name and contact information are included in the inventory for ease of use and readability.

9.3 Facility Assessment Requirements

Phase II Permit Section F.5.f.3 requires that CSUSM conduct an inspection and assessment of pollutant discharge potential and pollutant hotspots (completed). According to Section F.5.f.3(ii), CSUSM is to conduct an annual review and assessment of the facilities in the inventory to determine their potential to impact surface waters and if they generate storm water or non-storm water pollutants.

Factors to be considered in determining hotspots and labeling facilities as high priority because they pose a potential risk to storm water pollution are:

1. Type and volume of pollutants stored at the facility or site,
2. Presence of improperly stored materials,
3. Type of activities performed or that should not be performed outside (e.g., changing automotive liquids, vehicle washing),
4. Proximity to water bodies or storm drain inlets or conveyances,
5. Poor housekeeping practices, and
6. Discharge of pollutant(s) of concern to receiving water(s).

Pollutant hotspots and high priority facilities shall include at a minimum the following:

1. Maintenance yards,
2. Hazardous waste facilities,

3. Fuel storage locations, and
4. Other facilities with chemicals or other materials that have a high potential to be discharged in storm water.

Pollutant hotspots and high priority facilities have been identified in the Facility Inventory in Appendix D in accordance with minimum Phase II Permit requirements.

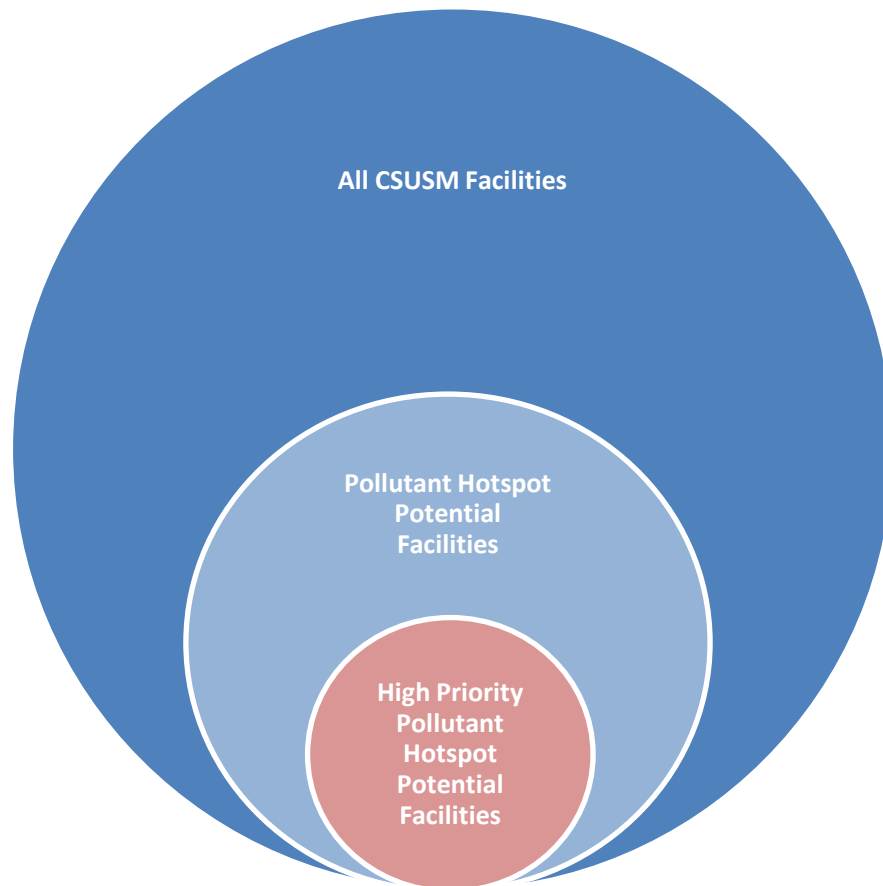
9.3.1 Facility Assessment Implementation and Status

The CSUSM facility inventory in Appendix D includes the latest facility assessment status in columns labeled “pollutant hotspot potential” with either a “yes” or “no” entry, and “high priority pollutant hotspot designation” with either a “yes” or “no” entry.

Permit Section F.5.f.3 requires an annual review and assessment of all CSUSM-owned facilities to determine their potential to impact surface waters.

A diagram of the types of facilities and how they are categorized is presented in Figure 9.1.

Figure 9.1: Designation of Facility Categories for Storm Water Inspections



9.3.2 Annual Facility Assessment Requirements

The annual review and assessment of all CSUSM-owned facilities includes, per Phase II Permit Section F.5.f.3.(ii), the identification of pollutant hotspots based on the assessment. As noted earlier, CSUSM will identify as pollutant hotspots those facilities that have a high potential to generate storm water and non-storm water pollutants. The factors to be considered are listed in Section 9.2. The annual assessment is part of the annual reporting and certification requirements.

Recordkeeping and Data Management

Annually verify and/or update the facility inventory in Appendix D, including the identification of facilities that are considered high priority hot spots.

9.4 Storm Water Pollution Prevention Plans

Storm Water Pollution Prevention Plans (SWPPP) are required per section F.5.f.4 of the Phase II Permit for pollutant hotspots at high priority sites, unless a Hazardous Materials Business Plan (HMBP), Spill Prevention Control and Countermeasure Plan (SPCCP) or equivalent document is in place and contains the information listed in section F.5.f.4(ii) of the Phase II Permit:

1. A site-specific SWPPP shall identify a set of storm water BMPs to be installed, implemented, and maintained to minimize the discharge of pollutants in storm water,
2. The SWPPP shall be kept on-site at each of the CSUSM-owned or operated facilities' offices for which it was completed.
3. The SWPPP shall be updated as necessary.
4. At a minimum the SWPPP will address the following:
 - a. Facility specific information (location, owner, address, etc.),
 - b. Purpose of the document,
 - c. Key staff/contacts at the facility,
 - d. Site map with drainage identified,
 - e. Identification of significant materials that are handled and stored at the facility that may be exposed to storm water,
 - f. Description of potential pollutant sources,
 - g. BMPs employed at facility,
 - h. Spill control and cleanup, and response to spills.

SWPPPs or comparable documents were verified to be in place by July 1, 2017 to comply with the Phase II Permit.

9.4.1 SWPPP Implementation

Facilities on the CSUSM campus that have been identified as high priority sites are listed in the inventory provided in Appendix D. The preferred option for CSUSM to comply with the Phase II Permit for a SWPPP at these facilities is through the SPCCP program since the components overlap and are synergistic with the SWMP goals.

9.5 Inspection, Visual Monitoring and Remedial Action

Permit Section F.5.f.5 requires that CSUSM implement a program to conduct regular inspections of CSUSM-owned and operated facilities not covered by another storm water General Permit. It allows CSUSM to incorporate storm water inspections into existing, routine facility inspections.

The minimum program requirements as outlined in the Phase II Permit include conducting inspections as follows:

1. Quarterly hotspot visual inspections – Perform quarterly visual inspections in accordance with the developed standing operating procedures of all hotspot CSUSM-owned or operated facilities to ensure materials and equipment are clean and orderly, to minimize the potential for pollutant discharge, and to ensure implementation of BMPs. CSUSM shall look for evidence of spills and immediately clean them up to prevent contact with precipitation or runoff. The quarterly inspections shall be tracked in a log for every facility, and records kept with the site-specific SWPPP. The inspection report shall also include any identified deficiencies and the corrective actions taken to correct the deficiencies.
2. Quarterly hotspot comprehensive inspections – At least once per quarter, a comprehensive inspection of hotspot facilities, including all storm water BMPs, shall be performed, with specific attention paid to the following, but not limited to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar potential pollutant-generating areas. The quarterly inspection results shall be documented and records kept with the site-specific SPP. This inspection shall be performed in accordance with the developed standard operating procedures. The inspection report shall also include any identified deficiencies and the corrective actions taken to correct deficiencies.
3. Quarterly Hotspot visual observation of storm water and non-storm water discharges – At least once per quarter, visually observe discharge location from hotspot facilities. Where discharges are observed identify any observed problems (e.g., color, foam, sheen, turbidity) associated with pollutant sources or BMPs shall be remedied within seven days or before the next storm event, whichever is sooner. Visual observations shall be documented, and records kept with the site-specific SWPPP. This inspection shall be done in accordance with the developed standard operating procedures. The inspection report

shall also include any identified deficiencies and the corrective actions taken to correct the deficiencies.

4. Non-Hotspot Inspection – At a minimum, inspect each inventoried facility that is not a hotspot, once per permit term (once every five years). The inspection shall investigate and assess each of the items identified above.

9.5.1 Inspection, Visual Monitoring and Remedial Action Implementation

Quarterly inspections are comprehensive and will include the following assessment for all pollutant hotspot potential facilities listed in the inventory in Appendix D:

- Visual inspections
 - Housekeeping practices
 - Spills
- Comprehensive inspections
 - All BMPs
 - Pollutant potential areas (e.g., dumpsters, fueling, material handling areas)
- Visual observation of storm water and non-storm water discharges

All quarterly inspections shall be documented using the inspection form provided in Appendix D and entered in the tracking sheet provided in Appendix D or comparable spreadsheet or database. Since CSUSM has elected not to develop SWPPP (using the SPCCP in lieu of) the inspection records are kept in the SWMP. Inspections are the responsibility of SH&S in coordination with Facilities for any repairs and to implement corrective actions or remedy any deficiencies. Inspections can be recorded as they are completed and tracked for the reporting year using an Excel spreadsheet or other comparable database or data management system. A hardcopy example is provided in Appendix D.

CSUSM inspection frequency and number of facilities are summarized in Table 9.1.

Table 9.1: Facility Inspection Summary (2019)

Facility Category	Approximate Number in Inventory ²⁹	Frequency
No pollutant potential	45	Once every 5 years
Pollutant hotspot potential	5	Quarterly
High priority pollutant hotspot potential	2	Quarterly
Total	49	-

9.6 Storm Drain System Assessment and Prioritization Requirements

Permit Section F.5.f.6 requires that CSUSM develop and implement procedures to assess and prioritize the MS4 storm drain system, including but not limited to catch basins, pipe and pump infrastructure, above-ground conveyances, including receiving waterbodies within CSUSM's urbanized area and detention basins.

At minimum the following must be completed to meet compliance with the Phase II Permit:

Assess/prioritize storm drain system facilities for cleaning based on conditions. Assign a priority to all storm drain system facilities based on accumulation of sediment, trash and/or debris. In particular, assign high priority to catch basins meeting the following criteria:

1. Catch basins known to accumulate a significant amount of sediment, trash, and/or debris;
2. Catch basins collecting large volumes of runoff;
3. Catch basin collecting runoff from area that do not receive regular street sweeping;
4. Catch basins collecting runoff from drainage areas with exposed or disturbed soil; and
5. Catch basins that receive citizen complaints/reports.

9.6.1 Storm Drain Prioritization Implementation and Status

CSUSM completed a comprehensive storm drain system facility assessment in 2013. The assessment consisted of closed-circuit television (CCTV) inspection of underground storm drain pipes, manhole structures and other facilities. The results were documented in a detailed report and resulted in numerous action items ranging from cleaning and repair to no action needed. The CSUSM storm drain system is divided into five distinct networks as presented in the report. A total

²⁹ Provided as a reference of the relative number present in April 2019. Inventory is updated annually and provided in Appendix D.

of 83 assessments of the storm drain system were performed over several days in 2013. Cleaning was implemented as recommended in the report by water jet flushing of the lines using appropriate BMPs for the resulting wash water.

The assessment report was reviewed to determine the prioritization of catch basins inspections to meet Phase II Permit requirements and primarily used the first criterion listed in the Phase II Permit (see Section 9.6). Seventeen catch basin locations throughout the entire storm drain network were identified as potential candidates for high priority status. The review identified the most likely locations for high priority status as catch basins located in parking lots. A consistent pattern of higher amounts of debris were identified in the assessment at catch basin locations in parking lots and for underground storm drain lines connecting catch basins located in parking lots. As result, two additional catch basins were added to the list of potential high priority locations based on best professional judgment. The total number of potential high priority catch basins was determined to be 19. A field survey was conducted in April 2015 to verify the catch basin location and confirm the high priority designation.

The results of the comprehensive storm drain system assessment are presented in Appendix D and shown on the figures in Appendix B. The final high priority designation was assigned to seven catch basins and one trench drain, all located in parking lots.

The high priority catch basin designation can be modified in the future as follows:

1. Catch basins that do not accumulate a significant amount of sediment, trash, and/or debris (defined as >33% of catch basin capacity) as verified during annual inspections (see Section 9.7) for two consecutive years can be removed.
2. Catch basins identified in future assessment as meeting any of the criteria in Section 9.6 shall be added.

In 2018, CSUSM implemented the Track 1 option of the statewide Trash Provisions requirements (Water Code section 13383 order (June 1, 2017) by installing Full Capture Systems at the furthest downstream location feasible at six locations where its Phase II MS4 meets the City of San Marcos MS4. Locations are shown in the maps provided in Appendix B.

9.7 Maintenance of Storm Drain System

The Phase II Permit requires that CSUSM (Section F.5.f.7) maintain all high priority storm drain systems, designed as described above in Section 9.6, at least on an annual basis prior to the rainy season (October 1st).

The minimum requirements for maintenance of the storm drain system to meet Phase II Permit requirements are:

1. Storm drain systems inspection – Based on the priorities assigned above, in Section 9.6 per Permit Section F.5.f.6, develop a strategy to inspect storm drain systems within CSUSM jurisdiction. At a minimum, inspect all catch basins of high priority systems annually, prior to the rainy season. This includes inspection of all trash Full Capture Systems at least once prior

to the rainy season (October 1st) and periodically, as needed, during the rainy season to ensure ultimate performance.

2. Storm drain cleaning – Develop and implement a schedule to clean high priority catch basins and other systems. Cleaning frequencies shall be based on priority areas, with higher priority areas receiving more frequent maintenance. Cleaning and maintenance of Full Capture Systems is included as part of routine storm drain cleaning. Full Capture System cleaning is generally conducted by a contracted service provider.
3. Maintenance of surface drainage structures –Visually monitor all CSUSM-owned open channels, detention basins, and other drainage structures for debris at least once per year and identify and prioritize problem areas. At a minimum, removal of trash and debris from open channels and other drainage structures shall occur annually.
4. Disposal of waste materials – Develop and implement a procedure to dewater and dispose of materials extracted from catch basins. This procedure shall ensure that water removed during the catch basin cleaning process and waste material will not reenter the MS4.

The implementation of the maintenance program for the storm drain system is described in Section 9.7.1.

9.7.1 Maintenance of the Storm Drain System Implementation

CSUSM has in place a storm drain system maintenance program to meet the four requirements of Phase II Permit Section F.5.f.7 and to report minimum cleaning activities as described in Section 9.7.

The storm drain system maintenance program is described in more detail in the following sections.

SMARTS Annual Reporting and Certification

All four of the required storm drain system maintenance components are subject to annual reporting and certification.

9.7.2 Storm Drain System Inspections

CSUSM inspects all high priority catch basins annually, prior to the start of the rainy season (October 1st), to determine if cleaning is needed, perform scheduled cleaning, and verify high priority designation (see Section 9.6.1). The high priority catch basins are listed in Appendix D, as updated. Inspections activities are tracked and logged in the Facilities Services Department work order system and shall include the following information:

1. Date and time of inspection and crew names.
2. Relative amount of sediment, debris, and trash accumulated compared to capacity as an estimated percentage (e.g., 20%, 50%).
3. Determination if cleaning is needed, if amount of material accumulated is greater than 33%, then catch basin must be cleaned.

4. Type (e.g., trash, sediment, leaf litter) and estimated amount of materials removed (e.g., 3 cubic feet).
5. Other relevant information.

During the annual report preparation period, SH&S will evaluate the inspection data captured by the Facilities Services Department and revise the high priority catch basin inventory (Appendix D) as applicable. SH&S will notify Facilities of any changes in the inventory to amend the following year's inspection requirements.

9.7.3 Storm Drain Cleaning

CSUSM cleans, generally by contracting with a specialized cleaning service, all high priority catch basins and Full Capture Systems annually, prior to the rainy season (October 1st). Cleaning is prioritized based on the results of the annual inspection (Section 9.7.1). Cleaning activities are tracked and logged in the Facilities Services Department work order system and shall include the following information:

1. Date and time of cleaning and crew names.
2. Estimate of the amount of material accumulated (e.g., 3 cubic yards).
3. Type of material removed (e.g., trash, sediment, leaf litter).
4. Other relevant information.

During the annual report preparation period, SH&S will evaluate the cleaning data and advise the Facilities Services Department of any changes in the high priority catch basin inspection and cleaning frequency, as applicable. If annual inspections and cleaning appear to be insufficient the frequency may increase. For example, if catch basins are routinely reaching 50% capacity then a higher cleaning frequency should be established (e.g., semi-annual). Conversely, catch basin cleaning frequency may be reduced based on inspection results that show that material accumulation is minimal between inspections.

9.7.4 Maintenance of Surface Drainage Structures

CSUSM has an existing surface drainage structure maintenance program that consists of visually inspecting all CSUSM-owned open channels, detention basins, and other drainage structures. The majority of the structures are post-construction BMPs (e.g., rock swales), as noted in Section 8.8.2 and overlaps with this requirement. For surface drainage structures that are not post-construction BMPs, the Facilities Services Department conducts daily patrols of parking lots and corresponding curb and gutter drainages and other structures that are cleaned free of debris and trash. In addition, landscaping crews maintain structures free of debris as part of their routine maintenance activities of landscaped areas. Street sweeping is conducted bi-weekly of all parking lots/parking structure on campus to minimize debris and trash entering catch basins and other surface drainage structures.

CSUSM meets the minimum requirement of removal of trash and debris from open channels and other drainage structures on an annual basis since they are performed either semi-annually or annually as shown in Appendix D.

9.7.5 Disposal of Waste Material

CSUSM has an established procedure to dewater and dispose of materials extracted from catch basins during routine maintenance activities. The procedure ensures that water removed during the catch basin cleaning process and waste material will not reenter the MS4 and is properly managed and disposed of by Facilities Services Department staff or contractors to meet all disposal requirements and regulations.

CSUSM has a centralized waste management and disposal area to manage this and other waste needs.

9.8 CSUSM Operations and Maintenance (O&M) Activities

Permit Section F.5.f.8 requires that CSUSM assess its O&M activities for potential pollutants in storm water and inspect all BMPs on a quarterly basis.

The minimum O&M activities listed in the Phase II Permit are:

1. Develop and implement O&M activity assessment. The O&M activities assessment shall include, but not be limited to, the potential to discharge pollutants in storm water.
2. Identify all materials that could be discharged from each of these O&M activities.
3. Develop and implement a set of BMPs that, when applied during CSUSM O&M activities, will reduce the discharge of pollutants in storm water. CSUSM shall use the CASQA Municipal Handbook or equivalent.
4. Evaluate annually all BMPs implemented during O&M activities.

9.9 CSUSM O&M Activities Implementation

O&M activities at CSUSM, other than pesticide, herbicide, and fertilizer application, and landscape design maintenance described in Section 9.11, are included in this section. The required development and implementation of BMPs targets those activities that have the potential to discharge pollutants in storm water runoff to reduce their discharge through the implementation of BMPs.

CSUSM has identified and selected BMPs as follows:

1. General O&M activities BMPs by location
2. Food handling facilities BMPs
3. Grounds and facility use and maintenance BMPs
4. Non-Storwater activities BMPs
5. General O&M activities BMPs by BMP type

A summary of each of these BMP groupings is provided below. Tables summarizing the specific BMPs, identified by number, that are recommended for each of the categories are provided in Appendix E. For each of these BMP groupings, CSUSM has developed BMP Fact Sheets that can be found in Appendix E.

9.10 General O&M Activities – BMPs by Location

General BMPs for various O&M activities have been identified by location and are provided in a summary tables in Appendix E. General BMPs may apply to the entire campus, but BPJ should be used to identify feasibility of implementation. This category can list from one to up to seven BMPs for each distinct campus location, facility or activity depending on its purpose and use.

The tables in Appendix E should be consulted to identify BMPs recommended for each location. BMPs should be updated in Appendix E if facility activities change, inspections identify new or obsolete BMPs, etc. Examples of BMPs by location include:

- General, campus-wide: solid waste and recycling containers (trash cans)
 - BMP G01 – General Housekeeping
 - BMP G08 – Solid Waste and Recycling Storage
 - BMP G10 – Building and Ground Maintenance
 - BMP FH01 – Cleaning Impervious Outdoor Surfaces
- Recycling Center: solid waste storage, recycling area. In addition to general BMPs:
 - BMP G01 – General Housekeeping
 - BMP G08 – Solid Waste and Recycling Storage
 - BMP FH01 – Cleaning Impervious Outdoor Surfaces
 - BMP NS03 – Non-Storm Water Discharges
 - BMP NS06 – Spill Prevention, Control and Cleanup

9.10.1 Food-Handling Facilities BMPs

The campus has several food-handling facilities, including The Dome, which can be a source of trash, debris, bacteria, oil and grease and nutrients. BMPs are implemented as shown in Appendix E.

- The Dome – campus cafeteria
 - BMP G06 – Proper Use of Products & Chemicals
 - BMP G07 – Proper Storage of Products & Chemicals

- BMP G08 – Solid Waste and Recycling Storage
- BMP G10 – Building and Ground Maintenance
- BMP FH01 – Cleaning Impervious Outdoor Surfaces
- BMP FH02 – Cleaning Indoor Surfaces
- BMP NS01 – Water and Sewer System Maintenance
- BMP NS03 – Non-Storm Water Discharges
- BMP NS06 – Spill Prevention, Control and Cleanup
- BMP G15 – Smoke, Vapor and Tobacco Free Campus Initiative

9.10.2 Grounds and Facility Use and Maintenance BMPs

The category of grounds and facility use and maintenance BMPs is extensive and covers the majority of the facilities on campus. As noted in Appendix E, general campus BMPs and many site specific BMPs (e.g., Markstein Plaza) include at least some grounds, landscaping or facility use and maintenance activities. Examples include:

- Markstein Plaza and University Plaza
 - BMP G06 – Proper Use of Products & Chemicals
 - BMP G07 – Proper Storage of Products & Chemicals
 - BMP G08 – Solid Waste and Recycling Storage
 - BMP G10 – Building and Ground Maintenance
 - BMP FH01 – Cleaning Impervious Outdoor Surfaces
 - BMP LA01 – Landscape Maintenance
 - BMP LA02 – Landscape Irrigation Runoff
 - BMP G15 – Smoke, Vapor, and Tobacco Free Campus
 - BMP NS03 – Non-Storm Water Discharges
 - BMP NS06 – Spill Prevention, Control and Cleanup
- Parking Lots (general)
 - BMP G05 – Street & Parking Lot Sweeping, Cleaning & Maintenance
 - BMP G06 – Proper Use of Products & Chemicals

- BMP G07 – Proper Storage of Products & Chemicals
- BMP G08 – Solid Waste and Recycling Storage
- BMP G15 – Smoke, Vapor, and Tobacco Free Campus
- BMP NS03 – Non-Storm Water Discharges
- BMP NS04 – Portable Sanitary Facilities
- BMP NS06 – Spill Prevention, Control and Cleanup

Ground maintenance activities, including the drainage system, are conducted by the landscape maintenance contractor and include removal of debris, vegetation, sediment, etc. from swales and other conveyances (e.g., curb, gutters). Sweeping is cited as the preferred method for sidewalk, pathway and other impervious area cleaning. Trash and litter removal is conducted by the landscape maintenance contractor for all landscape areas. Trash and litter removal in hardscape areas (e.g. parking lots, plazas) is performed by Facilities staff and/or volunteer/contract staff under their supervision.

9.10.3 Non-Storm Water Activities BMPs

Verification of activities that may generate non-storm water discharges or runoff applies campus wide and are subject to BMPs to reduce or eliminate them (Section 6). Specific non-storm water BMP fact sheets are included in Appendix E with BMP NS as the numbering designation, and numerous BMP Fact Sheets include non-storm water discharge information for the activity. For example, BMP LA02 for Landscape Irrigation and Runoff Control is critical to the elimination of irrigation overflow and runoff which is accomplished by good maintenance practices of the irrigation system. Examples of BMP Fact Sheets that support non-storm water activity BMPs are:

- BMP NS01 – Water and Sewer System Maintenance
- BMP NS02 – Fountain and Pool Maintenance
- BMP NS04 – Portable Sanitary Facilities
- BMP NS05 – Drainage System Maintenance
- BMP NS06 – Spill Prevention, Control and Cleanup

9.10.4 General O&M Activities BMPs by BMP Type

CSUSM also has prepared a list of BMP Fact Sheets by BMP type for the most common or general O&M activities that take place around campus. The table is included in Appendix E and the individual BMP Fact Sheets that are referenced are found in Appendix E.

9.11 Pesticide, Herbicide, and Fertilizer Application and New Landscape Design Maintenance Management

Per Phase II Permit Section F.5.f.9, CSUSM shall implement a program which focuses on pollution prevention, source control BMPs, and landscape design and maintenance to reduce the amount of pesticides, herbicides and fertilizers used during its operations and activities. CSUSM shall implement the landscape design and maintenance on new or decorative landscapes. This program was initiated by July 1, 2015 to comply with the Phase II Permit.

The minimum implementation requirements for this pesticide, herbicide and fertilizer application program and standards for new landscape design maintenance management are:

1. Evaluate pesticides, herbicides and fertilizers used and application activities performed to identify pollution prevention and source control opportunities.
2. Implement practices that reduce the discharge of pesticides, herbicides and fertilizers. At a minimum the CSUSM shall do the following, but not limited to:
 - a. Educate applicators and distributors of storm water issues.
 - b. Implement integrated pest management measures that rely on non-chemical solutions, including:
 - i. Use of native and climate appropriate plants (reduces water usage and fertilization) for decorative landscape applications
 - ii. Keeping clippings and leaves away from waterways and out of the street using mulching, composting, or landfilling
 - iii. Preventing application of pesticides and fertilizers when two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA³⁰
 - iv. Limiting or replacing herbicide and pesticide use (e.g., conducting manual weed and insect removal)
 - v. Limiting or eliminating the use of fertilizers, including prohibiting application within five feet of pavement, 25 feet of a storm drain inlet, or 50 feet of a water body
 - vi. Reducing mowing of grass to allow for greater pollutant removal, but not jeopardizing public safety

³⁰ www.weather.gov

- c. Collect and properly dispose of unused pesticides, herbicides, and fertilizers.
- d. Minimize irrigation run-off.

9.11.1 Pesticide, Herbicide, and Fertilizer Applications and New Landscape Design and Maintenance Management Implementation

Pesticide Application

Pesticide application for ground areas and buildings (except landscaping) is managed by the Facilities Department and mainly through contracted professional specializing in these services (e.g., Ecolab). Pesticide management include the control and prevention of pests using integrated methods implemented by highly trained and professional services specialist. Pest mitigation includes cockroaches, ants, and rodents. Applications may include mechanical and structural methods, as well as, biological or targeted products to eliminate pests. Treatment applications are used upon verification through inspection of key areas throughout campus to only target known infestations. Inspections for service are generally provided monthly by contracted service provider.

Service methods are specified in the contract document's scope of services specific to CSUSM. Service reports are provided to CSUSM by the contractor. Additional services are also available if needed. Also see Section 9.9.1.2 for pesticide management related to landscaped areas.

In addition to specific contract or scope of services requirements, conditions or restrictions, the following BMP Fact Sheets (Appendix E) may be applicable:

- BMP G01 – General Housekeeping
- BMP G10 – Building and Grounds Maintenance
- BMP LA01 – Landscape Maintenance
- BMP G06 – Proper Use of Products & Chemicals
- BMP G07 – Proper Storage of Products & Chemicals
- BMP G09 – Proper Storage & Disposal of Hazardous Waste

Herbicide and Fertilizer Applications

Herbicide and fertilizer applications are managed by the Facilities Department and mainly conducted as part of landscaping maintenance activities. Landscaping is primarily conducted by contracted professionals specializing in these services. Herbicide and fertilizer applications are performed by highly trained and professional services specialists familiar with the products, application and disposal methods, and risks to the environment. CSUSM's scope of services for landscape maintenance includes requirements for a Pest Control Advisor's License and a qualified pest control applicator's license (e.g., Qualified Operators Certificate for Category B) for herbicides, rodenticides, pesticides and hazardous materials. The contracted landscape maintenance provider is also responsible for irrigation management. The contract scope of work places emphasis on water management to reduce water consumption and costs, reducing green

waste, and minimizing extensive “green scape”. All quantities of herbicides, rodenticides, and pesticides applied as part of the landscaping maintenance contract are reported by the contractor to CSUSM on a monthly basis.

Fertilizers are applied as specified (e.g., annually for trees, quarterly for lawn areas; lawn areas are minimal at CSUSM) in the scope of services.

In addition to specific contract or scope of services requirements, conditions or restrictions, the following BMP Fact Sheets (Appendix E) may be applicable:

- BMP G01 – General Housekeeping
- BMP LA01 – Landscape Maintenance
- BMP LA02 – Landscape Irrigation and Runoff Control
- BMP G06 – Proper Use of Products & Chemicals
- BMP G07 – Proper Storage of Products & Chemicals
- BMP G09 – Proper Storage & Disposal of Hazardous Waste

9.12 SWMP Record Keeping and Annual Reporting

Permit requirement found in F.5.g.4.

SWMP record keeping and reporting is included in Section 12. In summary, annual reporting for the Pollution Prevention/Good Housekeeping for Permittee Operations Program is completed in SMARTS by answering specific questions and uploading supporting documentation by October 15th for the previous reporting period July 1st through June 30th of each year.

Pollution Prevention/Good Housekeeping record keeping, data management and annual reporting is extensive with 25 reportable items or questions that require specific data tracking, verification or self-auditing of the program through SMARTS as part of the Phase II Permit Annual Report submittal and certification.

In order to effectively report and certify on the items listed below, CSUSM must continue to have a program in place to:

1. Develop and implement a program to prevent or reduce the amount of pollutant runoff from Permittee operations, as specified by section F.5.f.
2. Develop and maintain an inventory of facilities that may impact storm water, as specified by F.5.f.1.
3. Develop and make available a map that identifies the storm water drainage system corresponding to each of the facilities as well as the receiving waters to which these facilities discharge, facility and facility manager, including contact information as specified in section F.5.f.2(ii) implementation and O&M of treatment and hydromodification BMPs.

4. Conduct an annual review and assessment of all Permittee-owned or operated facilities to determine their potential to impact surface waters, as specified by section F.5.f.3(ii)(a-b).
5. Develop and implement SWPPPs for hotspots as specified by section F.5.f.4(ii)(a-c).
6. Conduct quarterly visual inspection of hotspots and hotspot discharge locations (F.5.f.5(ii)(a and c).
7. Conduct quarterly comprehensive hotspot inspection (F.5.f.5(ii)(b).
8. Inspect each inventoried facility that is not a hotspot once during permit term (F.5.f.5(ii)(d).
9. Implement procedures to assess and prioritize maintenance of storm drain system infrastructure and assign a high priority to each catch basin meeting any of the criteria listed in section F.5.f.6(ii)(1-5).
10. Begin maintenance of storm drain systems according to the procedures and priorities developed according to section F.5.f.7(ii)(a-d).
11. Develop and implement a strategy to inspect storm drain systems, based on the priorities assigned in section F.5.f.6(ii), page 89 (F.5.f.7(ii)(a).
12. Develop and implement a schedule to clean high priority catch basins and other systems (F.5.f.7(ii)(b).
13. Visually monitor all permittee-owned open channels, detention basins, and other drainage structures for debris at least once per year, identify and prioritize problem areas, and remove trash and debris annually (F.5.f.7(ii)(c).
14. Develop and maintain a procedure to dewater and dispose of materials extracted from catch basins that ensures that water removed during the catch basin cleaning process and waste material will not reenter the MS4 (F.5.f.7(ii)(d).
15. Develop program to assess O&M activities for potential to discharge pollutants and inspect all O&M BMPs quarterly as specified in section F.5.f.8(ii)(a-d).
16. Develop and implement O&M activity assessment including potential to discharge pollutants in storm water (F.5.f.8(ii)(a).
17. Identify all materials that could be discharged from each of these O&M activities, and which materials contain pollutants (F.5.f.8(ii)(b).
18. Develop and identify a set of BMPs that, when applied during Permittee O&M activities, will reduce pollutants in storm water and non-storm water discharges (F.5.f.8(ii)(c).

19. Evaluate all BMPs implemented during O&M activities annually (F.5.f.8(ii)(d)).
20. Implement a landscape design and maintenance program to reduce the amount of water, pesticides, herbicides and fertilizers used by Permittee (F.5.f.9).
21. Evaluate pesticides, herbicides, and fertilizers used, and application activities performed and identify pollution prevention and source control opportunities (F.5.f.9(ii)(a)).
22. Implement practices that reduce the discharge of pesticides, herbicides and fertilizers as specified in section (F.5.f.9(ii)(b)(1-4)).
23. Implement educational activities for municipal applicators and distributors (F.5.f.9(ii)(b)(1)).
24. Implement integrated pest management measures that rely on non-chemical solutions, including the measures specified in section (F.5.f.9(ii)(b)(2)(a-f)).
25. Collect and properly dispose of unused pesticides, herbicides and fertilizers (F.5.f.9(ii)(b)(3)).
26. Minimize irrigation runoff (F.5.f.9(ii)(b)(4)).

Recordkeeping to complete reporting for the Pollution Prevention/Good Housekeeping Program includes all of the items outlined above.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (see Section 10), the Pollution Prevention and Good Housekeeping Program implementation and/or compliance deficiencies are identified as part of annual reporting and are reported as new or modified BMPs³¹ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Once BMPs are identified, verification of effectiveness is reported on the subsequent year. Addition details on the PEAIP and program modifications are provided in Section 10.

Table 9.3: Summary of Annual Reporting Milestones for the Pollution Prevention and Good Housekeeping Program

Completion Date	Requirements	
Annually by 6/30	Provide summary of BMPs identified in the PEAIP. Include supporting documentation in the Annual Report, as applicable	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

³¹ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

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10.0 PROGRAM EFFECTIVENESS ASSESSMENT AND PROGRAM MODIFICATIONS

10.1 Program Effectiveness Assessment and Improvement Requirements

SMARTS Annual Reporting and Certification

Implement a PEAIP by
reviewing and completing as
part of Annual Report.

Permit requirement found in F.5.h.1.

The Phase II Permit requires a Program Effectiveness
Assessment and Improvement Plan (PEAIP) as follows:

CSUSM shall develop and implement a PEAIP that tracks short and long-term progress of the storm water program. The Program Effectiveness Assessment and Improvement Plan will assist the Permittee to adaptively manage its storm water program and make necessary modifications to the program to improve program effectiveness, reduce pollutants of concern, achieve the MEP standard, and protect water quality, and to document CSUSM's compliance with permit conditions. The Program Effectiveness Assessment and Improvement Plan shall identify the strategy used to gauge the effectiveness of prioritized BMPs and program implementation as a whole. Prioritized BMPs include BMPs implemented based on pollutants of concern. Where pollutants of concern are unidentified, prioritized BMPs are based on common pollutants of concern (i.e., sediment, bacteria, trash, nutrients). The effectiveness assessments will build upon each other from one year to the next and shall identify modifications to the program the Permittee must undertake to improve effectiveness.

CSUSM shall review the SWMP on an annual basis as a result of the effectiveness assessment process and annual reporting.

In addition, Phase II Permit requirements (F.5.h.1(ii)) for implementation of the PEIAP are:

The PEAIP may be modeled upon the most recent version (if applicable) Municipal Storm Water Program Effectiveness Assessment Guidance (CASQA, May 2007) or equivalent.

(a) The Program Effectiveness Assessment and Improvement Plan shall include the following minimum elements:

- (1) Implementation of storm water program elements
- (2) Identification and targeting of Target Audience(s)

10.2 Program Effectiveness Assessment and Improvement Plan Implementation

CSUSM has adapted the Non-Traditional MS4 framework prepared by the California Stormwater Quality Association (CASQA) that is largely based upon the information presented in the guidance document prepared by CASQA, *A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs* (February 2015).

The PEAIP for CSUSM is found in Appendix F.

10.3 SWMP Modification Requirements

Permit requirement found in F.5.h.2.

The Phase II Permit requires updates to CSUSM's SWMP as follows:

Based on the information gained from the effectiveness assessment, CSUSM shall identify modifications to control measures/significant activities, including new BMPs or modification to existing BMPs. CSUSM shall consider the scope, timing, and frequency of BMP modifications for the next permit cycle, as applicable.

In addition, the Phase II Permit (F.5.h.2) states that CSUSM shall identify program modifications to include:

- (a) Improving upon BMPs that did not accomplish goals;
- (b) Continuing and expanding upon BMPs that proved to be effective, including identifying new BMPs or modifications to existing BMPs designed to increase pollutant load reductions;
- (c) Discontinuing BMPs that may no longer be productive and replacing with more effective BMPs; and
- (d) Shifting priorities to make more effective use of resources.

10.4 SWMP Modification Implementation

Any modifications or updates to the SWMP are initiated and documented as part of the annual report. CSUSM may update the SWMP whenever there is a change in campus operational and field activities, expansion/remodeling of facilities including the installation or removal of drainage facilities including source control BMPs, site design BMPs or treatment control BMPs which may significantly affect the characteristics of storm water discharge pollutants from the CSUSM campus.

SMARTS Annual Reporting and Certification

CSUSM shall use the PEAIP to assess modifications to the SWMP as part of the annual report.

10.5 Annual Reporting Requirements

The Phase II Permit requires that by the 2017-2018 Annual Report CSUSM complete and have available a list of maintenance activities of highest priority BMPs. By the 2017-2018 Annual Report (October 15, 2018), CSUSM complete and have available a summary of proposed modifications to the storm water program to improve program effectiveness, to achieve the MEP standard, and to protect water quality.

SMARTS Annual Reporting and Certification

CSUSM shall complete the SWMP modifications as part of the annual report as identified in the PEAIP annual review.

This version of the SWMP represents the revisions identified in 2017-2018, those resulting from the 2019 Regional Board audit, and other minor modifications in 2018-2019 identified as part of the process to update and improve the SWMP.

11.0 TOTAL MAXIMUM DAILY LOADS COMPLIANCE REQUIREMENT

This section satisfies Permit requirement found in C.1 and F.5.i.

11.1 Permit Requirement Overview

This SWMP section addresses two Phase II Permit requirements: 1) identification of applicable, adopted TMDLs; and 2) consideration of 303(d) List – Category 4b pollutants and potential sources. Phase II Permit Sections C.1 and F.5.i requires compliance with all applicable and approved Total Maximum Daily Loads (TMDLs) included in Attachment G of the Phase II Permit. Attachment G is subject to updates and revisions by the State Water Board.

CSUSM is also required to complete and have available a report that includes the implementation status of the TMDL(s) with each Annual Report (F.5.i.4) as noted in Section 11.5 below.

Phase II Permit Section F.5.i.5 requires compliance with implementation requirements in Category 4b of the State Water Board's *Integrated Reporting and Listing Decisions* (also known as the 303(d) List).

The relationship between the two regulatory drivers, TMDLs and the 303(d) List, and the Phase II Permit is described below. The activities incorporated into the SWMP as a result of these regulatory requirements are presented for each of them.

11.2 Total Maximum Daily Loads

11.2.1 Background

Water segments having an EPA approved TMDL are found on the 303(d) List Category 4a. As of December 2018, the most recent Phase II Permit Attachment G available is dated February 5, 2013 and has been included in the latest Phase II Permit amendment (Unofficial Draft approved by the SWRCB on December 19, 2017 and is pending finalization). Attachment G includes the San Marcos Hydrologic Area (904.50) and lists the *Bacteria Project I for Twenty Beaches and Creeks in the San Diego Region* (Bacteria Project I) per Resolution R9-2010-0001 issued by the San Diego Water Board as shown in the attached reference pages TMDL Appendices 1-2. CSUSM is located in the San Marcos Hydrologic Area (HA) and it is subject to the Phase II MS4 requirements listed in the Bacteria Project I resolution in Appendix Q (see TMDL Appendices 3-4).

Originally, the 2010 303(d) List included the beach for the San Marcos HA as Moonlight Beach at the mouth of Cottonwood Creek at the Pacific Ocean. Although Cottonwood Creek is located in the San Marcos HA, it is not located in the sub-watershed or drainage area that includes CSUSM. Therefore, CSUSM is not hydrologically connected to the impaired water segment.

For clarification purposes, CSUSM drainage goes to San Marcos Creek and to Batiquitos Lagoon and eventually to the Pacific Ocean, it does not directly contribute to the shoreline at Moonlight Beach at Cottonwood Creek (located in the City of Encinitas near Encinitas Blvd) and several miles south of Batiquitos Lagoon. The 2014 303(d) List Category 4a continues to list (as of February 2019) the impaired water body as Cottonwood Creek at Moonlight Beach in the same manner as the Bacteria Project I TMDL. Meanwhile the 2014 303(d) List updated the designation

of the bacteria impairment to include San Marcos Creek and Batiquitos Lagoon (per Interactive Map on SWRCB website) instead of Moonlight Beach which is located several miles south of Batiquitos Lagoon. Therefore, CSUSM sought clarification of the applicability of the TMDL in the response to the Regional Board's 2019 Storm Water Program Audit.

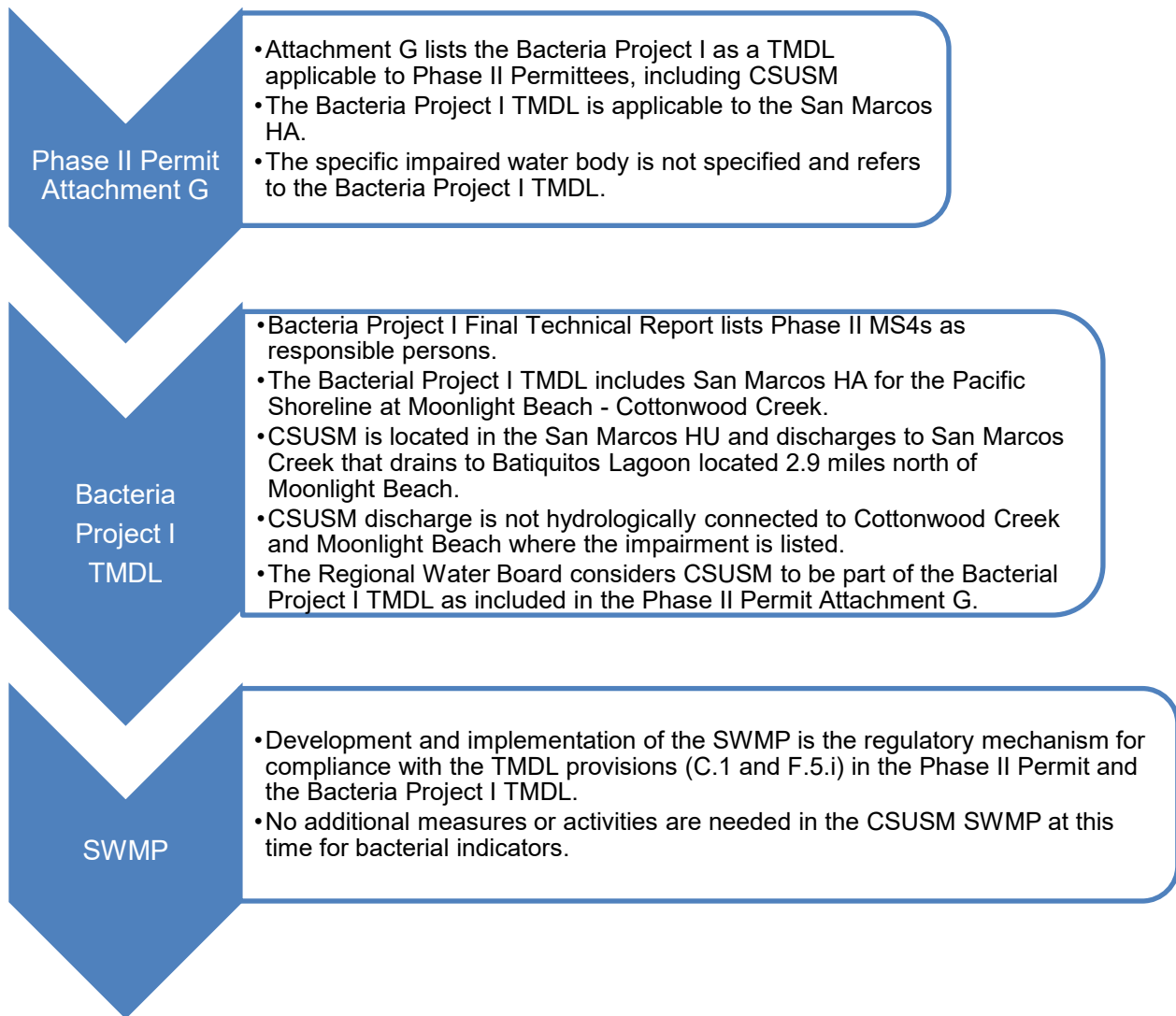
11.2.2 Status Summary

On May 2, 2019, the Regional Board stated their position regarding the Bacteria TMDL Project I in an email to CSUSM. The key items are:

- CSUSM has acknowledged that Phase II Permit Attachment G includes a summary table (page 40) of the Bacteria TMDLs for the San Marcos Hydrologic Area (HA) and that CSUSM is in this HA.
- CSUSM concurs with the Water Board's findings from the Phase II MS4 permit and the Bacterial TMDL (Resolution R9-2010-0001 and Final Technical Report). Specifically, these documents indicate that "Under these general WDRs and NPDES requirements, Phase II MS4s are required to develop and implement a Storm Water Management Plan/Program (SWMP). The SWMPs specify what BMPs will be used to address certain program areas." and "Phase II MS4 owners and operators are required to comply with the provision of the State Water Board general WDRs and NPDES requirements to reduce the discharge of bacteria as specified in their SWMPs." (Final Technical Report, 2/10/2010, pages 105-106).
- CSUSM understands that compliance with the Bacteria I TMDL is met through the continued implementation the SWMP and BMP strategies with appropriate emphasis on potential bacteria sources and implementation of monitoring as specified in Phase II MS4 permit Section F.5.d Illicit Discharge Detection and Elimination Program and Section 6 of the CSUSM SWMP.
- It is also CSUSM's understanding, in accordance with R9-2010-0001, Attachment A, Page A-54, that "Because the Phase I MS4s are located at the base of the watersheds and have been identified as the most significant controllable source of bacteria, the municipal Phase I MS4s will have the primary responsibility for monitoring the receiving waters" it is the primary responsibility of the Phase I MS4s to conduct monitoring under the Bacterial TMDL.
- Lastly, any additional monitoring requirements beyond those specified in Section F for Non-Traditional Phase II MS4s would come specifically at the direction of the San Diego Water Board if CSUSM is found to be a significant source of bacteria. "For any individual Phase II MS4s that are identified as a significant source of pollutants, the San Diego Water Board may also issue individual WDRs requiring the implementation of WQBELs that are consistent with the requirements and assumptions of the Municipal MS4 WLAs." (R9-2010-0001, Attachment A, Page A42).

Figure 11.1 illustrates the relationship between the TMDL compliance requirement in the Phase II MS4 Permit and the existing Bacterial Project I TMDL in the San Diego Region.

Figure 11.1: Relationship Between Phase II MS4 Permit and TMDL Requirements for CSUSM



11.2.3 Activities

CSUSM continues to monitor communications from the State Water Board and the San Diego Water Board for any changes to Phase II Permit Attachment G to appropriately respond to any new requirements. The latest version of the Phase II Permit (as of December 2017) is available as an unofficial draft pending certification by the clerk). The SWMP for CSUSM has been proactively prepared by taking into account the Bacteria Project I TMDL and verifying any potential sources and activities. CSUSM will continue to monitor the implementation of the Bacteria Project I TMDL by the San Diego Water Board.

11.3 303(d) List – Category 4b

11.3.1 Status Description

The latest 303(d) List Category 4b is for pollutants addressed by other than a TMDL and for 2014 it was approved by EPA in April 6, 2018³². The Category 4b portion of the list does not include any water bodies in the San Marcos HA.

11.3.2 Activities

CSUSM continues to monitor communications from the State Water Board and the San Diego Water Board for any changes to the 303(d) List Category 4b to appropriately respond to the requirements. The SWMP for CSUSM has been prepared by taking into account the 303(d) List and Bacteria I TMDL. Future revisions to the 303(d) List would be address with revisions to the SWMP and communicated in the Annual Report.

11.4 Implementation Schedule for TMDLs and 303(d) List Activities

As noted above, activities include:

1. Monitor communications by the State Water Board and San Diego Water Board for updates to Permit Phase II Attachment G listing applicable adopted TMDLs in the San Marcos HA and 303(d) List updates for Category 5, as required by the Phase II Permit.
2. Updates to this SWMP for any new or modified TMDLs and/or 303(d) List pollutants that will be documented and reported as part of the Annual Report.
3. Approaching the Bacteria Project I TMDL conservatively and implementing the SWMP to address indicator bacteria to comply with the Phase II MS4 Permit although the impaired water segment designation remains unclear between the Phase II Permit and the Bacterial Project I TMDL,

Phosphorous is a pollutant in the 303(d) List for San Marcos Creek with urban runoff or storm sewer sources in Category 5 indicating a TMDL is required. CSUSM will continue to track it.

11.5 SWMP Record Keeping and Annual Reporting

SWMP record keeping and reporting is included in Section 12. In summary, annual reporting for the TMDL Compliance Requirements is completed by answering questions and uploading any supporting documentation as attachments to SMARTS. The established reporting due date of October 15th is for the preceding reporting period July 1st through June 30th.

³² As of the preparation of this SWMP, the 2018 and 2020 Integrated Reports that include the 303(d) lists were listed as “in progress” on the State Water Board website.

The specific reporting metrics and requirements for TMDL Compliance Requirements reporting include incorporating the specific TMDL implementation status with each annual report.

As part of the Program Effectiveness Assessment and Improvement and any Storm Water Program Modifications as required in the Phase II Permit (See Section 10), any TMDL Compliance Requirement implementation changes and/or compliance deficiencies are identified as part of annual reporting and are reported as new or modified BMPs³³ as part of the Program Effectiveness Assessment and Improvement Plan (PEAIP) section of the Annual Report. Any changes in the TMDL status applicable to CSUSM is updated in this section of the SWMP and an action plan developed to assess changes to the overall program and SWMP.

Any TMDL-driven BMPs are identified and verification of effectiveness reported in the annual report. Addition details on the PEAIP and program modifications are provided in Section 10.

Table 11.1: Summary of Annual Reporting Milestones for TMDL Compliance Requirements

Completion Date	Requirements		
Annually by 6/30	Provide a summary of past year activities (F.5.i.4) as part of the annual report in SMARTs	Provide summary of BMPs identified in the PEAIP	Provide a summary of the PEAIP BMPs activities from previous year and answer management questions

³³ BMPs refer to general management practices and pollution controls depending on the deficiencies and corrective actions.

12.0 ANNUAL REPORTING AND RECORD KEEPING

The Phase II Permit requires annual reporting by the predetermined submittal date of October 15th for the previous reporting period beginning July 1st and ending June 30th. Reporting is to be completed as noted below in Section 12.1.

Annual reporting requires complete and constant record keeping throughout the year to ensure all SWMP required activities and tasks to comply with the Phase II Permit are completed in a timely manner and any corrective actions are tracked and documented.

CSUSM has implemented the necessary forms, tracking mechanisms, work orders and tools to complete all required SWMP tasks and activities in a timely manner and produce the necessary documentation to support the summarized annual reporting described in Section 12.1.

12.1 Online Annual Reporting

Permit requirement found in F.5.f.

12.2 Permit Requirement Overview

The Phase II Permit requires that an annual report be prepared and filed using the State Water Board's SMARTS. The annual report is a summary of the past years' activities for each program element (Provision F.5). Reporting elements also include any special studies (Provision E.13.d.2) as described in Section 10.4 above, an evaluation of the program's effectiveness, any program modifications (Provision E.14) as described in Sections 10.1 and 10.2 above, and an update on any TMDLs (Provision E.15) as noted in Section 11 above. Each program element is evaluated separately for effectiveness and the overall program is to be certified to be in compliance with the requirements. If a program element is not in compliance, as determined by the effectiveness assessment, an Improvement Plan is prepared in accordance with Section F.5.j.2 of the Phase II Permit. The Improvement Plan shall include the reason for the failure to comply, a description and schedule of tasks necessary to achieve compliance, and an estimated date to achieve full compliance.

The annual report is due on the SWRCB by October 15th and covers the previous reporting year from July 1st through June 30th.

Permittees are required to maintain all annual report supporting documentation and have it available during business hours unless an alternative arrangement is made with the Regional Board Executive Officer (Provision f.5.j.3).

12.3 Records Retention

All reporting and documentation should be retained for a minimum of three (3) years or longer if stipulated in CSUSM record retention policies and procedures.

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REFERENCES

1. *California Storm Water Best Management Practices Handbooks; Caltrans Storm Water Quality Handbook: Planning and Design Staff Guide; Manual for Storm Water Management in Washington State; The Maryland Stormwater Design Manual; Florida Development Manual: A Guide to Sound Land and Water Management; Denver Urban Storm Drainage Criteria Manual, Volume 3 - Best Management Practices and Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, USEPA Report No. EPA-840-B-92-002.
2. Final 2010 Integrated Report (CWA Section 303(d) 2010 California 303(d) List of Water Quality Limited Segments, State Water Resources Control Board, August 4, 2010.
3. *Stormwater Best Management Practice Handbook Portal: Construction*, CASQA, November 2009.
4. *Water Quality Control Plan for the San Diego Basin (9)*, California Regional Water Quality Control Board San Diego Region, September 8, 1994.
5. *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems*, NPDES Permit No. CAS000004, Water Quality Order No. 2003-0005-DWQ, April 30, 2003.
6. *Waste Discharge Requirements of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4), Draining the Watersheds of the San Diego County*, Order No. 2007-0001, NPDES Permit No. CAS0108758, January 24, 2007.
7. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule*, Federal Register 40 CFR Part 131, May 18, 2000.

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GLOSSARY OF TERMS

For a comprehensive glossary of terms, see the Glossary in the Small MS4 General Permit.

Basin Plan

Water Quality Control Plan for the San Diego Basin, adopted by the Regional Water Quality Control Board, San Diego Region updated August 4, 2016.

Best Available Technology (BAT)

Best available technology economically achievable is the technology-based standard established by Congress in Clean Water Act section 402(p)(3)(A) for dischargers of Storm Water. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and Best Management Practices.

Best Management Practices (BMPs)

Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to waters of the United States. Best Management Practices also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, waste disposal, and drainage from raw materials storage.

Confined Space

A confined space has limited openings for entry or exit, has insufficient natural or mechanical ventilation, and is not designed for continuous occupancy. Requires specific equipment and training to access.

Construction General Permit (CGP)

National Pollutant Discharge Elimination System for the Storm Water Discharges associated with the construction and land disturbance activities, State Water Resources Control Board Permit, Order No. 2009-0009 DWQ, NPDES Permit No. CAS000002 and as amended.

Construction Storm Water BMPs

BMP practices, procedures, devices or materials used to prevent the transport and introduction of pollutants, including sediment, both on and from a project site during construction.

Directly connected impervious areas

Impervious areas (e.g. sidewalks, parking lots) that are hydraulically connected to drainage facilities.

Environmentally Sensitive Areas

Areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (2016) and amendments); water bodies designated with the RARE beneficial use by the State Water Resources Control

Board (Water Quality Control Plan for the San Diego Basin (2016) and amendments); areas designated as preserves or their equivalent, Multi Species Conservation Program within the Cities and County of San Diego; and any other equivalent environmentally sensitive areas.

Hydromodification

The change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport. In addition, alteration of stream and river channels, installation of dams and water impoundments, and excessive streambank and shoreline erosion are also considered hydromodification, due to their disruption of natural watershed hydrologic processes.

Infiltration

Infiltration is the downward entry of water percolating into the surface of the soil matrix.

Illicit Discharge

Any discharge to a municipal separate storm sewer (storm drain) system (MS4) that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes all non-storm water discharges not composed entirely of storm water and discharges that are identified under the Discharge Prohibitions section of this General Permit. The term illicit discharge does not include discharges that are regulated by an NPDES permit (other than the NPDES permit for discharges from the MS4).

Illicit Disposal

Any disposal, either intentionally or unintentionally, of material(s) or waste(s) that can pollute storm water. Also see Illicit Discharge.

Illegal Connection (Discharge)

Any man-made conveyance/physical connections to the storm water conveyance/storm drain system without a permit by CSUSM or the San Diego Regional Water Quality Control Board. Examples include channels, pipelines, conduits, inlets, or outlets that are connected directly to the storm drain system.

Legally Responsible Person (LRP)

The LRP is the individual that certifies the Notice of Intent (NOI) and is responsible for reviewing, validating and certifying the annual report for accuracy and correctness.

Linear Utility

Any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid including water, wastewater for domestic municipal services, liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications e.g., telephone, telegraph, radio or television messages; and associated ancillary facilities.

Maximum Extent Practicable (MEP)

The minimum required performance standard for implementation of municipal storm water management programs to reduce pollutants in storm water. Clean Water Act § 402(p)(3)(B)(iii)

requires that municipal permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." MEP is the cumulative effect of implementing, evaluating, and making corresponding changes to a variety of technically appropriate and economically feasible BMPs, ensuring that the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative process.

Municipal Separate Storm Sewer System (MS4)

The regulatory definition of an MS4 (40 CFR 122.26(b)(8)) is "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created to or pursuant to state law) including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States. (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2."

In practical terms, operators of MS4s can include municipalities and local sewer districts, state and federal departments of transportation, public universities, public hospitals, military bases, and correctional facilities. The Storm water Phase II Rule added federal systems, such as military bases and correctional facilities by including them in the definition of small MS4s.

National Pollution Discharge Elimination System (NPDES) Permit

A national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Clean Water Act.

In California, an NPDES Permit is issued by the State Water Resources Control Board (SWRCB) or a Regional Water Quality Control Board (including San Diego) pursuant to Division 7 of the California Water Code to control discharges from point sources to waters of the United States.

Non-Storm Water Discharge

Any discharge to the Storm Water Conveyance System that is not entirely composed of storm water. Exclusions or exceptions may apply in the NPDES permit issued for the region.

NPDES General Permit

Any NPDES Permit issued by the State Water Resources Control Board in accordance with 40 Code of Federal Regulations section 122.28.

Numeric Effluent Limitation

Any numeric or narrative restriction imposed on quantities, discharge rates, and concentrations of pollutants, which are discharged from point sources.

Outfall (Storm Water Outfall)

A point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States. Specific to Ocean Plan monitoring, outfalls include those measuring 18 inches or more in diameter.

Permit Registration Documents

Permit Registration Documents includes a Notice of Intent (NOI), Risk Assessment, Site Map, Storm Water Pollution Prevention Plan (SWPPP), Annual Fee, and a signed Certification Statement.

Permanent Storm Water BMPs

BMPs include the site design features, source control features, and treatment control facilities that become a permanent part of a project's design and remain functioning throughout the use phase of a project site.

Phase I MS4 Permit (Municipal)

San Diego Water Board Order No. R9-2014-0001, NPDES No. CAS019266 for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region. Also known as the Regional MS4 Permit or Municipal Permit.

Phase II MS4 Permit

SWRCB WQO No. 2013-0001-DWQ originally issued on February 5, 2013 and went into effect on July 1, 2013. It has been amended by various actions of the SWRCB.

Point Source

Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Pollutant

Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. A Pollutant also includes any contaminant which can degrade the quality of the Receiving Waters in violation of any Plan Water Quality Objectives.

Pollution Prevention

Practices and processes that reduce or eliminate the generation of pollutants, in contrast to source control, treatment, or disposal.

Post-Project Flows

The peak runoff flows and runoff volume anticipated after the project has been constructed taking into account all permeable and impermeable surfaces, soil and vegetation types and conditions after landscaping is complete, detention or retention basins or other water storage elements incorporated into the site design, and any other site features that would affect runoff volumes and peak flows.

Pre-Development Hydrologic Conditions

Hydrologic conditions that would exist assuming no pavement, structures or hardened surfaces, with site vegetation typical of native conditions in the climate and ecological zone of the site, topography similar to current conditions without structures, pavements, or artificially hardened surfaces, and soil types similar to current conditions without structures, pavements, or artificially hardened surfaces. The terms “predevelopment runoff,” “pre-development flow,” or “pre-development volume,” are the quantitative measures associated with this definition.

Receiving Waters

Surface water that receives regulated and unregulated discharges from activities on land. Means surface bodies of water which serve as discharge points for the Storm Water Conveyance System, including creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays and the Pacific Ocean.

Redevelopment

Land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred. Redevelopment does not include trenching, excavation and resurfacing associated with LUPs; pavement grinding and resurfacing of existing roadways; construction of new sidewalks, pedestrian ramps, or bike lanes on existing roadways; or routine replacement of damaged pavement such as pothole repair or replacement of short, non-contiguous sections of roadway.

Qualified SWPPP Developer (QSD)

The trained and competent person typically employed by the Contractor responsible for the development of the SWPPP.

Qualified SWPPP Practitioner (QSP)

The trained and competent person typically employed by the Contractor responsible for the implementation of the SWPPP.

Storm Water

Storm water is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As storm water flows over the land or impervious surfaces, it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the storm water is discharged untreated.

Storm Water Conveyance System

Municipal and natural facilities within the CSUSM campus by which Storm Water may be conveyed to waters of the United States, including any roads with drainage systems, municipal

streets, catch basins, natural and artificial channels, aqueducts, canyons, stream beds, gullies, curbs, gutters, ditches, natural and artificial channels or storm drains.

Storm Water Pollution Prevention Plan (SWPPP)

A comprehensive document which describes the proposed activities and BMPs to be implemented by the owner or operator, or the construction contractor per project agreement, to eliminate or reduce pollutants/pollutant discharges to the MEP levels prior to entering the Storm Water Conveyance System.

Source Control BMP

Structural and non-structural site planning practices or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff. Examples include roof structures over trash or material storage areas, and berms around fuel dispensing areas. Aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff.

Storm Event

Storm Event is a rainfall event that produces more than 0.1 inch of precipitation and that, which is separated from the previous storm event by at least 72 hours of dry weather.

Storm Water Best Management Practice

See Best Management Practices.

Structural BMP

Structural BMP means any structural facility designed and constructed to mitigate the adverse impacts of storm water and urban runoff pollution (e.g. canopy, structural enclosure).

Total Maximum Daily Loads (TMDLs)

The maximum amount of a pollutant that can be discharged into a waterbody from all sources (point and nonpoint) and still maintain water quality standards. Under CWA section 303(d), TMDLs must be developed for all waterbodies that do not meet water quality standards even after application of technology-based controls, more stringent effluent limitations required by a state or local authority, and other pollution control requirements such as BMPs.

Treatment Control BMPs

BMPs that are engineered system designed and constructed to remove pollutants from urban runoff. Any method, technique, or process designed to remove pollutants and/or solids from polluted storm water runoff, wastewater, or effluent. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption, or any other physical, biological, or chemical process.

Water Pollution Control Plan

A plan required by the CSUSM projects with less than 1 acre of ground disturbance, inclusive of any unpaved areas associated with the project, which is determined to have a potential to impact water quality during construction.

Water Quality Objective

Any or all applicable requirements of the Basin Plan, the Enclosed Bays and Estuaries Plan, the Inland Surface Water Plan, and the California Ocean Plan.

WDID

Waste Discharge Identification number under the Construction General Permit required prior to the start of any construction activities for projects that disturb more than one acre or are not eligible for an erosivity waiver.

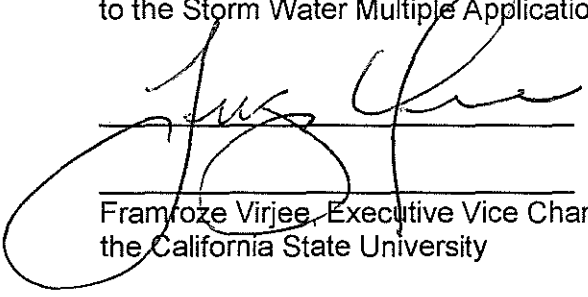
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Appendix A

Legal Authority Signature Pages

Statement of Adequate Legal Authority
General Permit for Waste Discharge Requirements for
Storm Water Discharges from
Small Municipal Separate Storm Sewer Systems (MS4s), Order No 2013-00001-DWQ, NPDES No.
CAS000004

I, Framroze Virjee, Executive Vice Chancellor and General Counsel, representing the California State University (CSU), hereby state on behalf of the CSU that I have read the requirements of the General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Order No 2013-00001-DWQ, NPDES No. CAS000004, consulted with appropriate CSU staff, and determined that universities within the CSU system have the authority to adequately carry out the requirements for a Non-traditional Small Municipal Separate Storm Sewer System as described in Sections A, B, C, D, F, G, H, I and J of the Permit Order within the jurisdictional areas shown on the Boundary Map submitted by the CSU to the Storm Water Multiple Application and Report Tracking System (SMARTS).



Framroze Virjee, Executive Vice Chancellor and General Counsel for
the California State University

Date: 4-30-15

Attachment A: Statement of Authorized Signatories From California State Universities

Statement of Adequate Legal Authority
General Permit for Waste Discharge Requirements for
Storm Water Discharges from
Small Municipal Separate Storm Sewer Systems (MS4s), Order No 2013-00001-DWQ, NPDES No.
CAS000004

I, Regina Frasca, Authorized Signatory, representing the California State University San Marcos, hereby state on behalf of the University that I have read the requirements of the General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Order No 2013-00001-DWQ, NPDES No. CAS000004, and amendments, consulted with the appropriate University staff, and determined that the University has the authority to adequately carry out the requirements for a Non-traditional Small Municipal Separate Storm Sewer System as described in Sections A, B, C, D, F, G, H, I and J of the Permit Order within the jurisdictional areas shown on the Boundary Map submitted by the University to the Storm Water Multiple Application and Report Tracking System (SMARTS).


[signature]

Date: 5/28/20

REGINA M. FRASCA
Regina Frasca, Authorized Signatory for
California State University San Marcos

Appendix B

Visual Observation Field Datasheet and Maps

CSU San Marcos

Visual Observation Field Datasheet

☐ Routine Investigation _____ ☐ IDDE Follow-Up For _____

Original Date: _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Date		Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	904
Time					Hydrologic Area	904.5
Location		Longitude	(e.g., -117.35213)		Hydrologic Subarea (Optional)	San Marcos
Observer				Discharge Area (Optional)		

Conveyance

(Check one only)

☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS (Circle best choice)

Weather ☐ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☐ > 72 hours ☐ < 72 hours

Rainfall ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other:

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other:

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other:

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Leaf Litter ☐ Other:

Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other:

Vegetation ☐ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other:

Biology ☐ None ☐ Insects ☐ Algae ☐ Flies ☐ Snails ☐ Mosquitoes ☐ Insect/Algae ☐ Insect/Snail ☐ Other:

Water Flow ☐ Flowing ☐ Ponded ☐ Dry ☐ Tidal ☐ Groundwater

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Illegal Discharge Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		pH (pH units)		TURB (NTU)		COND (mS/cm)	
-----------------	--	---------------	--	------------	--	--------------	--

Other Field Data (add to Comments)? ☐ Yes ☐ No

Analytical Lab Samples Collected? ☐ Yes (Ammonia, Color, Hardness, Potassium) ☐ No

Other:

Trash Assessment: ☐ High 100-50 pieces ☐ Medium 49-25 pieces ☐ Low 24-10 pieces ☐ Minimal <10 pieces

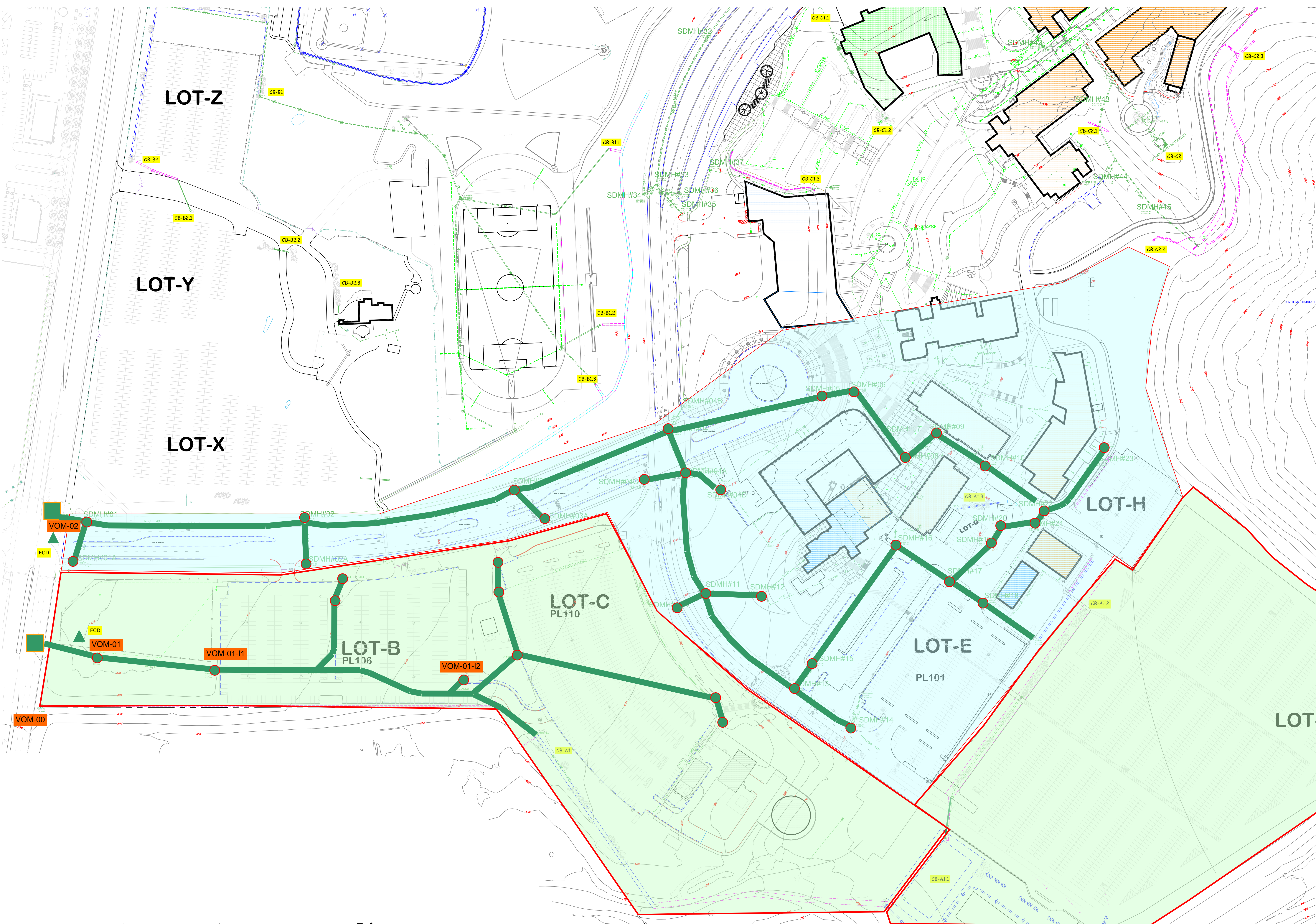
Type of Trash: _____

FLOW ESTIMATION WORKSHEETS

Flow Estimate

Diameter		ft
Depth		ft
Velocity		ft/sec
OR		
Flow		gpm

COMMENTS: _____



Storm Water Management Plan

Legend

- | | | | |
|--|---------------------------|--|-------------------------------|
| | Conc. Storm Swale | | Visual Observation Monitoring |
| | Natural Grade Storm Swale | | SDMH# - Storm Drain Manhole |
| | Underground Storm Pipe | | Full Capture Device (FCD) |
| | Catch Basin | | Storm Water Outfall |

Best Management Practice (BMP)
Area: Infrastructure 01
Catch Basin System: A and B

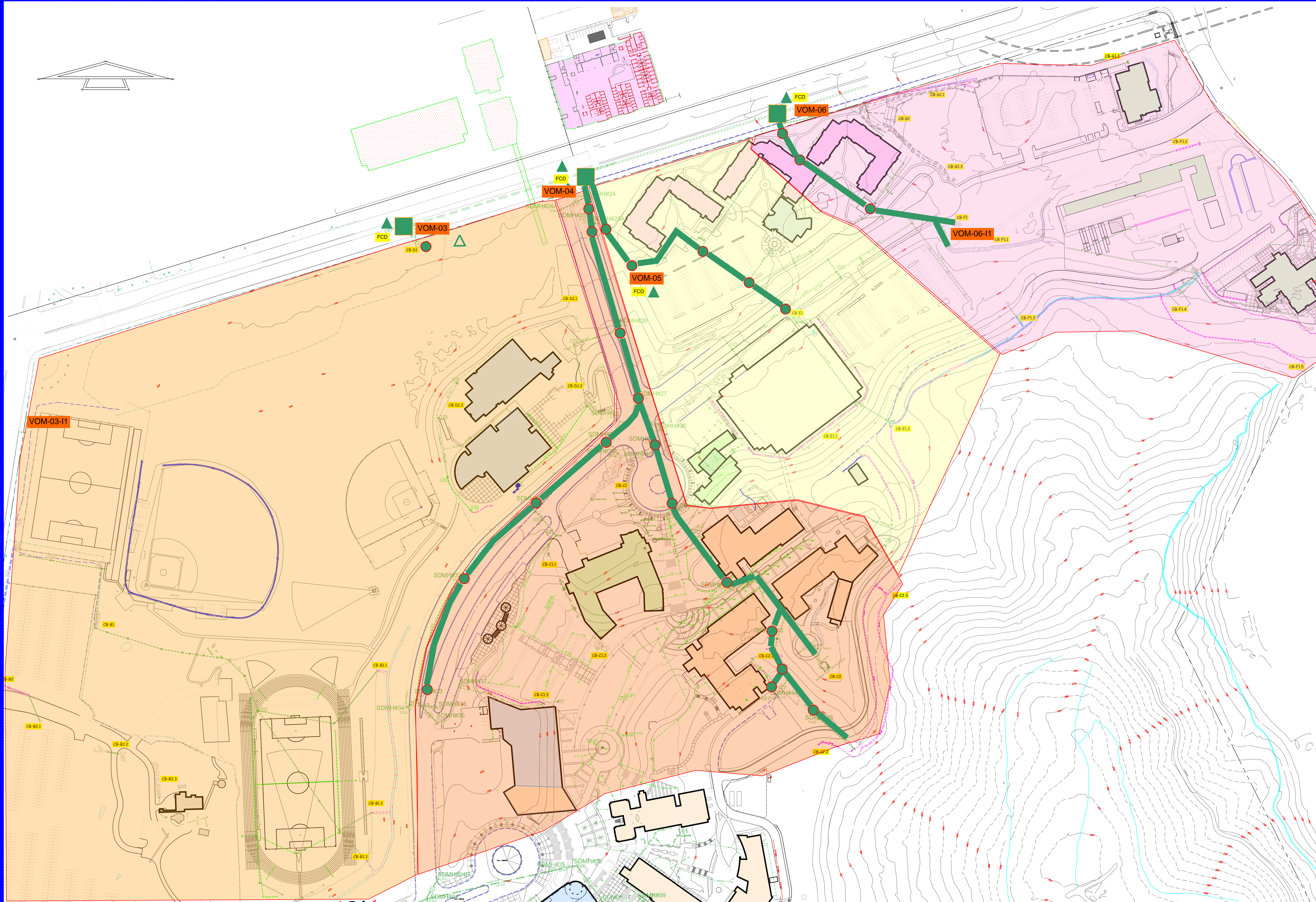
CALIFORNIA STATE UNIVERSITY SAN MARCOS
Campus wide Storm Drain Plan
Infrastructure 01

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES			
APPL			
FILE:	AC	FLS	SS
	DATE		

DATE
DRAWN BY
CHECKED BY
APPROVED BY
Scale 1" = 80'

REVISIONS

SD-01



Storm Water Management Plan

Legend

- Conc. Storm Swale
- Natural Grade Storm Swale
- Underground Storm Pipe
- Catch Basin
- VOM-03
- SDMH# - Storm Drain Manhole
- Full Capture Device (FCD)
- Storm Water Outfall

Best Management Practice (BMP)
Area: Infrastructure 02
Catch Basin System - C, D, E, F, G

CALIFORNIA STATE UNIVERSITY SAN MARCOS
Campus Wide Storm Drainage Plan
Infrastructure 02

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL
FILE: AC _____ FLS _____ SS _____
DATE _____

DATE _____
DRAWN BY _____
CHECKED BY _____
APPROVED BY _____

Scale 1" = 100'

REVISIONS	

SD-02

Appendix C

Post-Construction BMP Inventory, Inspection Form, and Various Guidance

Regulated Project Post-Construction BMP Inventory

[illegible]



CSU San Marcos **Post-Construction BMP Inspection Form** **Storm Water Management Plan**

Site	Address No.:	Street:	Facility No.
	Facility Name:		Other:
Inspection	Inspector:	Title/Company:	
	Type:	Previous Inspect. Date: 10/1/2020	Previous Inspection Result:
	Current Inspection Results:		Scheduled Follow-up Date: 10/1/2020

Post-Construction BMPs

	In Use	BMP No. and Name	Condition	Notes
LID/Site Design	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
Treatment BMP	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			
	<input type="checkbox"/>			

Comments:

Photos Taken:

CALIFORNIA STATE UNIVERSITY

Guidance Document Post Construction BMPs

MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) Phase II MS4 Permit

NOVEMBER 14, 2014

GUIDANCE

For Design and Development of Phase II Small Municipal Separate Storm Sewer System (MS4) Post Construction Best Management Practices (BMP) Requirements for California State University Campuses

I. EXECUTIVE SUMMARY

- A. Adoption and Designations
- B. Requirements for Non-Traditional MS4s
- C. Structural Post Construction Best Management Practices
- D. Non-Structural Post Construction Best Management Practices
- E. Goals

II. PRINCIPLES FOR DESIGN OF STRUCTURAL BMPs

- A. Permit Requirements
- B. Alternatives
- C. Design Principles
- D. Examples

III. PRINCIPLES FOR DEVELOPMENT AND IMPLEMENTATION OF POST CONSTRUCTION NON-STRUCTURAL BMPS

- A. Permit Requirements
- B. Alternatives
- C. Development Principles
- D. Examples

IV. Resources and Links

I. EXECUTIVE SUMMARY

A. Adoption and Designations

In February, 2013 the State Water Resources Board adopted a renewed Phase II General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). Phase II Small MS4s are not regulated under the municipal Phase I regulations. The permit became effective on July 1, 2013. The permit designates most California State University campuses as “Non-Traditional” MS4s. These designations can be found in Attachment B of the permit. Traditional MS4s are cities, counties and drainage and flood control districts that own and operate surface and sub-surface storm drain systems. Non-traditional MS4s are operators of substantial storm drain systems that are owned by state or federal government entities. Requirements specific to Non-traditional MS4s are contained in Sections A, B, C, D and F of the permit order.

For CSU campuses the permit is self-governing. It is the responsibility of the campus to report compliance efforts and certify compliance using the State Water Board’s Stormwater Multi-Application Reporting and Tracking System (SMARTS). Compliance can also be monitored by the public at large.

B. Requirements for Non-Traditional MS4s

Requirements in the permit order are phased in by year over the term of the permit, which is five years. During Year 2 of the permit Non-Traditional MS4s are required to implement a Post Construction Storm Water Management Program (SWMP). Post-Construction Storm Water Management Programming is a combination of structural and non-structural Best Management Practices (BMPs).

C. Structural Post Construction Best Management Practices

Structural BMPs function by storing or detaining runoff so that storm-water constituents settle out or are filtered and trapped by underlying soil or media. Basic mechanisms for removal of constituents are gravity settling, infiltration of soluble nutrients through the soil profile or filter media, or biological and chemical processes. Structural BMPs might use one or more of these mechanisms to achieve constituent removal from storm-water. Structural BMPs also retain runoff to reduce peak flows, which decreases hydro-modification downstream. Structural BMPs are permanent improvements and are designed integrally with a project, such as bio-swales, catch basin filters and permeable paving.

D. Non-Structural Post Construction Best Management Practices

Non-structural BMPs are typically "source control" measures, designed to reduce the level of contaminants and their concentrations in stormwater runoff. Non-structural BMPs are such measures as literature and signage that encourage facility users to eliminate non-stormwater discharges into the storm drain system and include maintenance programs, spill prevention plans and street sweeping.

E. Goals

This document is intended to provide California State University campuses with system-wide guidance for design, implementation, operation and maintenance of post-construction BMP elements. This document offers guidance to campus design and planning staff and maintenance staff to:

- Comply with the permit requirements,
- Develop campus design practices and principles that optimizes project costs and site impacts of

structural BMPs,

- Develop principles for development of non-structural BMPs that use existing campus programs and materials to the maximum extent applicable.
- Establish consistency across the CSU system for MS4 permit compliance.

II. PRINCIPLES FOR DESIGN OF POST CONSTRUCTION STRUCTURAL BMPS

A. Permit Requirements

Section F.5.g of the permit divides requirements into four categories. They are:

- 1) Site Design Measures (Section F.5.g.1) for projects that create or replace between 2,500 square feet and 5,000 square feet of impervious surface,
- 2) Low Impact Development (LID) Design Standards (Section F.5.g.2) for projects that create or replace more than 5,000 square feet of impervious surface.
- 3) Alternative Post-Construction Storm Water Management Programs (Section F.5.g.3) for multi-benefit projects, which include water supply, flood control and drainage, habitat, open space preservation recreation and climate change.
- 4) Operation and Maintenance (O&M) of Post-Construction Storm Water Management Measures for new development projects, which requires a verification program to ensure BMPs are properly operated and maintained.

There are additional requirements, conditions and exclusions for road projects that create 5,000 square feet or more of new impervious surface. These are discussed in more detail in following paragraphs.

B. Compliance Options

Understanding the requirements of the permit is critical to designing economical structural BMPs that meet the requirements of the permit.

Projects 2,500 Square Feet to 5,000 Square Feet (F.5.g.1 - Site Design Measures)

The first level of projects that are required to include post construction BMPs are projects covering areas of at least 2,500 square feet and not more than 5,000 square feet. These projects are required to comply with the State Water Board SMARTS Post-Construction Calculator (http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_app_21.xls), or equivalent, to quantify the runoff reduction resulting from implementation of site design measures.

The Post Construction Calculator is an Excel® spreadsheet that accepts input of project data and returns options for measures that will re-create the pre-project hydrologic site conditions. The goal is to achieve no increase in runoff from the project site. The options provided by the calculator can be extensive and costly and the calculator ignores specific site conditions, and off-site conditions, that may provide mitigation that satisfies the permit requirements. For these reasons the Calculator is not always the best tool for permit compliance for projects of this size.

The permit allows the use of an “equivalent” method to quantify runoff reduction. This equivalent can be a simple hydrologic calculation based on an 85th percentile storm (the storm frequency that includes 85% of all storm events) and using basic runoff coefficients. For physical plant and facilities managers and directors who are responsible for maintenance work, this calculation can be done once and then applied to future projects with adjustments for project size and other factors.

Projects 5,000 Square Feet & Larger (F.5.g.2 - Low Impact Development Design Standards)

For projects that create or replace 5,000 square feet or more of impervious surface the permit allows four specific numeric sizing criteria – two volume based and two flow based – from which to choose. They are as follows:

(1) Volumetric Criteria:

- a) The maximized capture storm water volume for the tributary area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998) pages 175-178 (that is, approximately the 85th percentile 24-hour storm runoff event); or*
- b) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology in Section 5 of CASQA's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data.*

(2) Flow-based Criteria

- a) The flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity; or*
- b) The flow of runoff produced from a rain event equal to at least 2 times the 85th percentile hourly rainfall intensity as determined from local rainfall records.*

The most direct method above is Option a) under 2) Flow-based Criteria. This method requires no further research and no references. It is also unlikely any of the other options will produce significant cost savings because the numerical differences will be small and there will be no discernable size reductions in BMPs.

Volume based solutions require dedication of land for storage of storm water. Flow based solutions can be integrated into landscaped areas, parking surface with permeable material and other site elements.

Projects larger than 5,000 square feet are sub-divided into two categories. They are:

- 1) Projects that increase impervious surfaces by 50% or more of the project site.

For these projects, runoff and pollutant reduction is required for all impervious surfaces within the project site “to the extent feasible” from all impervious surfaces.*

- 2) Projects that increase impervious surfaces by less than 50% of the project site.

For these projects, runoff and pollutant reduction is required only from new and/or replaced impervious surfaces.

- * A pollutant is broadly defined as any agent that may cause or contribute to the degradation of water quality such that a condition of pollution or contamination is created or aggravated.

“To the extent feasible” is not defined in the permit and it is difficult to find a definition on the State Water Board’s web site or the federal EPA’s web site. In most cases, the closest matches found are variations of the phrase, such as “maximum extent practicable,” “maximum extent feasible,” and “technically feasible.” In general, to the extent feasible should consider all factors, including technical feasibility, fiscal feasibility, public health risks, societal concerns, and social benefits. The criteria and factors used to determine this should be consistent and reasonable.

Alternative Post Construction Storm Water Management Program

The permit allows provides for compliance using projects having multiple benefits (see Permit Section F.5.g.3). This general option allows the campus to mitigate storm water quality effects on another part of campus and to combine mitigation requirements from multiple projects into one or more mitigation efforts.

In practice, this means that multiple small projects on a campus can be mitigated with a project on another part of the campus. For example, a recreation field or garden created in one part of a campus can be used to mitigate a project in another part of the campus. New building projects that include landscaping and that exceed their own mitigation requirements can be used for mitigation for other projects.

This will require advanced planning by the campus, but this work can be integrated into project planning and master planning. Non-traditional Phase II MS4 permittees are not required to create a campus-wide water quality management plan; however, mitigation must be tracked and recorded to show compliance and effectiveness.

Taken as a whole, the above narrative describes and the tool box provided in the permit for compliance for large and small projects. To take advantage of this tool box some basics during planning and design to be considered are:

- Begin site planning early. Site planning participants should include the architect/ designer, landscape architect and the designer of the site storm-water BMPs, which is usually a civil engineer. Ideally, the BMP designer should have experience in hydrology and hydraulics. This will facilitate comparison of the options, alternatives, adjustments and exceptions to the requirements.
- Identify common site elements that can be developed as BMPs for storm water treatment or retention system. These may include landscape buffers, seating areas, tree wells, pedestrian plazas and other elements.
- Use landscaping as structural BMPs. In most cases, projects will already include landscaping as site features.
- Keep runoff on the surface to the maximum extent possible. Surface drainage is slower and will increase time of concentration, which will decrease peak flows.

- Combine storm site drains with water quality management BMPs.
- Use small footprint BMPs when possible. Examples of this are:
 - Catch basin filters
 - Permeable pavers arranged in strips, such as walkways that are perpendicular to surface flow
 - Individual tree wells with functioning filter and infiltration systems.
- Use small changes in building/improvement locations to create spaces to increase BMP effectiveness. Examples of this are:
 - Shifting a building a few feet in one direction to create a flow path into which roof drainage can be conducted to allow surface flow
 - Raising a finish floor by small increments (inches) to create flow paths
- Avoid increasing site improvements footprint solely for BMP components.
- Use self-treating and self-retaining areas.
- Consult with campus maintenance as part of planning and design process.
- The permit does not require that every drop of rainfall be treated and/or retained and it does not require treatment of the entire site if the increase in impervious area is less than 50%.
- Control runoff at the source when possible. Drainage system and control or treatment structure costs increase with distance from the source.
- Avoid underground treatment and storage systems. These usually have large footprints, have high construction costs and are expensive and inconvenient to maintain.
- Avoid one-size-fits-all design concepts, such as retaining the first three-quarters inch of runoff.
- Avoid “standard” or “typical” structural BMP details. Many of these have been developed by cities and counties and are included in their SUSMP criteria, but are not necessary to develop effective BMPs under the Phase II MS4 permit.

III. PRINCIPLES FOR DEVELOPMENT OF POST CONSTRUCTION NON-STRUCTURAL BMPS

Non-structural BMPs consist of processes, prohibitions, procedures, schedules of activities, etc., that prevent pollutants from contacting storm water discharges and authorized non-storm water discharges. They are generally considered low technology, but cost-effective measures.

Post Construction Non-structural BMPs fall into broad general categories. These include:

- Good Housekeeping
- Preventive Maintenance
- Spill Response (for any pollutant)
- Material Handling and Storage Procedures
- Employee Training
- Waste Handling and Recycling Procedures

Guidance Document Post Construction BMPs

Phase II MS4 Permit

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- Record Keeping and Reporting
- Erosion Control and Site Stabilization Requirements
- Inspections
- Quality Assurance
- Public Outreach and Education

These categories apply across campuses for all facilities.

For many of the categories listed above, BMPs are already in place on California State University campuses. These include:

- Street Sweeping Schedules
- Storm Drain Maintenance Programs
- Sanitary Sewer Maintenance Programs
- Spill Prevention, Control and Counter-Measure (SPCC) Plans
- Equipment Maintenance Manuals and Programs
- Public Education and Outreach Efforts

These documents and plans can be adapted to the Post Construction Storm Water Management Program, which, in some case, can be as simple as changing the title of documents. In some cases, the only effort necessary is reporting or uploading plans and procedures to the State's SMARTS web site during prior to reporting deadlines.

The most efficient effort for producing non-structural BMPs is to use existing items as described above. Using BMP material common to other campuses leverages efforts across the CSU system. This can be new material produced by collaboration among campuses, or existing material that one or more campuses may already be using. For new projects, maintenance and operation manuals and materials may be produced by product suppliers or contractors. This effort can be added to construction contract document packages in either specifications or drawings.

The following are some general guidelines for developing post-construction BMPs that apply across all types of projects:

- Use Existing Campus-Created Content
- Adapt Content from other Recently Completed Projects
- Use Existing BMP Literature and Materials Created by Other Campuses
- Use Public Domain Material
- Use Materials Created by Phase I and other Phase II MS4s
- Adapt Content/Text from Equipment Operating and Maintenance Manuals

Using the guidelines each campus can minimize efforts to produce structural and post-construction BMPs and fully comply with the requirements of the MS4 permit.

IV. Resources and Links

More information, as well as some content, can be found at the following:

www.casqa.org

www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Appendix D Facility Inventory, Catch Basin Inventory, Facility Inspection Form, and Inspection Tracking Log

CSUSM FACILITY INVENTORY				APPENDIX D				Revision Date:		5/25/2020
Facility Name	Facility Number	Operation or Type 1	Operation or Type 2	Facility Owner	Facility Operator	Facility Manager Name	Facility Manager Contact Information	Pollutant Hotspot Potential	High Priority Pollutant Hotspot Designation	Pollution Prevention Plan Type
Craven Hall	001	Building	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
University Commons	002	Building	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Science Hall 1	003	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Science Hall 1	003	Building	Haz Waste Storage	CSUSM	SRSS	Regina Frasca	760-750-4502	Yes	No	N/A
Markstein Hall	013	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Academic Hall	014	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
University Hall	015	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Kellogg Library	017	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Center for Children and Families	022	Building	Child Development	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Visual Performing Arts Building	026, 027	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Social and Behavioral Science Buildings (SBSB)	031	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Science Hall 2	037	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Science Hall 2	037	Building	Haz Waste Storage	CSUSM	SRSS	Regina Frasca	760-750-4502	Yes	No	N/A
University Services Building (USB)	041	Building	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	Yes	No	N/A
Central Plant	042	Utility	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	Yes	Yes	SPP
Recycling Yard	043	Utility	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	Yes	Yes	SPP
Viasat Engineering Pavilion	055	Parking	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Viasat Engineering Pavilion	056	Parking	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Annex: Facility Services Training Room	058	Building	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Public Safety Building (PSB)	063	Building	Operations	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Wetlands Reserve	064	Reserve	Reserve	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Greenhouse	065	Building	Lecture	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Structure (PS1)	103	Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Transit Center/Huts	900	Transit Center	Public drop off	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot X, Y, Z		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot B, C		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot D		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot E		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot G		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot F, H		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot N		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot K		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
parking Lot J		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot M		Parking	Parking	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Parking Lot L		Parking	Parking	CSUSM	Facilites	Floyd Dudley	760-750-4600	No	No	N/A
University Student Union (USU)		Building	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Clarke Field House	023	Building	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
University Village Apartments (UVA)	038	Building	Student Housing	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
McMahan House	050	Building	Community Center	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Track Field		Recreational	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Softball Field		Recreational	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A

CSUSM FACILITY INVENTORY				APPENDIX D				Revision Date:		5/25/2020
Facility Name	Facility Number	Operation or Type 1	Operation or Type 2	Facility Owner	Facility Operator	Facility Manager Name	Facility Manager Contact Information	Pollutant Hotspot Potential	High Priority Pollutant Hotspot Designation	Pollution Prevention Plan Type
Baseball Field		Recreational	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Lower Multipurpose Field		Recreational	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Upper Multipurpose Field		Recreational	Student Life	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Parking Lot O		Recreational	Parking	CSUSM	University Corp	Scott Kirby	760-750-7405	No	No	N/A
Veteran Center	004	Building	Student Life	CSUSM	University Corp	Patricia Reily	760-750-7050	No	No	N/A
Veteran Center A	004A	Building	Student Life	CSUSM	University Corp	Patricia Reily	760-750-7050	No	No	N/A
Telecommunications Building	049	Building	Operations	AT&T	IITS	Bill Ward	760-750-4791	No	No	N/A
Sports Center	024A	Building	Student Life	CSUSM	Facilities	Floyd Dudley	760-750-4600	No	No	N/A
Extended Learning Building	902	Building	Lecture	CSUSM Corp	Sub-Lease	Scott Lloyd	760-750-4712	N/A	N/A	NA
Parking Structure	903	Building	Parking	CSUSM	Sub-Lease		760-750-4712	N/A	N/A	N/A
Pedestrian Bridge (Barham)	904	Building	NA	CSUSM	Sub-Lease	Floyd Dudley	760-750-4600	N/A	N/A	N/A
Sprinter Station	901	Transit Center	Building	NCTD	Sub-Lease	NCTD	760-750-4600	N/A	N/A	N/A
Temporary or Transient Storage or Operation Sites	N/A	Other	Other	CSUSM or Other	Varies	Regina Frasca	760-750-4502	Varies	Varies	N/A

CSU San Marcos

Facility Inspection Form – Storm Water Management Plan

GENERAL INSPECTION AND SITE INFORMATION

☐ Routine Quarterly Inspection ☐ Routine Annual Inspection ☐ Follow-Up - Original Date: _____ Type: ☐ Quarterly ☐ Annual

Date		Time		Watershed	Hydrologic Unit	904
Observer		Association			Hydrologic Area	904.5
Facility		Bldg No.			Hydrologic Subarea (Optional)	San Marcos
Type	<input type="checkbox"/> Building <input type="checkbox"/> Parking <input type="checkbox"/> Utility <input type="checkbox"/> Recreation <input type="checkbox"/> Other: _____			Discharge Area (Optional)		

Current Facility Classification: ☐ High Priority Pollutant Hotspot Potential ☐ Pollutant Hotspot Potential ☐ No Pollutant Potential

Annual Facility Classification Assessment (1st Quarter/July-Sept Inspection): ☐ No Change ☐ Change to: _____

HOUSEKEEPING PRACTICES (provide comments for other than Good)

Cleanliness ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Staff Knowledge ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Spill Clean-up/Kit ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Signage ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A

Comments: _____

AREA OR ACTIVITY BMPs (provide comments for other than Good)

Waste Storage ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Trash Areas (Dumpsters) ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Vehicle/Equipment Storage ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Vehicle/Equipment Fueling ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Material Handling/Storage ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Wash Areas (Contained) ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Landscaping/Irrigation ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Other: _____ ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Other: _____ ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A
 Other: _____ ☐ Good ☐ Needs Improvement ☐ Deficient ☐ N/A

Comments: _____

STORM OR NON-STORM DISCHARGE OBSERVATIONS

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
 Last Rain ☐ >72 hours ☐ < 72 hours **Rainfall** ☐ None ☐ < 0.1" ☐ > 0.1"

DISCHARGE CHARACTERISTICS – Evidence of Discharges: ☐ No ☐ Yes (complete)

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other
 Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other
 Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other
 Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Leaf Litter ☐ Other
 Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Storm Drain ☐ Flowing (Estimate _____ gpm) ☐ Ponded ☐ Dry

Evidence of Illegal Discharge Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No Photo # _____

Comments: _____

INSPECTION RESULTS: ☐ Good ☐ Needs Improvement ☐ Deficient

BMP or Corrective Action Requirements: _____

Notified: _____ Phone No. _____ Date: _____ Planned Re-inspection Date: _____

Appendix E

BMP Tables and Fact Sheets

See electronic version of California Stormwater Quality Association's *Stormwater Best Management Practice Handbook* on CASQA's Website at www.casqa.org.

Appendix E
BMP Fact Sheet Reference Tables

Building/Site	Location	Description	Applicable BMPs
Central Plant	Rear	Greenhouse - plants, fertilizers, general chemicals	G06 - Proper Use of Products & Chemicals G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage G10 - Building and Ground Maintenance FH01 - Cleaning Impervious Outdoor Surfaces LA01 - Landscape Maintenance LA02 - Landscape Irrigation Runoff G15 - Smoke-, Vapor-, and Tobacco-Free Campus NS03 - Non-Storm Water Discharges NS06 - Spill Prevention, Control and Cleanup
Central Plant	Rear	Cooling system, water tank (1.37 million gallons)	G06 - Proper Use of Products & Chemicals G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage NS01 - Water and Sewer System Maintenance NS03 - Non-Storm Water Discharges NS05 - Drainage System Maintenance NS06 - Spill Prevention, Control and Cleanup
Central Plant	Rear	Substation; chillers; material receiving area	G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage G09 - Proper Storage and Disposal of Hazardous Waste G10 - Building and Grounds Maintenance FU04 - Outdoor Loading and Unloading Materials at a Dock FH01 - Cleaning Impervious Outdoor Surfaces NS03 - Non-Storm Water Discharges NS06 - Spill Prevention, Control and Cleanup
Viasat Engineering Pavilion	-	Two storage sheds in front of the Foundation Classroom Building	G06 - Proper Use of Products & Chemicals G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage NS03 - Non-Storm Water Discharges NS06 - Spill Prevention, Control and Cleanup
Viasat Engineering Pavilion	-	The mail center utilizes the back entrance (Rm. 106)	G08 - Solid Waste and Recycling Storage
Field Athletics	On-site	Baseball/Softball, Soccer, Track	G05 - Street & Parking Lot Sweeping, Cleaning & Maintenance G06 - Proper Use of Products & Chemicals G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage G15 - Smoke-, Vapor-, and Tobacco-Free Campus LA01 - Landscape Maintenance LA02 - Landscape Irrigation Runoff Control NS03 - Non-Storm Water Discharges NS04 - Portable Sanitary Facilities NS06 - Spill Prevention, Control and Cleanup
Parking Lots	On-site	General Lots (B, C, N at front half of lot, J - 2 storage units in C listed above; water drains towards lot B with a sanitary waste facility on-site.	G05 - Street & Parking Lot Sweeping, Cleaning & Maintenance G06 - Proper Use of Products & Chemicals G07 - Proper Storage of Products & Chemicals G08 - Solid Waste and Recycling Storage G15 - Smoke-, Vapor-, and Tobacco-Free Campus NS03 - Non-Storm Water Discharges NS04 - Portable Sanitary Facilities NS06 - Spill Prevention, Control and Cleanup

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BMP G01 – General Housekeeping

Reference: CASQA Municipal SC-60 – Housekeeping Practices

Good housekeeping practices and preventive maintenance will be used to minimize spills or releases of materials into the stormwater conveyance system. Promote efficient and safe housekeeping practices whenever handling potentially harmful materials including fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. CSUSM will respond as soon as is practicable to any reported spills or release to prevent entry to or minimize impact on stormwater conveyance system. All significant spills and leaks should be documented and reported according the CSUSM protocol.



Pollution Prevention Guidelines:

- Keep work sites clean and orderly.
- Remove debris in a timely fashion.
- Sweep the area.
- Dispose of wash water, sweepings, and sediments, properly.
- Recycle or dispose of fluids properly.
- Establish a checklist of office, yard and plant areas to confirm cleanliness and adherence to proper storage and security. Specific employees should be assigned specific inspection responsibilities and given the authority to remedy any problems found.
- Post waste disposal charts in appropriate locations detailing for each waste its hazardous nature (poison, corrosive, flammable), prohibitions on its disposal (dumpster, drain, sewer) and the recommended disposal method (recycle, sewer, burn, storage, landfill).
- Summarize the chosen BMPs applicable to each operation and post them in appropriate conspicuous places.
- Require a signed checklist from every user of any hazardous material detailing amount taken, amount used, amount returned and disposal of spent material.
- Keep records of water, air and solid waste quantities and quality tests and their disposition.
- Use and reward employee suggestions related to BMPs, hazards, pollution reduction, workplace safety, cost reduction, alternative materials and procedures, recycling and disposal.
- Have, and review regularly, a contingency plan for spills, leaks, weather extremes etc.

Training:

- Train applicable CSUSM staff in BMP's and pollution prevention methods and encourage accountability.
- Train applicable CSUSM staff who handle potentially harmful materials using good housekeeping practices.
- Train personnel who use pesticides in the proper use of the pesticides. Preferably contract applicators certified by the California Department of Pesticide Regulation and conduct onsite inspections.
- Train employees and contractors in proper techniques for spill containment and cleanup. The employee should have the tools and training to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention:

- Keep the Spill Prevention Control and Countermeasure Plan (SPCCP) up-to-date and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Notify SH&S if a spill is suspected to be hazardous to identify best clean-up method.
- Properly dispose of spill cleanup material. This may require it be managed for sanitary sewer disposal or removal as a special or hazardous waste.

Revision Date: 8/6/2019

BMP G02 – Employee Training

CSUSM shall provide training for campus field staff as necessary depending on the job duties and the campus' needs.

Training shall focus on general housekeeping BMPs as the minimum with additional BMPs targeting source control in specific areas and treatment control as applicable.

Specifically staff responsible for facility design, selection, construction, implementation, inspection and/or maintenance of Treatment Control BMPs. This training will be integrated into existing training programs wherever possible. All required training shall be documented and reported in the stormwater annual report.

Specific training recommendations are included in each BMP fact sheet.

Training shall include the following topics (as applicable):

Good Housekeeping:

- Preventive Maintenance
- Spill Prevention and Response
- Material Use and Disposal Management Practices
- Temporary Construction BMPs
- Treatment Control BMP Selection and Design
- Treatment Control BMP Operation and Maintenance Requirements



Revision Date: 8/6/2019

BMP G03 – General Campus Inspections

Inspections will focus on pollution prevention and source control by looking for evidence of spills, leaks or conditions that could lead to discharges of pollutants to the stormwater conveyance system. The inspection is key to identifying non-stormwater discharges to the storm drain system that can have or carry pollutants. Also see BMP NS03 – Non-Stormwater Discharges for additional information.

Staff working in the designated areas or building shall be interviewed to identify housekeeping practices and any deficiencies shall be addressed through one-on-one training or group training as needed.

Locations with high priority hotspots will be inspected at least quarterly (see Section 9.5). Other areas of lower priority locations will be checked less frequently, but no less than once every five years (Phase II Permit term).

Refer to SWMP Appendix D and Section 9 for facility inventory and high priority hotspot designation, facility map, stormwater facility inspection form, and facility inspection tracking sheet.



Revision Date: 8/6/2019

BMP G04 – Storm Drain Facility Inspections

Reference: CASQA Industrial & Commercial SC-44 – Drainage System Maintenance

CSUSM will regularly inspect stormwater conveyance, detention, and treatment systems under its control (e.g., underflow/overflow weir, road culvert underflow weir, gutters, storm drains, catch basins, ditches). Necessary repairs will be conducted whenever a problem area is identified during the inspection. The frequency of inspection and cleaning will be at least annually, occurring before the start of the rainy season (October 1st). See Section 9.7 for detailed storm drain facilities inspection requirements and procedures.



If material (e.g., sediment, trash) accumulation within a stormwater device (e.g., catch basin) exceeds 33 percent of its capacity within a year, a more frequent inspection and cleaning frequency will be implemented. For locations where significant leaf litter is occurring, more frequent inspection and cleaning will be conducted to ensure proper functioning of the stormwater system.

Treatment control and/or permanent post-construction BMPs are generally integrated into the storm drain system downstream of a facility or use area. These facilities are required to be inspected and maintained regularly. The campus has special trash capture devices located at the terminus of the storm drain outfall where they connect to the City of San Marcos MS4. Trash capture devices should be inspected regularly and cleaned periodically during the rainy season to allow for maximum performance and minimize flooding. Catch basin inlets have been equipped with screens to provide additional trash and debris capture that can be cleaned more easily than at the catch basin. Screens should be inspected to verify cleaning needs and frequency. Additional information on the applicable requirements and inspection procedures are found in Section 8.8. Also see NS05 – Drainage System Maintenance.

Pollution Prevention Guidelines:

- Cover storm drains during field work activities.
- Remove accumulated trash, debris, organic material (e.g., leaf litter) from storm drain system and screens.
- Minimize and prevent non-stormwater discharges to the storm drain system.

Design Guidelines:

- Design developments to drains and discharge to treatment control BMPs.
- Design post-construction, permanent treatment control BMPs according to standards to meet requirements.
- Include trash capture or screen systems as applicable.

Inspection Guidelines:

- Check the priority inlet and outlet discharge points throughout the CSUSM campus.
- Inspect for signs of illegal discharges and waste discharges to the storm drains.
- Identify repairs, maintenance or operational issues and schedule for follow-up.

Training Guidelines:

- Train staff to identify stormwater pollution prevention issues.
- Train staff or contractors to perform required inspections, repairs, operation and maintenance of storm drain system facilities and structures.

Revision Date: 8/6/2019

BMP G05 – Street & Parking Lot Sweeping, Cleaning & Maintenance

Reference: CASQA Municipal SC-43 – Parking/Storage Area Maintenance and SC-70 – Road and Street Maintenance

Sweeping of all paved areas exposed to precipitation or stormwater will be conducted on a regular basis. Litter controls of all exposed surface will also be conducted on a regular basis. The frequency of sweeping and litter control will be based on site conditions.



Pollution Prevention Guidelines:

- Keep the parking areas clean and orderly.
- Remove trash and debris on a routine basis. Currently five days per week.
- Provide trash receptacles in parking lots to discourage littering.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Routinely sweep and dispose of litter in solid waste containers.
- Establish frequency of parking lot sweeping based on usage and field observations. Current frequency is every other week and by a contract sweeper.
- Sweep all parking lots at least once before the onset of the rainy season (October 1st).
- Cleanup spills immediately and use dry methods if possible.
- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants. Wet methods will only be used where adequate precautions have been taken to prevent the entry of wash water and contaminants into the stormwater conveyance system. Block the storm drain, collect the waste wash water and discharge to the sanitary sewer or discharged to a pervious surface.
- Have spill cleanup kits and materials readily available and in a known location. See BMP NS06.
- During parking lot and street maintenance slurry seal/coating, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying materials. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.
- Implement proper paint and thermoplastic handling, use, storage, and disposal practices to prevent spills and waste discharges to storm drain or impervious areas.
- Follow proper concrete management practices when conducting street or sidewalk repairs (see BMP G13).
- Conduct equipment and vehicle fueling, cleaning and maintenance related to street and sidewalk operational activities to prevent wash water, leaks or spill from entering the storm drain system (see BMP FU01, FU02, and FU03).

- Materials and equipment which may contaminate urban runoff will not be stored on parking areas unless adequate precautions have been taken to prevent their contact with precipitation, urban runoff and stormwater.

Design Guidelines:

- Allow sheet runoff to flow into vegetated, swales or appropriate filtering/infiltration BMP.
- Design rooftop drains to pervious areas and for dispersion prior to entering the storm drain system.
- Design parking lots to include semi-permeable or permeable hardscape surfaces.
- Consider designing streets and walkways per Green Streets Municipal Handbook (EPA-833-F-08-009, December 2008) or comparable.
- “No Littering” signs shall be posted which prohibit littering, dumping, and vehicle servicing.
- Provide an adequate number of litter receptacles.
- Prior to any improvement or expansion project, parking areas designed to meet the treatment control criteria, standards and requirements described in SWMP Section 8. Such devices shall be installed if practicable. Installed controls shall be inspected and maintained as necessary to ensure their continued proper functioning.

Inspection Guidelines:

- Conduct inspections of the streets and parking lots and associated stormwater conveyance systems on a regular basis.
- Regularly inspect cleaning equipment, sweepers for leaks.
- Vehicles temporarily stored in parking areas for extended periods shall be periodically inspected and may be included in the “hot spot” inspection list based on site conditons.
- Leaks and spills cleaned as necessary.

Training Guidelines:

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train staff in the proper techniques for spill containment and cleanup (see BMP G17).

Revision Date: 8/6/2019

BMP G06 – Proper Use of Products & Chemicals

Reference: CASQA Municipal SC-61 – Safer Alternative Products

Prevent or reduce the discharge of pollutants to the urban runoff system or watercourses from product or material use. All materials with the potential to pollute urban runoff (including but not limited to cleaning and maintenance products used outdoors, fertilizers, pesticides and herbicides, etc.) shall be used and stored in accordance with product directions.



The use of alternative products can reduce or eliminate the potential to pollute urban runoff. The classes of products with less harmful chemical ingredients may include fertilizers, pesticides, cleaning solutions, janitorial products, automotive and painting products, and consumables (e.g., batteries, fluorescent lamps). Also see G01 – General Housekeeping.

Pollution Prevention Guidelines:

- No chemical or cleaning material or product may be disposed of or rinsed into the campus storm drain system.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed.
- Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydro seeding.
- Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains.

Design Guidelines:

- Minimize the use of hazardous materials onsite.
- Provide proper storage, preferably indoors, and with secondary containment as needed (see BMP G07).
- Follow manufacturer instructions regarding use, personal protective equipment, ventilation requirements, segregation, and storage.
- Provide accessible location for proper storage and disposal of chemical products when they expire or are no longer needed. See G07, G08 and G09 for storage of materials and disposal of hazardous and non-hazardous materials or waste.

Inspection Guidelines:

- Inspect and verify that activity based BMPs are in place prior to the commencement of use of chemical or cleaning products. While activities associated with the BMP are under way, inspect high priority hotspot facilities/areas quarterly to verify continued BMP implementation. See Section 9.5 and corresponding appendices.

Training Guidelines:

- Train appropriate campus staff in the proper use of materials, hazardous products, or cleaning products on campus.
- Maintain Safety Data Sheets (SDSs) onsite with staff access. SDSs are required for all materials that can pose a physical or health hazard to employees.

Product Purchasing Guidelines:

- Consider development and implemetation of a Environmentally Preferable Purchasing Program or similar to minimize the purchase of projects with hazardous ingredients used in custodial services, fleet and equipment maintenance and facility maintenance activities.
- Evaluate chemical and product purchases to secure the most environmentally preferable alternatives.
- Consider development and implementation of an Integrated Pest Management (IPM) or Less-Toxic Pesticide Program or equivalent approach to less toxic chemical use and alternative applications.
- Consider development and implementation of an Energy Efficiency Program to minimize energy use.

Revision Date: 8/6/2019

BMP G07 – Proper Storage of Products & Chemicals

Reference: CASQA Municipal SC-31 – Outdoor Container Storage and SC-33 – Outdoor Storage of Raw Materials

All materials, products and waste products will be stored in covered areas or sealed containers unless the materials or products are not a threat to urban runoff quality (also see G08 and G09). Preferably and when practical, indoor storage of products and chemical is preferable. To prevent accidental spills, materials or products will be stored away from direct traffic routes. All containers will be stacked according to applicable federal, state, and local regulations as well as manufacturers' instructions to avoid damage from improper weight distribution.



Pallets or similar devices will be used to prevent corrosion of the containers that can result when containers come in contact with moisture on the ground.

Tanks, drums, vessels or other containers located outdoors whether temporarily or permanently should include safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures, spill notification, spill containment or clean-up techniques.



Pollution Prevention Guidelines:

- Hazardous or non-hazardous materials and wastes shall be stored, managed, and disposed in accordance with applicable federal, state, and local laws and regulations.
- Hazardous or non-hazardous materials will be stored off the ground. Where practicable, overhead coverage will be provided for all outside hazardous or non-hazardous materials or waste storage areas. If overhead coverage is not available, stored materials shall be covered with an impervious material (e.g., a tarp) as a temporary measure.
- Do not store open containers with paint residue or other materials outdoors where rainwater can discharge contents to storm drain, ditches or receiving waters.
- Spill kits with proper materials shall also be on-hand at each location. See (NS06)
- Spill containment, notification, and clean-up practices either posted or training provided.
- Minimize the storage of products and chemicals through proper purchasing practices (e.g., smaller quantities) and frequent disposal of hazardous wastes.
- Ensure caps and lids are securely tightened on containers. This prevents leaks, spills, and evaporation of contents.

- Use approved flammable storage lockers or flammable storage containers to store flammable and combustible liquids.

Design Guidelines:

- Segregate incompatible chemicals (e.g., storing oxidizing acids and flammable solvents in separate locations).
- Store hazardous materials away from heat and direct sunlight. Heat and sunlight may impact and degrade chemicals, deteriorate storage containers and labels.
- Place materials containing liquids in a containment unit or under an awning and out of direct sunlight.
- Design containment with sumps to help collect any spills from leaking containers. See NS06.
- Do not store hazardous materials (except cleaners) under sinks.

Inspection Guidelines:

- Check storage containers for cracks, leaks and fatigue of storage material.
- Verify that secondary containment is appropriate (e.g., size, type).
- Spill kits adequate and properly stocked; located in an appropriate place for use.

Training Guidelines:

- Train employees about pollution prevention measures and goals, including spill containment, notification, and clean-up.
- Train field staff to recognize any potential hazardous or non-hazardous product or chemical storage issues.

Revision Date: 4/14/2020

BMP G08 – Solid Waste and Recycling Storage

Reference: CASQA Municipal SC-34 and SC-75 – Waste Handling and Disposal

Solid waste and recycling materials will be disposal of regularly to prevent overflow of waste storage containers, which would increase the risk of waste contacting stormwater.



Pollution Prevention Guidelines:

- Encourage reuse of products and materials.
- Dumpsters and other containers shall be maintained in good condition and lids shall be kept securely closed when not in use.
- Materials and equipment necessary for the cleanup of trash and debris shall be maintained and kept readily accessible.
- Wet cleaning (hosing, pressure washing, etc.) of trash storage and disposal areas shall only be allowed if adequate precautions have been taken to prevent the discharge of wash water into the storm drain conveyance systems. Wash water shall be directed to pervious areas (for smaller volumes) or collected for disposal to the sanitary sewer.
- Hazardous materials and wastes shall be stored, managed, and disposed in accordance with applicable federal, state, and local laws and regulations.
- All exposed storage areas that are accessible to unauthorized personnel or the general public will be secured to prevent accidental spills, vandalism, or any unauthorized use of the materials or products.
- Dumpsters and containers of grease, fat, and used cooking oil will always be tightly covered.
- “No Littering” signage shall be installed and maintained in areas where littering is a higher probability, such as transit stops, rest areas, assembly areas, etc.
- Encourage recycling programs with strategic location of bins and collection containers.

Design Guidelines:

- Where practicable, roof downspouts shall be routed away from solid waste storage areas and toward pervious areas such as lawns.
- All storage containers will be protected from potential physical damage from vehicles or other equipment.
- Materials or products will only be stored on impervious and covered areas, or paved storage areas, lined with an impermeable material compatible with the materials being stored.
- Where possible dumpsters will be stored in a covered area or with proper drainage management.
- Waste storage areas should be secured during non-working hours to prevent illegal dumping or disposal.

Inspection Guidelines:

- High priority hot spot solid waste storage containers and disposal area(s) shall be inspected at a minimum on a quarterly basis.
- Check dumpsters for leaks and replace immediately when leaks are detected.
- Identify substances (i.e. bird droppings, oil and grease, leaves, etc.) which have accumulated and remove as necessary to prevent or reduce the discharge of contaminants.
- Inspect dumpster to verify lids are closed after disposal.

Training Guidelines:

- Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with solid waste disposal activities.
- Train staff to recognize the signs and characteristics of spills and illegal dumping.
- Train staff to follow through with appropriate protocols.

Revision Date: 4/15/2020

BMP G09 – Proper Storage & Disposal of Hazardous Waste

Reference: CASQA Municipal SC-34 – Waste Handling and Disposal

All waste products will be stored in covered areas or sealed containers unless the materials or products to minimize the threat to urban runoff quality. To prevent accidental spills, waste materials will be stored away from direct traffic routes. All containers will be stacked according to applicable federal, state, and local regulations as well as manufacturers' instructions to avoid damage from improper weight distribution. Pallets or similar devices will be used to prevent corrosion of the containers that can result when containers come in contact with moisture on the ground.



Each CSUSM facility will limit the handling of oil, hazardous, and other sensitive materials to those personnel specially trained to handle these materials. Significant spills shall be reported promptly to the CSUSM Safety, Health and Sustainability Services (SH&SS) office. Significant spills are those which discharge, or have the potential to discharge, contaminants directly or indirectly to the stormwater conveyance system or Receiving Waters.

Pollution Prevention Guidelines:

- Hazardous materials and wastes shall be stored, managed, and disposed in accordance with applicable federal, state, and local laws and regulations.
- Hazardous materials will be stored off the ground. Where practicable, overhead coverage will be provided for all outside hazardous materials or waste storage areas. If overhead coverage is not available, stored materials shall be temporarily covered with an impervious material (e.g., a tarp) until permanent storage is secured.
- Drums and other containers shall be kept in good condition and securely closed when not in use.
- Materials and equipment necessary for spill response and clean-up shall be maintained and kept readily accessible, and all employees involved in the storage, management, or disposal of hazardous materials or wastes will be trained in their proper handling.
- Purchasing and disposal practices shall also be in place to minimize the accumulation of materials on-site.

Design Guidelines:

- Construct hazardous waste facilities to be self-contained.
- Isolate facilities to avoid collecting and contaminating stormwater discharges.

Inspection Guidelines:

- Inspect hazardous waste containers and storage areas for any signs of spills, leaks or illegal dumping on a quarterly and as needed basis.

Training Guidelines:

- Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with hazardous waste handling and storage activities.
- Train staff on the CSUSM SH&S spill response on-line forms and proper notifications.

Revision Date: 4/15/2020

BMP G10 – Building and Grounds Maintenance

Reference: CASQA Municipal SC-41 – Building & Grounds Maintenance

Stormwater runoff from building and grounds maintenance activities can impact stormwater conveyance systems from the release of pollutants. Maintenance crews can prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning-up with as little water as possible. Following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains will help reduce the release of pollutants and minimize the impact to stormwater conveyance systems.



One of the most impactful building maintenance activities is paint stripping and power washing of surfaces. Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with paint or coating stripping and cleaning of buildings, including power washing. Paint or coating materials can cause pollution to stormwater discharges from the debris and any illegal discharges. Use the following suggestions to help reduce the discharge of pollutants from these activities.

Painting and coating activities can cause pollution to stormwater discharges. Painting chemicals can destroy sensitive ecosystems and pollute stormwater discharges. Use the following suggestions to help reduce the discharge of pollutants from these activities.



Pollution Prevention Guidelines:

- Choose cleaning agents that can be recycled and switch to non-toxic chemicals.
- Cleanup spills immediately and use dry methods if possible.
- Recycle residual paints, solvents, lumber, and other material as much as possible.
- Avoid stripping or cleaning building exteriors with high-pressure water, seal storm drains. If conducted, water used cannot be discharged to the stormwater conveyance system or Receiving Waters. Contain wash water and dispose per local requirements. Verify sanitary sewer disposal as an option depending on the pollutants in the wash water.
- Don't rinse materials or equipment into the storm drains.
- Keep all liquid paint products and wastes away from storm drain conveyance systems and sanitary sewers.
- Drop cloths and drip pans shall be used in mixing areas.
- Storm drain inlets located within or downhill of areas where painting or coating is conducted shall be covered or otherwise protected to protect discharge of dust, chips, accidental spills, and rinsate.
- Areas where painting and coating work is being actively conducted shall be cleaned and vacuumed, if necessary.

- Wet methods (e.g., hosing) may only be used if adequate precautions have been taken to prevent the discharge of wash water to the stormwater conveyance systems.
- Collect paint chips, dust, and dirt in plastic trash bags for disposal as solid waste.
- Never pour excess paint materials on the ground or down storm drain conveyance systems or sewer systems.
- Recycle waste or left-over paint and other materials.
- Don't use paints over 15 years old. These paints may contain toxic levels of lead.
- Use water-based paints instead of oil-based paints. Look for the words "Latex" or "Cleanup with water" on the label.
- Have spill cleanup materials readily available and in a known location. See NS06.

Design Guidelines:

- Use appropriate BMPs to prevent and control spills from containers.
- Keep the Spill Prevention Control and Countermeasure Plan (SPCCP) up to date and implement accordingly.

Inspection Guidelines:

- Inspect ground facilities for any signs of spills, leaked vehicular fluids, illegal dumping.
- Check painting applications for any spilled materials.
- Check the building perimeters and storm drains for discharges of paint and chip residue.

Training Guidelines:

- Train employees and contractors in proper building and grounds maintenance techniques for pollution prevention, spill containment, notification, and cleanup.
- Train CSUSM staff to recognize illegal discharges.

Revision Date: 4/15/2020

BMP G11 – Reserved

BMP G12 – Maintenance of Exposed/Disturbed Slopes

Reference: CASQA Construction Erosion Control EC-2 through EC-8 and Sediment Control SE-1 through SE-6

The CSUSM campus is surrounded by a large area of open space. Slopes that are more than five feet in height, more than 250 square feet in total area, and steeper than 3:1 (run-to-rise) that have been disturbed at any time by clearing, grading, or landscaping, shall be protected from erosion prior to the first rainy season following completion of the slope, and maintained continuously thereafter. Slopes may also be impacted by wildfires in late summer months and create a condition of higher erosion potential unless appropriate BMPs are installed. Prior to the rainy season, CSUSM will remove or secure any significant accumulations of eroded soils from slopes previously disturbed by clearing or grading, or those eroded soils could otherwise enter the stormwater conveyance system during the rainy season.



Pollution Prevention Guidelines:

- Vegetation will be maintained and preserved at all times, as practical. See Construction BMP EC-2 – Preservation of Existing Vegetation.
- All exposed surface areas will be protected with adequate vegetative ground cover at all times. Any unprotected surfaces in the storm system will be stabilized to prevent direct erosion.
- Securing eroded soils should be implemented by standard measures such as securing a cover over the soils or by applying hydroseeding and/or soil binders providing the most durable and cost-effective coverage in most cases. Erosion control measures may include the application of hydraulic mulch (Construction EC-3), hydroseeding (Construction EC-4), soil binders (Construction EC-5) and/or straw mulch (Construction EC-6). Smaller areas may be secured with geotextile and mats (Construction EC-7) or wood mulching (Construction EC-8).
- Erosion on slopes and other areas may also be prevented by diverting runoff flows around the exposed areas. See Construction EC-9 – Earth Dikes and Drainage Swales.
- Clean out the debris basins regularly to ensure operating capacity to prevent overflows to slopes.
- Install fiber rolls, check dams and gravel bags and other temporary methods to reduce flow velocities across the slope face. Construction SE-1 through SE-6 may be consulted.
- The deployment of temporary BMPs shall occur prior to the rainy season to help stabilize exposed soil slopes and reduce sediment discharges from the campus. These measures may be applied in addition to other soil surface erosion control measures.

Design Guidelines:

- Protection of slopes typically is accomplished through erosion control by covering the slopes, planting the slopes to stabilize vegetation, and/or installing sandbags, silt fences, or other measures to prevent runoff of sediment.
- Sediment control should not be relied upon for erosion control for large, exposed areas.
- Use appropriate drainage structures to carry stormwater flows away from the slope surfaces.

Inspection Guidelines:

- Check temporary control BMPs (e.g., fiber rolls, hydroseeded area condition) as needed during rainy season and at least monthly during the non-rainy season.
- Verify the requirements for BMPs, inspections, etc. if the State's Construction General Permit applies to a construction site.
- Removal of eroded soils should be to an approved and licensed disposal facility.
- Inspect significant accumulations of eroded soils from slopes.

Training Guidelines:

- Train appropriate staff to inspect and recognize signs of increased erosion potential and assessment of BMP conditions to replace and repair in a timely manner.

Revision Date: 4/15/2020

BMP G13 – Concrete Waste Management & Disposal

Reference: CASQA Construction WM-8 – Concrete Waste Management

Prevent or reduce the discharge of pollutants to stormwater from concrete related waste, use of concrete equipment cleaning and washout pans or bins by selecting a designated area and properly preparing the dried concrete material for recycling or proper disposal. Mix concrete batches properly and dispose of waste materials in designated areas.



Pollution Prevention Guidelines:

- Do not wash out concrete mixing truck into storm drains, open ditches, streets, or streams.
- Washout concrete trucks in designated areas only. Establish designated washout pans or bins.
- Store dry/wet concrete materials under a cover and away from drainage pathways.
- Avoid mixing excess amounts of concrete materials. Mix only what is needed for the job.
- Do not dump excess concrete materials to bare land surface or allow it to be buried on-site.
- Add a sign advising field staff/contractor(s) to use concrete washout in designated areas only.
- Do not allow excess concrete to be dumped onsite, except in designated areas.

Design Guidelines:

- Place the designated washout area at least 50-feet from any storm drains, open ditches or drainages.
- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 6-inches.
- Place excess concrete or wastes into designated bins where the concrete can set/dry and be broken-up or hauled away and then disposed properly or recycled.
- Incorporate concrete waste management requirements into contractor's agreements.

Inspection Guidelines:

- Direct senior field staff to inspect concrete disposal practices.

Training Guidelines:

- Educate field staff, contractors about the campus' concrete waste management practices.
- Train appropriate personnel to inspect a contractor's concrete work to oversee and enforce the campus' concrete waste management practices.

Revision Date: 4/15/2020

BMP G14 – Reserved

BMP G15 – Smoke, Vapor, and Tobacco Free Campus Initiative

As of August 28, 2017, CSUSM became a smoke, vapor, and tobacco free campus and does not allow smoking vaping, or tobacco use on campus property. As a smoke, vapor and tobacco free campus, CSUSM is commitment to be a respectful, safe and healthy learning and working environment for all our faculty, staff, students, and visitors.

The Clear the Air campaign is supported by the Clean the Air Ambassador Program on campus. Established in Fall 2018, the mission of the Clear the Air Ambassador Program is to educate the campus community about our 100% smoke, vapor, and tobacco free campus program and provide resources to support the initiative. The Ambassador Program is staffed by CSUSM student interns and volunteers. Ambassadors encourage compliance with the smoke, vapor, and tobacco free policy through ongoing peer-to-peer interaction, engagement, and education. CSUSM has an on-line reporting tool to track tobacco and vape related litter to create a cleaner campus and keep this liter out of the stormwater conveyance system.



The Clear the Air website is found at: <https://www.csusm.edu/smokefree/>

Pollution Prevention Guidelines:

- Educate students and faculty about the smoking health risks and the environment.
- Provide resources to quit.
- Encourage online/app reporting of smoking or vaping, and cigarette litter.
- Evaluate online/app data to improve program.
- Monitoring signage locations to target high use areas on campus perimeter or on campus.
- Volunteers or support staff conduct cigarette and cigarette butt removal on a regular basis throughout campus.
- Other campus activities that promote a smoke free campus by volunteers or as faculty research projects (e.g., Kick Butt Clean Up Event).

Design Guidelines:

- Place signage at all vehicle entrances to campus.
- Place signage at the main entrance/exits of all buildings throughout campus in key locations announcing a smoke free campus.
- Manage online/app reporting and data acquisition.

Inspection Guidelines:

- Periodically check high use areas.
- Educate tobacco users through the Clean Air Ambassador Program.

Training Guidelines:

- Train field staff to identify high use areas.

Revision Date: 8/6/2019

BMP FH01 – Cleaning Impervious Outdoor Surfaces

Reference: CASQA Municipal SC-71 – Plaza & Sidewalk Cleaning

Trash, litter and particulate matter typically accumulates on paved impervious surfaces. These materials can then be transported during storm events into the storm drain conveyance systems. Cleaning impervious surfaces with water can rinse these pollutants into the storm drain system. Care must be taken to reduce the accumulation of these pollutants and washing these materials into the storm drain system.



Surface cleaning may include routine plaza, walkways, and sidewalk cleaning and graffiti removal.

Pollution Prevention Guidelines:

- Dry methods (e.g., sweeping) shall be used for routine, frequent cleaning of outside areas and surfaces. Accumulated materials shall be properly disposed.
- Dry cleaning methods are encouraged. Where practicable, the introduction of pollutants (soaps, degreasers, etc.) to wash water shall be reduced or eliminated.
- Wash water and rinse water may not be disposed into the stormwater conveyance system (i.e. driveways, streets, and gutters) under any circumstances.
- When washing in the vicinity of stormwater conveyance systems located within or downhill of wash areas shall be covered or otherwise protected to prevent the entry of wash water or rinse water.
- Wash water and rinse water that cannot be properly disposed at a job site shall be collected and contained for recycling, reuse, or proper disposal (e.g., sanitary sewer). Dischargers are responsible for obtaining all necessary approvals prior to discharging to the sewer.
- Dry sweeping of paved areas is routinely performed and as needed based on observations. Particular emphasis will be placed on sweeping the paved areas prior to the wet season and frequently during the wet season. Equipment will be cleaned in designated isolated outdoor areas where water can be collected for disposal in the sanitary sewer.
- Graffiti removal should be attempted using the least polluting options first, such as, high pressure washing with wash water capture or chemical cleaning without water.

Training Guidelines:

- Personnel shall be trained to use outdoor cleaning equipment as necessary.

Revision Date: 4/15/2020

BMP FH02 – Cleaning Indoor Surfaces

Indoor surfaces shall be cleaned in a manner that prevents wash water from leaving the interior of the facility and entering the stormwater conveyance system. When cleaned using wet methods (e.g., hosing, steam-cleaning, pressure-washing) unless adequate precautions have been taken to prevent the entry of wash water and other contaminants into the stormwater conveyance system. Wash water shall be primarily directed to the sanitary sewer system or floor drains.



Pollution Prevention Guidelines:

- Equipment including kitchen mats, grease filters, etc. may not be washed outdoors or in areas where wash water or rinse water will drain to the stormwater conveyance system.
- Discharge of oily or grease wash water must be directed to permitted grease removal equipment or comparable and meet local discharge requirements with Vallecitos Water District and/or the City of San Marcos.
- The discharge may require obtaining specific approval/permit with Vallecitos Water District prior to discharging to the sanitary sewer.
- Wherever possible, CSUSM facilities will use floor mats that are small enough to be cleaned inside near a floor sink or drain connected to the sanitary sewer or cleaned/exchanged by using a floor mat replacement service.
- Equipment will be cleaned in designated indoor areas, such as a kitchen sink or floor, with a drain connected to the sanitary sewer or in designated covered outdoor areas with a drain connected to the sanitary sewer. Grease removal equipment may be required for these sanitary sewer lines to prevent excessive grease or oil from causing clogs and sewer overflow. This area will be isolated from the storm drain with a berm or other barrier.

Training Guidelines:

- Train employees in proper indoor surface cleaning methods.
- Train employees on proper spill containment and clean up, and in identifying non-stormwater discharges.
- Use a training log or similar method to document training.

Revision Date: 4/15/2020

BMP FH03 – Reserved

BMP FH04 – Reserved

BMP FU01 – Vehicle and Equipment Fueling

Reference: CASQA Municipal SC-20 – Vehicle & Equipment Fueling

Spills and leaks that occur during vehicle and equipment fueling can discharge pollutants to stormwater conveyance systems.

Pollution Prevention Guidelines:

- Fuels can include diesel, gasoline, kerosene and other flammable solvents or hydrocarbon base liquids.
- Only dry methods shall be used to clean spills from fueling and any spills in parking areas unless adequate precautions have been taken to prevent the discharge of wash water to the stormwater conveyance system.
- Fuel wastes or liquids contaminated with fuel should not be disposed to the sanitary sewer system due to the risk of explosions.
- Fuel or other materials contaminated with fuel shall be stored as flammable liquids for proper disposal.
- Disposal to soil or land of fuel or materials contaminated with fuel is not allowed.
- Equipment fueling shall take place away from the stormwater conveyance system. Use a spill pan or other containment when practical.
- Report all leaking fleet vehicles for proper repair and maintenance.



Design Guidelines:

- Fueling areas or fuel storage areas will be included in the Spill Prevention Control and Countermeasure Plan (i.e. SPCCP). Also see NS06.
- Fueling area shall have the corresponding spill response equipment and clean-up materials.
- Where practicable, fueling areas shall be under permanent cover.
- Areas surrounding the fueling area will have a 2 to 4 percent slope to prevent ponding and a grade break to prevent any surface run-on flows.
- Fueling areas will be paved using Portland cement concrete, not asphalt.
- Where practicable, all storm drain inlets draining the areas of fueling and surrounding areas shall be connected to an oil/water separator and to the sanitary sewer.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Provide adequate spill containment systems for fuel storage.

Inspection Guidelines:

- Fueling and parking areas shall be periodically inspected, and significant accumulations of materials and substances (oil, fuel, grease, etc.) removed or cleaned using dry methods. All materials shall be properly disposed.

Training Guidelines:

- Fueling area employees will receive training in spill response and appropriate spill clean-up procedures. Spills or spill clean-up will not be washed into the storm drain.
- Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with fueling activities.

Revision Date: 4/16/2020

BMP FU02 – Vehicle and Equipment Cleaning

Reference: CASQA Municipal SC-32 – Vehicle & Equipment Cleaning

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute to discharges of pollutants to stormwater conveyance systems and receiving waters. The CSUSM campus has a vehicle cleaning facility that is equipped with a water recycling system that shall be used for vehicle and equipment cleaning.



Pollution Prevention Guidelines:

- Equipment and parts shall be cleaned with biodegradable solutions (e.g. simple green). The wastewater generated from steam cleaning shall be discharged into oil/water separator and/or the sanitary sewer system as appropriate.
- Equipment and parts cleaning shall not be performed outdoors on impervious surfaces (e.g., concrete) even if only using steam or a power washer.
- Vehicles and equipment shall be washed in the designated wash rack area.
- In some cases, vehicles may be washed over porous surfaces such as lawns and gravel areas where feasible, so that these areas can infiltrate all the wash water and rinse water generated during the washing. Adequate precautions will be taken to prevent the entry of wash water and other contaminants into the stormwater conveyance system.
- The use of hose off or single-use engine degreasing chemicals is prohibited, unless captured and properly disposed.
- Personal vehicle washing by campus employees, staff, faculty, students, visitors or others is strictly prohibited on campus property. The hiring of mobile detailing or vehicle cleaning services shall also be prohibited on campus property.
- Promote the personal vehicle maintenance prohibition on campus through social media, website or other.

Design Guidelines:

- Post signs stating that only vehicular/equipment washing is allowed in wash area and that discharges to the storm drain are prohibited.
- When practicable, use biodegradable, phosphate-free detergents for washing vehicles.

Inspection Guidelines:

- Inspect washing facilities on an as needed basis.
- Check the pipelines, recycling system, and floor drains for any clogs, leaks or illegal dumping.

Training Guidelines:

- Train staff on proper maintenance measures and use of the facility wash area.
- Train staff on routine basis based on campus staff needs.

Revision Date: 4/16/2020

BMP FU03 – Vehicle and Equipment Maintenance and Storage

Reference: CASQA Municipal SC-32 – Vehicle and Equipment Repair

Storage of vehicles and maintenance of vehicles and equipment shall be on campus property only. All maintenance activities of equipment and vehicles shall take place in the Vehicle Maintenance Bays.



Pollution Prevention Guidelines:

- Drip pans or other methods of spill containment shall be used to prevent the discharge of materials to the stormwater conveyance systems or receiving waters.
- Stored equipment shall be drained of lubricants and other petrochemicals, and these substances properly disposed.
- Avoid hosing down work areas; use dry methods for clean-up activities.
- Have spill clean-up and containment materials available in vehicle and equipment maintenance and storage areas.
- Personal vehicle servicing by employees, staff, faculty, students, visitors or others is strictly prohibited on campus property. The hiring of mobile vehicle service providers shall also be prohibited on campus property, except for battery jump starts, tire changing, and other similar and minor activities.
- Promote the personal vehicle maintenance prohibition on campus through social media, website or other.

Design Guidelines:

- Consider conducting maintenance activities in a building and connecting the floor drains to the sanitary sewer.

Inspection Guidelines:

- Inspect the facilities and grounds for any signs of spills annually at a minimum.
- Dry sweep the facilities on a routine basis.



Training Guidelines:

- Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with vehicle and equipment maintenance and storage.

Revision Date: 4/16/2020

BMP FU04 – Outdoor Loading and Unloading Materials at a Dock

Reference: CASQA Municipal SC-30 – Outdoor Loading/Unloading

Loading and unloading of materials usually takes place outside on docks attached to buildings on the CSUSM campus. During this process, materials can spill or leak, and flow to the stormwater conveyance system or potentially be carried away by stormwater runoff. Loading and unloading of materials may include packing products (e.g., Styrofoam) that can impact stormwater conveyance systems. Exposed machinery and equipment used to unload and/or move materials to the docks may contribute pollutants during rainfall.



Pollution Prevention Guidelines:

- Park trucks or delivery vehicles in designated areas to contain any spills.
- Limit exposure of materials with the potential to contaminate stormwater.
- Limit loading and unloading of materials to only designated area(s).
- Prevent stormwater run-on from adjacent area(s) to loading docks.
- Develop loading/unloading operation instructions for any hazardous materials or wastes and only allowed trained personnel to conduct these activities.
- Regularly check equipment including trucks and forklifts for leaks and spills.
- Additional precautions should be taken when conducting loading and unloading of materials during wet weather in case of spills.
- Have spill containment and cleanup materials readily available. Cleanup spills immediately and use dry methods. Properly dispose of spilled cleanup materials.
- Keep accurate maintenance logs to evaluate materials removed and completed improvements.

Design Guidelines:

- Loading dock areas shall be covered to prevent rainfall from coming into contact with unloading/loading equipment and materials.
- Loading dock areas shall be graded so that all runoff can be directed to a sump or a holding tank. Sumps shall be designed to have no outlets to any stormwater conveyance systems. Any spilled materials shall be captured and removed and disposed of according to applicable solid waste and hazardous waste regulations.

Inspection Guidelines:

- Check loading and unloading equipment regularly for any leaks.
- Inspect holding sumps for accumulation of liquids or rainfall (if loading dock area is not covered). Empty sumps of any liquids and dispose of properly.
- Look for dust or fumes during loading or unloading operations.

Training Guidelines:

- Train employees (e.g. forklift operators) and contractors on proper use of equipment and spill containment and cleanup procedures.
- Employees trained in spill containment and cleanup should be present during the loading/unloading activities.
- Train employees in proper handling techniques during liquid transfers to avoid spills.

Revision Date: 4/16/2020

BMP FU05 – Reserved

BMP FU06 – Reserved

BMP LA01 – Landscape Maintenance

Reference: CASQA Municipal SC-73 – Landscape Maintenance

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other landscaping care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system from the application activity and storage practices.



Landscaping chemicals (e.g., pesticides) should be stored and secured in storage buildings or separate structures wherever possible. These structures should be separated from offices, workshops, laboratories, and surface water sources. The floor of the storage area should be made of treated concrete or other chemically impervious material. Structures should be in flood free areas, downwind and downhill from sensitive areas such as houses and ponds.

Landscape maintenance includes pest control and management. The use of Integrated Pest Management (IPM) practices and other non-chemical pest control methods (e.g. traps) will be used where practicable. Pesticide application must be under the supervision of a California qualified pesticide applicator.

The objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and contractors.

Pollution Prevention Guidelines:

- Grounds and landscaped areas will be periodically inspected. Litter, debris, organic matter (leaves, cut grass, etc.), and other materials with the potential to contaminate urban runoff shall be collected and properly disposed.
- Paved surfaces such as sidewalks shall be cleaned regularly using dry methods (e.g., sweeping, vacuuming). Hosing, power washing, and other wet cleaning methods are permissible only if adequate precautions have been taken to prevent the discharge of wash water to the stormwater conveyance systems or receiving waters.
- Leaf blowers are permitted so long as materials are collected and properly disposed. Leaving or blowing materials in the stormwater conveyance systems is not allowed.
- Recycle grass clippings and use fertilizer as appropriate.
- Do not allow floor drains in landscape chemical storage areas. Floors should be impermeable and provide containment in the event of a spill. Secondary containment shall be routinely used for most open containers.
- Protective measures shall be taken to ensure that stored pesticides, fertilizers, and other chemicals do not contact precipitation, urban runoff, and stormwater.

- Stored pesticide containers will be checked often for corrosion, leaks, loose caps, or bungs. Appropriate spill containment and clean-up procedures will be followed in the event of a release.
- Dispose of empty pesticide containers according to the instructions on the container label.
- Weather conditions will be considered prior to the outdoor application of pesticides and other chemical products. Where practicable, these products shall not be applied outdoors prior to rainfall. Their outdoor application during rainfall is prohibited.
- Precautions shall be taken during the application of pesticides and other chemical products to prevent drift into non-target areas or onto non-target vegetation, insects, or animals, and impervious areas (e.g., walkways).
- **Do not** mix or prepare pesticides for application near storm drains. Use oldest products first.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Plant fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Dry sweep pavement and sidewalks any spilled fertilizer before applying irrigation water.

Design Guidelines:

- Minimize the use of hazardous materials onsite.
- Select low water using plantings, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as xeriscaping.
- Consider the use of Integrated Pest Management (IPM) practices and other non-chemical pest control methods (e.g., traps, sticky tape, hot-wire lamps) where practicable.
- Containers should be placed on pallets or shelves to prevent water damage or corrosion.
- Whenever possible, do not buy more pesticide than you can use in any one season.

Inspection Guidelines:

- Conduct periodic inspections of maintenance activities and implementation of BMPs (i.e. properly timed fertilizing, weeding, pest control) to help preserve the landscape's target water efficiency.
- Inspect irrigation system operation and performance to maximize efficiency.
- At a minimum, inspect herbicides/pesticides/fertilizers storage facilities annually.
- Inspect pesticide/fertilizer equipment routinely.

- Inspect landscaping contractor records of pesticides/herbicides use and application and verify SDSs.

Training Guidelines:

- Train staff on an annual/or as needed basis in protecting storm drain conveyance systems from pollutants associated with landscape maintenance activities, including herbicide, pesticide, and fertilizer use and storage.
- Employees/contractors who are not authorized and trained to apply pesticides should be periodically informed of the appropriate usage of over-the-counter pesticides in/or around the workplace.
- Verify the credentials of the California qualified pesticide applicator(s) whether staff or contractors.
- Use a training log or similar method to document staff training.

Revision Date: 4/16/2020

BMP LA02 – Landscape Irrigation and Runoff Control

Reference: CASQA Municipal SC-73 – Landscape Maintenance

Facility Services uses potable water and pumped ground water to irrigate landscaped areas throughout the CSUSM campus. Potable water irrigation consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation and lawn watering. Excess irrigation water on landscaped areas may result in runoff being conveyed into stormwater drainage systems. Potential pollutants that can discharge from the site can include nutrients, sediment, organic pollutants including pesticides. CSUSM staff will review the application of irrigation water to minimize runoff water into the stormwater conveyance systems.



Pollution Prevention Guidelines:

- Nozzles, intermitters, and other application equipment shall be maintained in good working condition.
- Direct and calibrate the application of irrigation water including water nozzles towards landscape/lawn and grass land areas.
- Shut off or isolate the water source(s) to broken pipelines, sprinklers, or valves as soon as possible to prevent excess non-stormwater flows. Repair any broken water lines as soon as possible.
- Adjust watering times and schedules to ensure that the appropriate amount of water is being utilized and minimize runoff. Consider factors such as soil structure, grade, time of year, and the type of plant material in determining the appropriate application of water. Install smart irrigation systems that monitor soil moisture and other data to control irrigation, if possible. Eliminate or shut-off irrigation during rainy weather.
- Where practicable, low-volume watering methods (e.g., drip-, sub-, and pulse irrigation) shall be used to minimize the potential for excess flows.
- Where practicable, tail-water recovery systems or subsurface drains shall be used to recycle irrigation water.
- Discharges from potable water line flushing should be reused for landscaping purposes. Percolating potable water will help keep the water on-site and prevent the non-stormwater discharge from collecting and discharging pollutants.

Design Guidelines:

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the stormwater conveyance systems.
- Sodding or seeding may be used for erosion control.
- Employ rain-triggered shutoff devices to prevent irrigation before and after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.

- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Consider native vegetation to reduce water, fertilizer, and pesticide needs.
- Include smart irrigation control systems when possible.

Inspection Guidelines:

- Routinely inspect irrigated areas within the CSUSM campus limits for excess watering. At a minimum, inspect the irrigation system on a monthly basis depending upon the season, scheduling and usage.
- Inspect landscaped areas immediately after watering for signs of excessive watering or runoff.
- Check the curb, gutters and storm drains for signs of excessive irrigation.
- Inspect irrigation lines and nozzles for any potential leaks and proper operation.

Training Guidelines:

- Train staff on an annual/or as needed basis to recognize and address excessive watering, reduce runoff and protect storm drain conveyance systems.

Revision Date: 4/16/2020

BMP LA03 – Reserved

BMP LA04 – Reserved

BMP LA05 – Reserved

BMP NS01 – Water and Sewer System Maintenance

Reference: CASQA Municipal SC-76 – Water & Sewer Utility Maintenance

Water and sewer service maintenance shall be conducted in a manner that prevent and minimizes the contribution of pollutants to the stormwater conveyance system.

Potable water can contain chemicals (e.g., chlorine) that can have an impact on receiving waters and discharges of potable water even when dechlorinated for discharge shall be managed to prevent the transport of pollutants to the stormwater conveyance system and receiving waters.



Routine inspection and maintenance of the sanitary sewer system is important to prevent line clogging and failure which can lead to the release of raw sewage. Spills and leaks from the sanitary sewer to impervious areas eventually makes its way to street gutters and storm drain inlets unless containment and clean-up is timely.

Facilities Services conducts a comprehensive potable water line flushing and distribution system releases throughout the CSUSM campus, typically annually. Water line flushing is a process that rapidly removes water from the CSUSM water piping system by forcing scour of materials that accumulate in the CSUSM pipelines.

Potable water mains are sized to allow adequate and safe flows for fire protection, water typically is moving through the underground pipelines at less than 2-miles per hour. This slow movement causes sediment, like rust and mineral particles, to build up over time and accumulate along the pipe's bottom. The buildup of sediment and debris can impede and restrict water flow in the pipelines and contribute to corrosion and water coloring issues. Potable water line pipes are typically flushed by opening-up fire hydrants and blowing water flows to the open street through the curb and gutter. The CSUSM campus staff uses a fire hydrant connector to direct fire hydrant flows to an open-space area on campus. CSUSM staff discharges potable water at discreet locations from fire hydrants when maintenance is performed.

Pollution Prevention Guidelines for Water System Maintenance:

- **Do not** discharge chlorinated or super-chlorinated¹ water to any storm drain, street, ditch, or surface water. A dichlorination device must be used to neutralize residual chlorine as part of the line flushing process.
- Super-chlorinated water may only be discharged after de-chlorination by aeration, retention, dissipation, or chemical treatment to “no measurable chlorine” content.

¹ This is usually associated with the installation of a new potable water line or after a repair to eliminate any risk of bacterial contamination of the water supply.

- The discharge shall be visibly clear and not contain floating or solid materials. Otherwise, turbid water shall be directed to landscape or dirt areas with control release to prevent erosion or to the sanitary sewer with permission from the sewer authority.
- The discharge shall not result in flooding of neighboring property, streets, gutters or storm sewers.
- The discharge shall be diverted from building foundations or other areas that may be damaged from ground settling or swelling.
- Remove any debris, trash or other materials from conveyance system if discharged².

Pollution Prevention for Sewer Maintenance:

- Implement a routine and scheduled work order system to inspect (using CCTV) and clean sewer lines to remove grease, grit, roots, and other debris that may lead to sewer backups and spills.
- Establish minimum frequency for entire system and more frequently for problem or “hot spot” areas based on historical records of inspections and cleaning.
- Maintain observation records from routine maintenance and inspection that note the condition of sanitary sewer lines and structures.
- Identify areas that need repair or maintenance, such as, deteriorating pipes, cracks or leaking joints or seals, infiltration from storm drains or groundwater.
- Prioritize repairs based established ranking criteria.
- Immediate schedule blockage clearing.
- Establish a preventive program for structures that can present problems that may cause an imminent overflow (e.g. pump station).

Design Guidelines:

- Direct potable water releases to a pervious area, ditch to help percolate discharge, or to sanitary sewer if it contains excessive sediment or other pollutants.
- Use dechlorinating devices for potable and super-chlorinated potable water discharges.
- Design new potable water and sanitary sewer facilities to accommodate inspection and maintenance practices that take into account any potential impact to the stormwater conveyance system and the receiving waters.

² Discharges to storm drain systems and/or receiving waters may require a separate permit from other storm drain operators (City of San Marcos) and/or the State's Water Quality Control Board.

Inspection Guidelines:

- Inspect the discharge of potable water for any floating or solid materials or debris.
- Test potable water discharges for residual chlorine levels, even if dichlorination practices are used.
- Implement scheduled and routine inspection, repair, maintenance, and capital replacement of potable water and sanitary sewer system pipes and structures to prevent failure, spills and accidental releases.

Training Guidelines:

- Ensure adequate training is provided to CSUSM field staff and contractors on the procedures to use for potable water line flushing.
- Conduct refresher training for staff who conduct potable line flushing on an as needed basis.
- Train CSUSM field staff and verify contractors' personnel training in sewer inspection and maintenance practices to prevent spills and leaks.

Revision Date: 4/16/2020

BMP NS02 – Fountain and Pool Maintenance

Reference: CASQA Municipal SC-72 – Fountain & Pool Maintenance

Facilities Services operates and maintains a number of water features and/or impoundments on campus, including swimming pools. Water in the features or impoundments may need to be recharged and replaced occasionally. Dewatering of pools, decorative fountains and other impoundments that are chlorinated water can impact receiving waters. Chlorinated water discharged to surface waters can have adverse effect and impact on local water quality. Swimming pools are a major source of chlorinated water. An average swimming pool holds approximately 20,000 gallons of highly chlorinated water, which can be toxic to wildlife including fish and micro invertebrates. The CSUSM campus impoundments are plumbed to the sanitary sewer. The CSUSM campus staff uses the following practices for discharging and disposing of this type of wastewater.



Pollution Prevention Guidelines:

The preferable method to drain a fountain, pool or other water impoundment is to sanitary sewer. Guidelines include:

- Contact the sanitary sewer agency, Encina Wastewater Authority at (760) 438-3941, for the latest procedures and any permits required prior to draining a water feature or impoundment to the sanitary sewer.
- Wastewater from impoundment must sit for a period of at least 2-days after the addition of chlorine or bromine or until chlorine or bromine levels are below 0.1 mg/L.
- Wastewater from impoundments must meet pH between 5.5 and 12.0 before discharge.
- Manage volume and peak flow to the sanitary sewer capacity at the time of discharge to prevent any sanitary sewer overflows downstream.

A secondary option is to drain a fountain, pool or other water impoundment is to pervious areas (e.g., landscaping, dirt lot or depressed area, infiltration area). Guidelines include:

- Draining impoundments directly into the environment; water quality must comply with the applicable Federal, State or local water quality criteria.
- Discharge the chlorinated wastewater to open space or pervious area where water can be detained and not discharge to local storm drains and surface waters.
- Wastewater discharges to the environment should be directed over a land surface so that some level of filtration by soil particles can occur.
- Prevent any erosion and sediment release during the discharge by controlling flows or adding appropriate erosion and sediment control BMPs downstream of the discharge point.

- **Do not** drain impoundment (i.e. pool/spa) within 5-days of adding chemicals; ensure that all chemicals have dissipated prior to discharge/disposal. Make sure all chemicals are dissipated before draining impoundments.
- Dechlorinate water in impoundments with appropriate de-chlorinating agents (i.e. sodium thiosulfate) before draining the impoundment.
- Wastewater from impoundment must sit for a period of at least 2-days after the addition of chlorine or bromine or until chlorine or bromine levels are below 0.1 mg/L.
- Wastewater from impoundments must meet pH between 6.5 and 8.5 before discharge.

Design Guidelines:

- Design all impoundments to drain water to sanitary sewer facilities.

Inspection Guidelines:

- Inspect water surface impoundments routinely for signs of illegal discharges.

Training Guidelines:

- Train CSUSM staff to inspect impoundments regularly. Check for signs of illicit discharges to the storm drain system or surface waters.

Revision Date: 4/16/2020

BMP NS03 – Non-Stormwater Discharges

Reference: CASQA Municipal SC-10 – Non-Stormwater Discharges

Non-stormwater discharges are classified as all flows that do not entirely composed of stormwater and are prohibited by the Phase II MS4 Permit³ that applies to CSUSM.

Exceptions, listed in Provision B.3 of the Phase II MS4 Permit include⁴:

Water line flushing (with BMPs applied; see NS-01)

- Diverted stream flows
- Rising groundwaters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources (with BMPs applied, see NS-01)
- Foundation drains
- Air conditioning condensate
- Springs
- Water from crawl space pumps
- Footing drains
- Dechlorinated swimming pool discharges (see BMP NS-02)
- Incidental runoff from landscaped areas (see BMP LA-01 and LA-02)
- Flows from fire fighting activities, unless a significant sources of pollutants

Sources of prohibited non-stormwater discharges can include fixed facilities or during routine field operations by staff or contractors. Typically, the non-stormwater discharges that do not include pollutants may be discharged to the storm drain as noted in the above list.

There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions.

Other non-stormwater discharges may have pollutants and can pose a risk to receiving waters. These discharges may originate from illegal dumping, illicit connections whether intentional or mistakenly installed (e.g., outdoor wash pad connected to the stormwater conveyance system).

³ General Permit WQ Order 2013-0001-DWQ as amended.

⁴ Exceptions listed in the Phase II MS4 Permit that are not applicable or a possibility at CSUSM have been excluded from the list.

Non-stormwater discharges may be identified through facility inspections, reported illegal dumping or spills, stormwater conveyance inspections including condition surveying using closed-circuit television (CCTV), and during annual stormwater conveyance system outfall inspections.

Pollution Prevention Guidelines:

- Post “No Dumping” messages at storm drain inlets and other stormwater conveyance facilities (e.g., drainage channels) to deter illegal dumping and non-stormwater discharges.
- Install and maintain screens and trash capture devices to trap materials and debris.
- Promote environmental stewardship on campus with no dumping messaging and clean-up events through the CSUSM website or social media.
- Implement spill and leak notification procedures for staff, faculty, students, and visitors.
- Implement methods to respond to spills and leaks to clean-up, contain, and remediate to minimize or prevent them from entering the stormwater conveyance system.



Design Guidelines:

- Design facilities to include indoor washing stations, racks or areas or outdoor wash pads with cover for all routine operations.
- Include design features to capture and mitigate spills and leaks of non-stormwater discharges (e.g., loading dock sumps).
- Include “No Dumping” signage at all stormwater conveyance system inlets for new facilities.

Inspection Guidelines:

- Routinely inspect facilities for illegal discharges and illicit connections.
- Routinely inspect stormwater conveyance system outfalls as part of the Municipal Permit compliance program and investigate and mitigate any non-stormwater sources identified.
- Routinely inspect and clean trash capture devices, inlet screens and other pollution prevention devices.

Training Guidelines:

- Train CSUSM staff on illegal discharge identification and notification procedures.
- Train CSUSM staff to inspect facilities regularly and to check for signs of illicit discharges to the storm drain system or surface waters.

Revision Date: 4/17/2020

BMP NS04 – Portable Sanitary Facilities

Reference: CASQA Construction WM-9 – Sanitary/Septic Waste Management

Portable sanitary facilities may be deployed for on-site field activities (e.g. soccer field and track field) and other functions. CSUSM maintenance staff oversees the deployment, location, maintenance and cleaning, and proper use of sanitary and septic waste management to prevent the discharge of pollutants to the stormwater conveyance systems. The campus shall provide convenient, well-maintained facilities, and arrange for routine cleaning services of the facilities based on usage volume.



Pollution Prevention Guidelines:

- Secondary containment trays shall be included with the installation of each portable sanitary facility unit. Secondary trays should be inspected after each rain event and any standing water removed and disposed at a permanent sanitary sewer connection (e.g., wash sink, wash pad).
- Sanitary wastes should be treated or disposed of in accordance with state and local requirements.
- Rinse water from the cleaning of sanitary facilities may not be disposed into the stormwater conveyance systems or receiving waters.
- Sanitary facilities shall be located away from the stormwater conveyance systems and high vehicular traffic areas.
- Sanitary facilities shall be monitored and secured to prevent vandalism that can lead to spills.

Design Guidelines:

- Portable sanitary facilities shall be placed on flat surfaces.
- Portable sanitary facilities shall be secured from overturning from high winds and vandalism.
- Portable sanitary facilities shall be equipped with secondary spill containers.
- Portable sanitary facilities will be posted or otherwise labeled to encourage reporting of needed cleaning or repair.

Inspection Guidelines:

- Inspect portable facilities for signs of spills, leaks, cleaning needs or illegal dumping.

Training Guidelines:

- Train staff to recognize pollutant hazards from sanitary waste facilities that may impact surrounding storm drain conveyance systems.
- Train staff on an annual/or as needed basis in proper inspection and handling procedures for portable sanitary waste facilities.

Revision Date: 4/17/2020

BMP NS05 – Drainage System Maintenance

Reference: CASQA Municipal SC-74 – Drainage System Maintenance

The stormwater conveyance system collects and transports urban runoff during rain events to prevent ponding and flooding, but it can also convey non-stormwater discharges including spills, that may contain pollutants that may be harmful to the receiving waters and the environment.

Therefore, cleaning and maintaining inlets and catch basins, underground pipes, infiltration basins, trenches, and other stormwater conveyance or treatment structures on a regular basis is essential to the proper management of the drainage system overall. Cleaning and maintenance activities conducted routinely will remove pollutants, debris and trash, prevent clogging of the downstream conveyance system, restore the catch basins' and trench's sediment trapping capacity, and ensure the system's hydraulic function is maintained to avoid flooding.



Pollution Prevention Guidelines:

- Install and maintain “No Dumping” signage for all inlets or other structures of the stormwater conveyance system.
- Regularly clean all stormwater conveyance system facilities including inlets and catch basins, underground pipes, infiltration basins, trenches, and other structures to remove debris, sediment, trash and other materials. At minimum, perform cleaning annually prior to the rainy season.
- Adjust cleaning frequency based on inspection results. Hot spots should be scheduled for more frequent cleaning, as needed.
- Collect and dispose of waste materials in accordance with regulatory requirements.
- If flushing of the stormwater conveyance system is required to remove clogs and sediment, use a dam or other method to hold the wash water at the downstream point for collection and removal.

Design Guidelines:

- Include design features in all new stormwater conveyance system facilities that facilitate cleaning and maintenance.
- Include trash removal devices that meet the State's standards for all new outfall connections to the City of San Marcos, if they meet the eligibility criteria.

Inspection Guidelines:

- Inspect the stormwater conveyance system for condition and functional performance at least annually, prior to the rainy season.
- Periodically assess structural integrity of underground pipes using CCTV, visual inspection of catch basins, trash removal devices, open channels and trenches, and other stormwater treatment structures or devices.
- Maintain cleaning records for regulatory authority inspections.

Training Guidelines:

- Train staff to conduct inspections and assessment of the stormwater conveyance systems for required cleaning, repair and maintenance.

Revision Date: 4/17/2020

BMP NS06 – Spill Prevention, Control and Cleanup

Reference: CASQA Municipal SC-11 – Spill Prevention Control and Cleanup

CSUSM has in place a Spill Prevention Control and Countermeasure Plan (SPCCP) that it implements as required. The SPCCP is indirectly a valuable tool in spill prevention and control for the most significant oil, fuel and petroleum product storage tanks and containers at CSUSM.

Spills and leaks should be prevented as much as possible through structural controls and inspection of the continued function of those controls. When spills or leaks do result, timely identification and cleanup is imperative. Spills and leaks can reach the stormwater conveyance system and adversely impact receiving waters. Proper spill response planning (accomplished by the SPCCP) and for other minor releases, and preparation can enable CSUSM employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment.

Pollution Prevention Guidelines:

- Implement the campus' SPCCP.
- Implement spill prevention measure on smaller scale tasks and receptacles such as vehicle drip pans, containment for small equipment fueling, secondary or spill pans for portable sanitary facilities, etc.
- Install and maintain spill containment equipment and cleanup materials at locations where liquids are stored and used regularly.
- When operations involve large volume transfer or dispensing of liquids, protect downstream stormwater conveyance system inlets by sealing or berming.
- Implement and promote spill notification systems (via phone, website notification tickets, etc.) to facilitate reporting and timely cleanup.
- Secure spills with berms or other materials for cleanup.
- Plan to have the ability to block spills downstream in the stormwater conveyance system to prevent release beyond campus property and for removal and recovery or disposal.
- Use dry methods to clean spills. DO NOT wash spills to the stormwater conveyance system.

Design Guidelines:

- Include secondary containment and emergency shut-off systems in all new liquid storage facilities, as required by regulations or as needed.
- Implement secondary containment as part of smaller operations and tasks.
- Include spill cleanup equipment and materials as part of new facility design.
- Slope areas surrounding fuel or other liquid storage or dispensing facilities away from stormwater conveyance system inlets.

Inspection Guidelines:

- Inspect facilities and the stormwater conveyance system for evidence of past spills and leaks.
- Periodically assess the cause and response to spills to identify additional preventive measures.
- Maintain spill records for regulatory authority inspections.

Training Guidelines:

- Train staff to conduct inspections and assessment of facilities for potential or past leaks and spills.
- Train staff to inspect spill control equipment, measures and structures for integrity and condition.
- Train staff to respond to spills and conduct cleanup activities.

Revision Date: 4/17/2020

Description

Parking lots can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants from parking areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

BMPs for other outdoor areas on site (loading/unloading, material storage, and equipment operations) are described in SC-30 through SC-33.

Approach

The goal of this program is to ensure stormwater pollution prevention practices are considered when conducting activities on or around parking areas to reduce potential for pollutant discharge to receiving waters. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Encourage advanced designs and maintenance strategies for impervious parking lots. Refer to the treatment control BMP fact sheets in this manual for additional information.
- ☐ Keep accurate maintenance logs to evaluate BMP implementation.



Good Housekeeping

- ☐ Keep all parking areas clean and orderly. Remove debris, litter, and sediments in a timely fashion.
- ☐ Post “No Littering” signs and enforce anti-litter laws.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered

	Good Housekeeping	✓
	Preventative Maintenance	✓
	Spill and Leak Prevention and Response	✓
	Material Handling & Waste Management	
	Erosion and Sediment Controls	
	Employee Training Program	✓
	Quality Assurance Record Keeping	✓



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- ☐ Provide an adequate number of litter receptacles.
- ☐ Clean out and cover litter receptacles frequently to prevent spillage.



Preventative Maintenance

Inspection

Have designated personnel conduct inspections of parking facilities and stormwater conveyance systems associated with parking facilities on a regular basis.

- ☐ Inspect cleaning equipment/sweepers for leaks on a regular basis.

Surface Cleaning

- ☐ Use dry cleaning methods (e.g., sweeping, vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system if possible.
- ☐ Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- ☐ Sweep all parking lots at least once before the onset of the wet season.
- ☐ Dispose of parking lot sweeping debris and dirt at a landfill.
- ☐ Follow the procedures below if water is used to clean surfaces:
 - ✓ Block the storm drain or contain runoff.
 - ✓ Collect and pump wash water to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains.
- ☐ Follow the procedures below when cleaning heavy oily deposits:
 - ✓ Clean oily spots with absorbent materials.
 - ✓ Use a screen or filter fabric over inlet, then wash surfaces.
 - ✓ Do not allow discharges to the storm drain.
 - ✓ Vacuum/pump discharges to a tank or discharge to sanitary sewer.
 - ✓ Dispose of spilled materials and absorbents appropriately.

Surface Repair

- ☐ Check local ordinance for SUSMP/LID ordinance.
- ☐ Preheat, transfer or load hot bituminous material away from storm drain inlets.
- ☐ Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff.
- ☐ Cover and seal nearby storm drain inlets where applicable (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in

place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- ☐ Use only as much water as necessary for dust control during sweeping to avoid runoff.
- ☐ Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.



Spill Response and Prevention Procedures

- ☐ Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- ☐ Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- ☐ Clean up fluid spills immediately with absorbent rags or material.
- ☐ Dispose of spilled material and absorbents properly.



Employee Training Program

- ☐ Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- ☐ Train employees and contractors in proper techniques for spill containment and cleanup.
- ☐ Use a training log or similar method to document training.



Quality Assurance and Record Keeping

- ☐ Keep accurate maintenance logs that document minimum BMP activities performed for parking area maintenance, types and quantities of waste disposed of, and any improvement actions.
- ☐ Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- ☐ Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- ☐ Capital investments may be required at some sites to purchase sweeping equipment, train sweeper operators, install oil/water/sand separators, or implement advanced BMPs. These costs can vary significantly depending upon site conditions and the amount of BMPs required.

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ❑ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ❑ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.



Good Housekeeping

Illicit Connections and Discharges

- ❑ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered

	Good Housekeeping	✓
	Preventative Maintenance	✓
	Spill and Leak Prevention and Response	✓
	Material Handling & Waste Management	
	Erosion and Sediment Controls	
	Employee Training Program	✓
	Quality Assurance Record Keeping	✓



Drainage System Maintenance **SC-44**

- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.
- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
 - ✓ Illegal dumping hot spots;
 - ✓ Types and quantities (in some cases) of wastes;
 - ✓ Patterns in time of occurrence (time of day/night, month, or year);
 - ✓ Mode of dumping (abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, accidents/spills); and
 - ✓ Responsible parties.
- Post “No Dumping” signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
 - ✓ Immediate repair of any deterioration threatening structural integrity.
 - ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

Drainage System Maintenance SC-44

- ❑ Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- ❑ Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- ❑ Keep accurate logs of the number of catch basins cleaned.
- ❑ Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- ❑ Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- ❑ Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- ❑ Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- ❑ Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- ❑ Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- ❑ Conduct routine maintenance at each pump station.
- ❑ Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- ❑ Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- ❑ Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Stream or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.



Spill Response and Prevention Procedures

- ❑ Keep your spill prevention control plan up-to-date.

Drainage System Maintenance **SC-44**

- ☐ Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- ☐ Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- ☐ Clean up all spills and leaks using “dry” methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- ☐ Educate employees about pollution prevention measures and goals.
- ☐ Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- ☐ Train employees and subcontractors in proper hazardous waste management.
- ☐ Use a training log or similar method to document training.
- ☐ Ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures.
- ☐ Have staff involved in detection and removal of illicit connections trained in the following:
 - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
 - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
 - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- ☐ Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- ☐ Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- ☐ Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- ☐ Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended “work-arounds” for drainage system maintenance:

Drainage System Maintenance SC-44

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
 - ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.
 - ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
 - ✓ Do not dump illegal materials anywhere onsite.
 - ✓ Identify illicit connections, illicit discharge, and illegal dumping.
 - ✓ Cleanup spills immediately and properly dispose of wastes.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.
 - ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.
 - ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .
- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vacuum trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents “plug flow” discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

Drainage System Maintenance SC-44

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Appendix F CSUSM Program Effectiveness Assessment and Improvement Plan

JUNE 2015

CALIFORNIA STATE UNIVERSITY SAN MARCOS



Program Effectiveness Assessment and Improvement Plan

Prepared by

CSUSM SAFETY, HEALTH AND SUSTAINABILITY SERVICES



This *Program Effectiveness Assessment and Improvement Plan* uses the California Stormwater Quality Association (CASQA) guidance document, *A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs* (February 2015), as its basis and is consistent with the approach described therein. Much of the text in this document is directly from the CASQA guidance document. It has been modified by CSUSM as applicable.

Collaborative Project Partners

California State University System

UC Santa Barbara
UC San Diego
UC Irvine
CSU Channel Islands
CSU Fullerton
CSU Sacramento
CSU Dominguez Hills
CSU Long Beach
CSU Northridge
CSU Pomona
San Diego State University
Cal State Los Angeles
California Polytechnic Institute Pomona
Others as needed

Phase I Stormwater Programs

City of San Marcos
County of San Diego

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1. Introduction

The Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit¹ (Phase II Permit) requires the development and implementation of a *Program Effectiveness Assessment and Improvement Plan* (PEAIP). The PEAIP must address each of the elements outlined in Provision F.5.h (non-traditional small MS4s). The PEAIP must include the strategy that CSUSM will use to track the short- and long-term effectiveness of the stormwater program, the specific measures that will be used to assess the effectiveness of the prioritized best management practices (BMPs), groups of BMPs, and/or the stormwater program as a whole, and a description of how CSUSM will use the information obtained through the PEAIP to improve the stormwater program.

The California State University San Marcos (CSUSM) stormwater program addresses many pollutants of concern (POCs) and implements a wide range of BMPs; however, consistent with Provision F.5.h requirements, the PEAIP will present a plan for assessing the effectiveness of a subset of prioritized BMPs that are focused on high priority POCs. This approach provides a manageable assessment program that can be improved, targeted, and refined.

CSUSM has developed this PEAIP as a guidance document for its staff responsible for stormwater to assist them in conducting program effectiveness assessments (EAs). The PEAIP is modeled after the methodology described within the California Stormwater Quality Association (CASQA) document, *A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs* (February 2015).² The PEAIP outlines the approach that CSUSM will use to adaptively manage its stormwater program to improve its effectiveness at reducing the identified high priority POCs, thereby achieving the maximum extent practicable (MEP) standard and protecting water quality.

The PEAIP is focused on the *impact* that the stormwater program is having rather than the strict *implementation* of the program. By focusing the EA in this manner, CSUSM staff will increase their ability to understand if its stormwater program is achieving the intended outcomes and can identify necessary modifications to the program to make it more effective.

This PEAIP addresses the requirements in Provision F.5.h, as summarized in **Table 1**.

¹ Order No. 2013-0001-DWQ, effective July 1, 2013

² Language from the 2015 CASQA Guidance Document is used as the basis for much of the PEAIP.

Table 1. Phase II Permit PEAIP Provisions and Corresponding PEAIP Sections (Non-Traditional Small MS4s)

Phase II Permit Provision(s)	PEAIP Section
F.5.h.1.(i-iii)	1. Introduction
F.5.h.1.(i) F.5.h.2.(i) and (ii)	5. Program Reporting and Modifications
F.5.h.1.(ii)(a)(1-2)	2. Program Effectiveness Assessment Approach and Development
F.5.h.1.(ii)(a)(1)	2.3. Identification of the Stormwater Program Activities ³
F.5.h.1.(ii)(a)(2)	2.2. Identification of the Key Target Audiences 2.2.2. Barriers and Bridges to Action ⁴
F.5.h.1.(ii)(a)(2)	2.2. Identification of the Key Target Audiences 2.2.1. Target Audience Actions ⁴
--- ⁵	1.1. Stormwater Program Goals and Objectives
--- ⁵	2.1. Identification of Sources and Impacts 2.1.2. Urban Runoff and MS4 Contributions
--- ⁵	2.1. Identification of Sources and Impacts 2.1.3. Source Contributions
--- ⁵	2.1. Identification of Sources and Impacts 2.1.1. Receiving Water Conditions
--- ⁵	3. Management Questions
--- ⁵	4. Data Assessment and Collection

The schedule for the implementation of the PEAIP is as follows:

- Year 2 Annual Report (October 15, 2015): Submit the PEAIP
- Year 3 and Year 4 Annual Reports (October 15, 2016 and October 15, 2017): Describe the implementation of the PEAIP, summarize the data obtained, and provide an analysis of the data (i.e., the EA)
- Year 5 Annual Report (October 15, 2018): Describe the implementation of the PEAIP, summarize the data obtained, provide an analysis of the data (i.e., the EA), and describe any program modifications identified

³ Provision F.5.h.1.(ii)(a)(1) uses the phrase “Implementation of storm water program elements;” however, the 2015 CASQA Guidance Document and this PEAIP use the term “Stormwater Program Activities” for Outcome Level 1 to reflect the new approach that has been developed.

⁴ Provision F.5.h.1.(ii)(a)(2) uses the phrase “Identification and targeting of Target Audience(s);” however, the 2015 CASQA Guidance Document and this PEAIP use the term “Barriers and Bridges to Action” for Outcome Level 2 and “Target Audience Actions” for Outcome Level 3 to reflect the new approach that has been developed.

⁵ Although these PEAIP components are not specifically called out within Provision F.5.h., they are essential to the identification of high priority POCs and their urban sources, which, in turn, inform the development of management questions and specific information needed for assessment at Outcome Levels 2-4.

1.1. STORMWATER PROGRAM GOALS AND OBJECTIVES



The goals and objectives described below may be modified in the future as the PEAIP is implemented and the overall stormwater program matures.

Stormwater programs are inherently complex due to a number of factors such as: the number of pollutant sources, the limited ability to directly control the behaviors of target audiences, the number of constituents that must be addressed, the co-mingling of flows within the drainage system, and the potential impacts to water quality from other sources (wind-blown materials, groundwater seepage, aerial deposition, etc.).

The overall goals of CSUSM stormwater management program are: a) to reduce the potential impact(s) of pollution from the campus on waters of the State and waters of the United States (U.S.) and protect their beneficial uses; and b) to develop and implement an effective stormwater program that is well-understood and broadly supported by stakeholders.

The core objectives of the stormwater program are to:

1. Identify and control those pollutants in urban runoff that exceed water quality objectives (WQOs), as measured in the waters of the State and waters of the U.S., and protect the beneficial uses of the receiving waters;
2. Comply with the federal and State regulations to eliminate or control, to the MEP, the discharge of pollutants associated with urban runoff from CSUSM's stormwater drainage system;
3. Develop a cost-effective program which focuses on the prevention of pollution in urban stormwater;
4. Seek cost-effective alternative solutions where prevention is not a practical solution for exceedances of WQOs; and
5. Coordinate the implementation of control measures with other agencies.

The PEAIP supports these stormwater program goals and objectives by providing a framework for the implementation and assessment of prioritized BMPs focused on the high priority POCs, as well as a feedback loop for the adaptive management of the CSUSM's stormwater program. When considered as part of a larger program planning process (e.g., a CSU-wide program), assessment principles and approaches can help to guide managers toward implementation strategies with the greatest opportunity for long-term success.

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2. Program Effectiveness Assessment Approach and Development

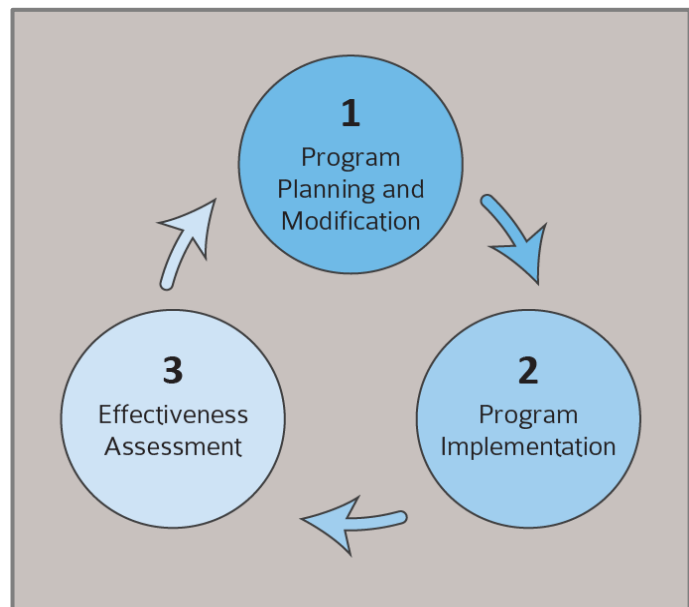
This section provides an overview of the stormwater program management cycle and the CASQA EA approach. The associated subsections provide an overview of all six CASQA outcome levels, how they were used in the development of the PEAIP, and how they will be used in the implementation of the PEAIP.

This PEAIP was developed to implement a focused evaluation of priority program elements and BMPs, ensuring that they are well-targeted and determining whether intended results are being achieved.

Stormwater program management⁶ can be described by a cycle divided into three phases of activity (**Figure 1**):

- **Program Planning and Modification** – In this phase, CSUSM is identifying the critical components and POCs for its stormwater program, as well as developing an EA approach and associated management questions to assist in determining if the program is achieving the intended results.
- **Program Implementation** – In this phase, CSUSM is implementing the program and obtaining the assessment data needed to answer the management questions.
- **Effectiveness Assessment** – In this phase, CSUSM is conducting EAs, reviewing the results, and determining if any program modifications are necessary. This is typically conducted as a part of the Annual Reports and/or Report of Waste Discharge, but may also be a part of other regulatory requirements such as Total Maximum Daily Loads (TMDLs). Once identified, CSUSM can make the program modifications and initiate the next round of implementation, leading again to renewed assessment and planning (see **Section 5**).

Figure 1. The Program Management Cycle (CASQA, 2015)



This process is applied repeatedly over time in order to focus the stormwater program in on the most effective BMPs and the achievement of the desired results.

⁶ See 2015 CASQA Guidance Document, Section 3.0: Introduction to Strategic Planning for Stormwater Management Programs

The CASQA EA approach⁷ utilizes a general model that aggregates three primary components from the six outcome levels and associated, general outcome types (**Figure 2**). The three primary components are:

- Sources and Impacts (Outcome Levels 4-6) – This component addresses the generation, transport, and fate of urban runoff pollutants. It includes sources (sites, facilities, areas, etc.), stormwater conveyance systems, and the water bodies that ultimately receive the source discharges (receiving waters). This component is typically assessed on a long-term basis.
- Target Audiences (Outcome Levels 2-3) – This component focuses on understanding the behaviors of the people responsible for source contributions. It explores the factors that determine existing behavioral patterns and looks for ways to replace polluting behaviors with non-polluting behaviors. This component is typically assessed on a short- and/or long-term basis.
- Stormwater Programs (Outcome Level 1) – Stormwater programs are the road map for the improvements that managers wish to attain in receiving waters. Their immediate purpose is to describe programs that will facilitate changes in the behaviors of key target audiences. This component is typically assessed on a short-term basis.

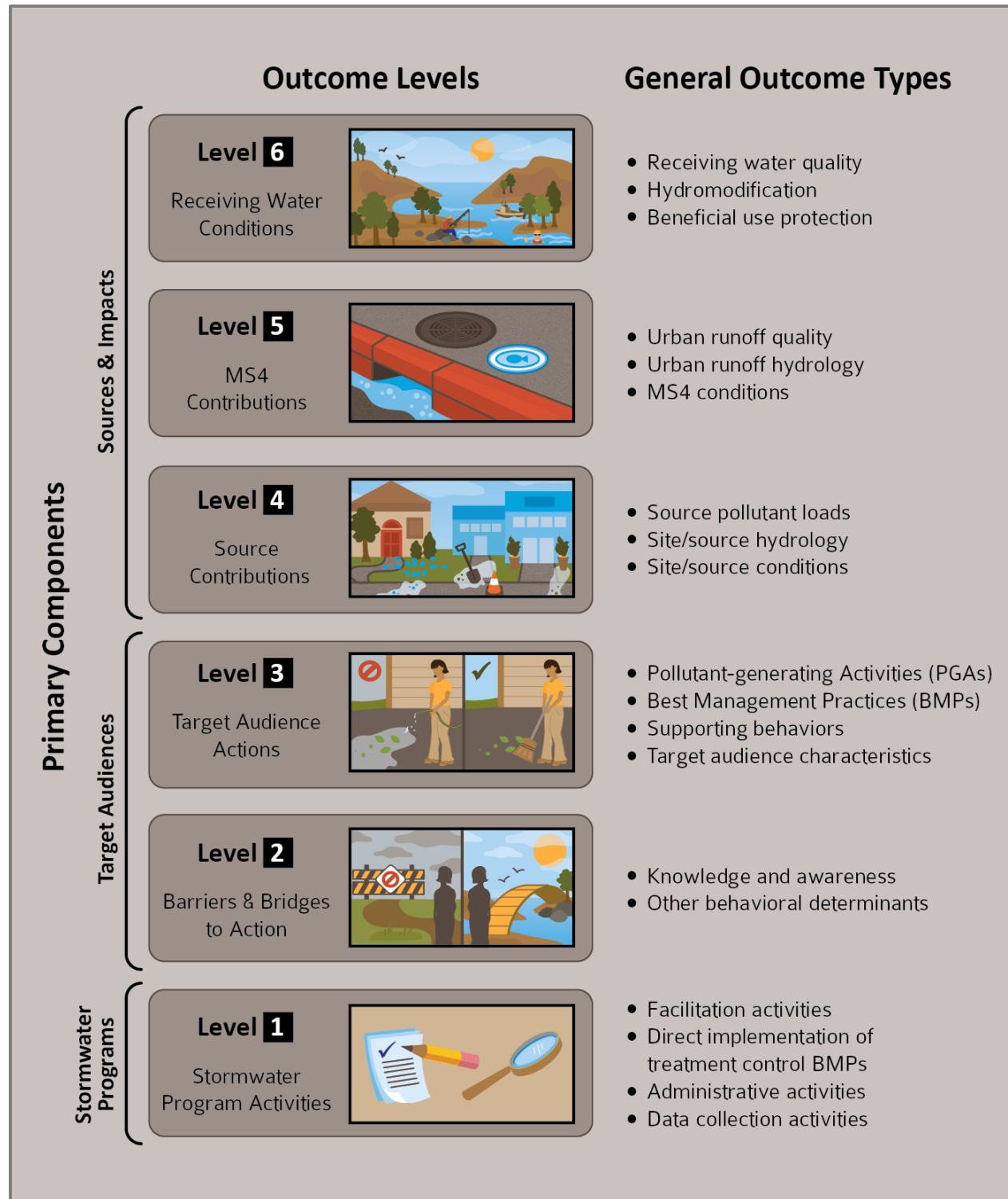
The six categories of outcome levels establish a logical and consistent organizational scheme for assessing and relating individual outcomes.

This PEAIIP will focus primarily on the Target Audiences (Outcome Levels 2 and 3) and the Sources and Impacts (Outcome Level 4) and will provide a plan to collect data that can be used to improve the stormwater program and protect water quality. Assessment at Outcome Levels 5 and 6 may be undertaken once program implementation has progressed to a point that improvements in outfall and receiving water quality are statistically significant, if applicable. The timeframe for this level of change to be realized will vary based on a variety of factors.

The approach to be used for each of the outcome levels is described in more detail within this section.

⁷ See 2015 CASQA Guidance Document, Section 2.0: Stormwater Management Approach

Figure 2. General Stormwater Management Model (CASQA, 2015)



2.1. IDENTIFICATION OF SOURCES AND IMPACTS⁸

This section outlines the process used for identifying the high priority POCs and their sources, as well how the impact of the stormwater program will be assessed. The associated subsections provide an overview of CASQA Outcome Levels 6, 5, and 4 and how they will be used in the development and implementation of the PEAIP.

2.1.1. Receiving Water Conditions (Outcome Level 6)⁹

This section provides an overview of Outcome Level 6 (which describes receiving water conditions) and describes the process by which the high priority POCs were preliminarily identified.

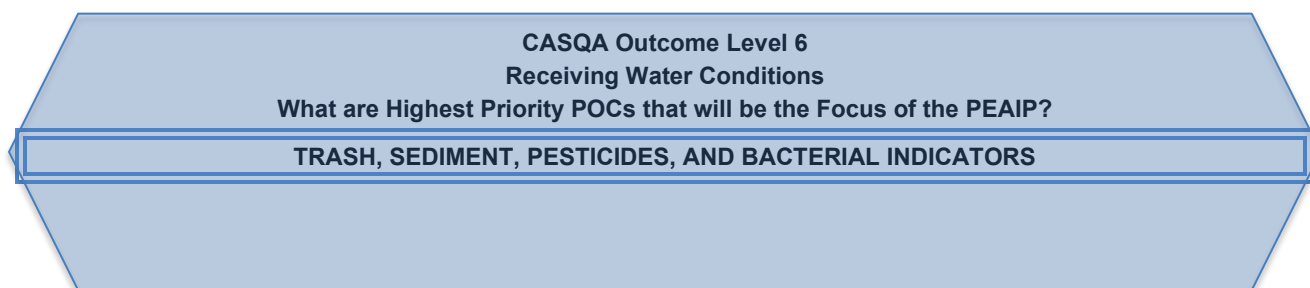
- 1) What are the priority receiving waters (i.e., waterbodies, segments, locations)?
- 2) What are the POCs for each priority receiving water?

One of the primary objectives of the stormwater program is the protection of the beneficial uses of the receiving waters. The Phase II Permit recognizes that there is a need to conduct the EA based on prioritized POCs. The number of POCs ultimately selected depends on the number of regional issues [e.g., 303(d) listings, monitoring data] that are identified. Where POCs are unidentified, the prioritized BMPs and assessment may be based on common urban pollutants.

Although Outcome Level 6 assessments may occur in future Phase II Permit terms as a part of a regional effort, the receiving water conditions were used to focus the PEAIP and select the key metrics that will be used to assess the effectiveness of the stormwater programs. This PEAIP will focus on high priority POCs identified in **Section 2.1.2**.

In order to identify the POCs for the PEAIP, CSUSM reviewed the 2010 303(d) list and/or limited monitoring data. Best professional judgment (BPJ) and knowledge of local and/or regional water quality issues were also factors in the identification of POCs. In addition, common urban pollutants were considered. The categories of receiving water impairments that were identified and considered to be potential high priority POCs are summarized in Error! Reference source not found.

Figure 3. Potential High Priority POCs Identified for the PEAIP



⁸ See 2015 CASQA Guidance Document, Section 4.0: Source and Impact Strategies

⁹ See 2015 CASQA Guidance Document, Section 4.2 Outcome Level 6: Receiving Water Conditions.

2.1.2. Urban Runoff (Outcome Level 5)¹⁰

This section provides an overview of Outcome Level 5 and identifies the high priority POCs for the PEAIP, as well as the significant urban sources of these POCs.

For each priority receiving water:

- 1) Which drainage areas contribute the POCs to the receiving water?
- 2) Which outfalls are of the highest priority (i.e., may be/are causing or contributing to exceedances in the priority receiving water(s))?

Level 5 Outcomes may be measured either within the MS4 or within discharges from the MS4. In either case, evaluation typically focuses on pollutant concentrations or loads, or both. Level 5 Outcomes provide a direct linkage between upstream sources and receiving waters and, as such, are a critical expression of stormwater program success. However, due to the temporal and spatial variability of water quality data, it is extremely challenging and takes many years and a significant amount of data to establish linkages between pollutants in MS4 discharges and the conditions within the receiving waters.

Although Outcome Level 5 assessments may occur in future Phase II Permit terms, the known urban runoff and MS4 contributions were used to focus the PEAIP and select the key metrics that will be used to assess the effectiveness of the stormwater programs. To date, the limited data collected from the visual inspections of CSUSM's outfalls indicates that there are no urban runoff discharges during dry weather conditions and MS4 contributions from CSUSM to the City of San Marcos MS4 are minimal or non-existent under this conditions.

In selecting high priority POCs, the CSUSM has considered the 2010 303(d) list, common urban pollutants, and/or limited monitoring data. It has determined that the 303(d) list is not directly applicable to the campus (see SWMP Section 3.9) and used Best professional judgment and knowledge of local and/or regional water quality issues in the identification of high priority POCs.

Thus, CSUSM has selected its high priority POCs for the potential discharge in urban runoff listed as the source of the POC (**Table 2**).

Table 2. CSUSM Highest Priority POCs and Water Bodies

Watershed	Water Body	Pollutant	Source Category
Carlsbad	San Marcos Creek	Trash	BPJ
Carlsbad	San Marcos Creek	Sediment	BPJ
Carlsbad	San Marcos Creek	Pesticides	BPJ
Carlsbad	San Marcos Creek	Bacterial Indicators	BPJ

¹⁰ See 2015 CASQA Guidance Document, Section 4.3 Outcome Level 5: MS4 Conditions

Of the potential POCs (**Figure 3**), consideration of Outcome Level 5 confirmed that the following high priority POCs will be the focus of the EAs:

- Sediment
- Trash
- Pesticides
- Bacterial Indicators

POC-specific shading throughout the PEAIP for tables and figures as follows:

- Yellow shading is used for the sediment.
- Orange shading is used for trash.
- Green shading is used for pesticides.
- Blue shading is used for bacterial indicators.

Where there are multiple POCs, this may help understand which POC is being referenced throughout the PEAIP.

CSUSM will focus its EAs on the prioritized BMPs that specifically target these POCs. Although the POCs were chosen based on the 303(d) list, limited local monitoring data, BPJ, and common urban pollutants, CSUSM will continue to assess the 303(d) list to understand which TMDLs may be developed in the near future. Best professional judgment and knowledge of local and/or regional water quality issues will also continue to be factors in the identification of POCs.



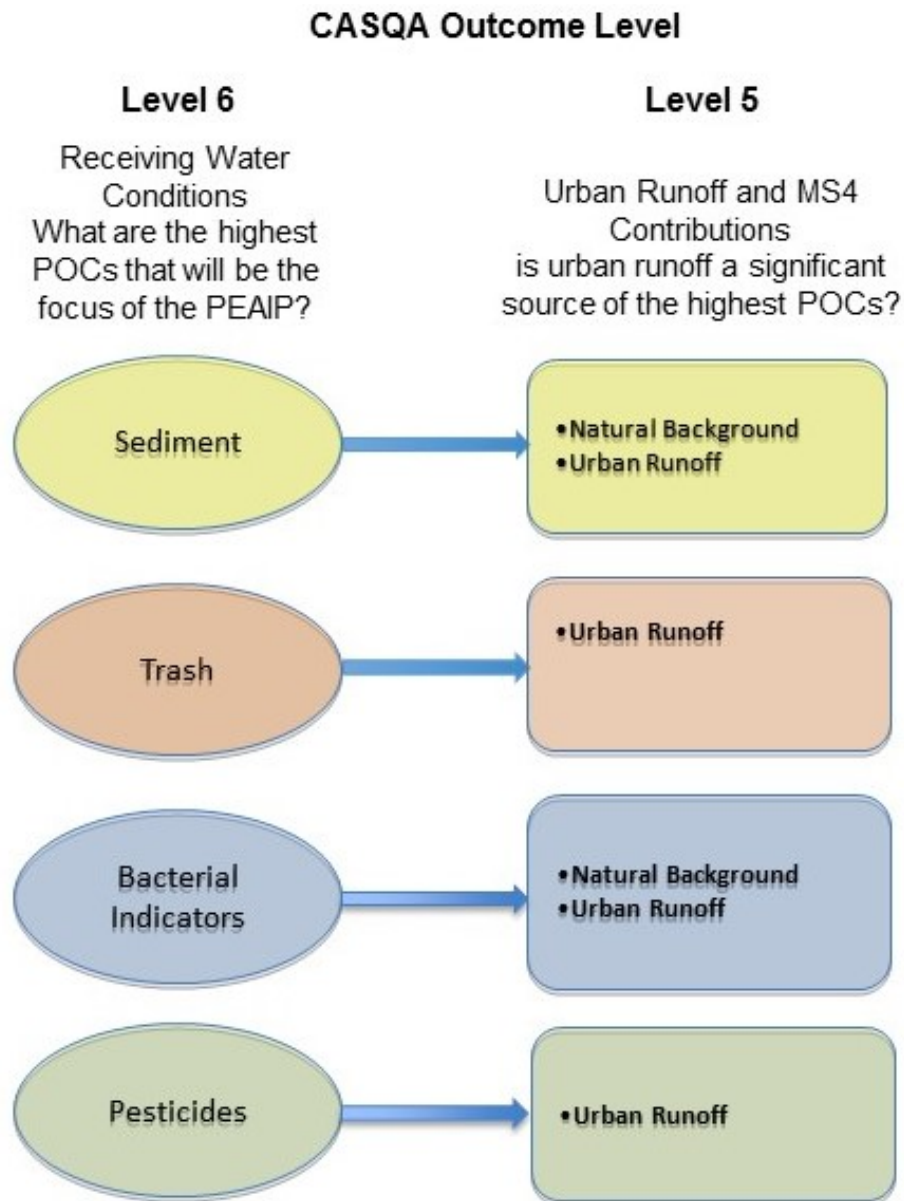
For each high priority POC and its sources shown in **Figure 4**. The sources listed under Outcome Level 5 were identified by reviewing TMDL(s), 303(d) Listings, and potential sources at CSUSM for each POC.

For each high priority POC identified, CSUSM applied best professional judgment to identify all significant sources and list them in the flow chart.

In addition, if CSUSM identifies any common urban pollutants as POCs addressed by its program, urban runoff are included in this flow chart as a significant source of those POCs.

Each high priority POCs is identified with unique shading. For example, sediment was chosen as the high priority POC and is shaded yellow in this and subsequent figures and tables. Similarly, pesticides are tracked easily in green shaded boxes in figure and tables.

Figure 4. Sources of the High Priority POCs



2.1.3. Source Contributions (Outcome Level 4)¹¹

This section provides an overview of Outcome Level 4 and identifies the specific urban sources of the high priority POCs.

For each priority MS4 outfall/group of outfalls (i.e., drainage area):

- 1) Which portions of identified drainage areas are the highest priorities?
- 2) What are the significant sources (or source types) of POCs in the drainage area?
- 3) What changes will be targeted for the significant sources (e.g., improvements in water quality, reductions in pollutant loadings)?

Outcome Level 4 addresses urban sources and the discharges from them. A source is anything with the potential to generate pollutants prior to their introduction to the MS4. Source loadings are the pollutant loadings added by the urban sources to an MS4. Source reductions are the changes in the amounts of pollutants associated with specific sources before and after BMPs are employed. However, it is challenging to measure source loadings and/or reductions achieved by individual and/or groups of BMPs. As a result, CSUSM will need to rely on direct measurements (where possible) and/or estimates of source reductions.

CSUSM will focus its evaluation of Outcome Level 4 on the high priority POCs. Doing so will help direct CSUSM's efforts and provide the basis for the management questions described in **Section 3** and outlined in the tables in **Section 4**.

In order to determine the specific target audiences and the appropriate prioritized BMPs, CSUSM has evaluated local programmatic information and used best professional judgment and/or knowledge of local and/or regional water quality issues to identify the primary urban runoff sources of each POC, as shown in **Figure 5**. It is expected that assessment at this outcome level will be included in long-term EAs.

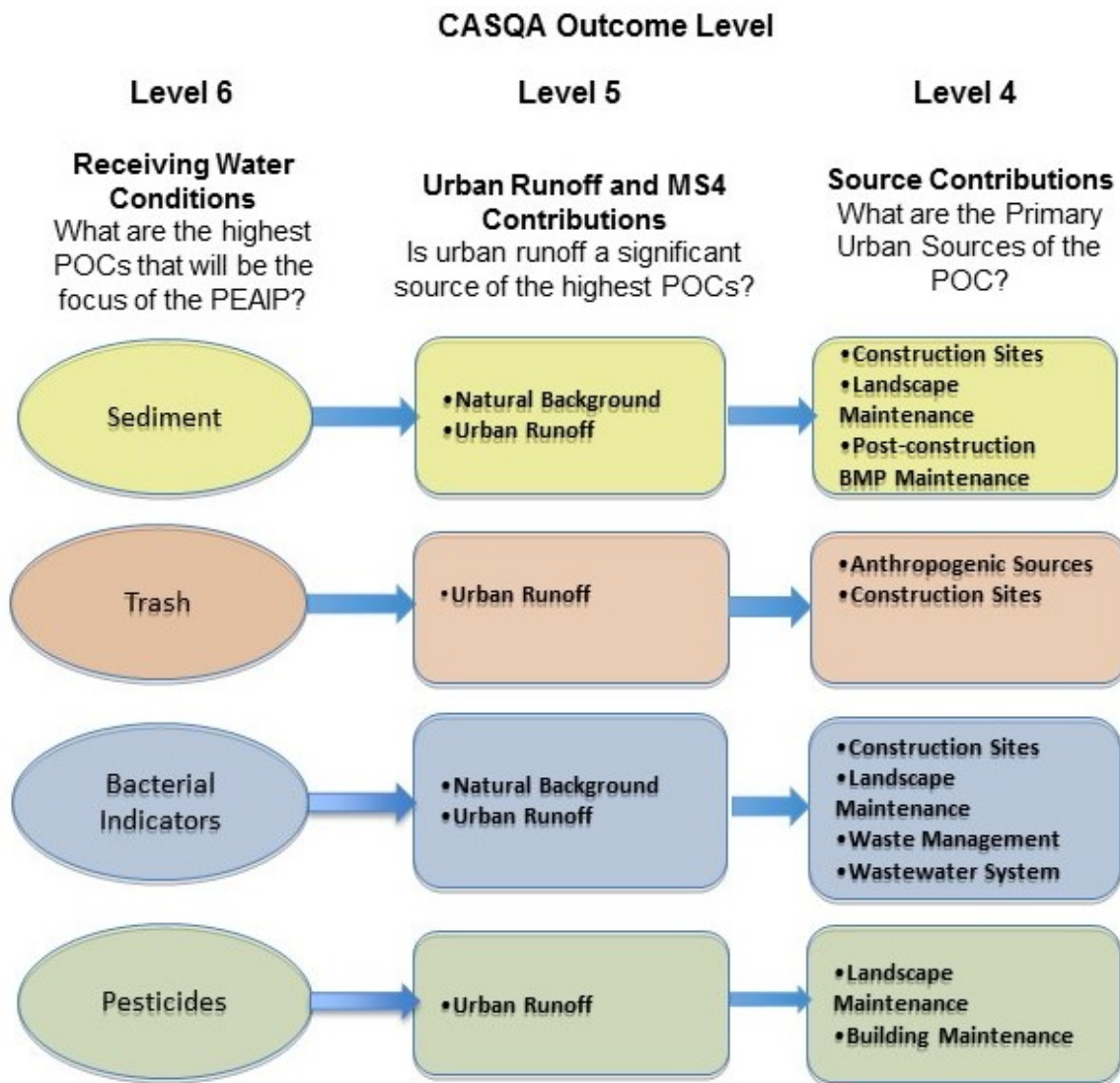


The flow chart in **Figure 5** builds from **Figure 4** and includes the primary urban sources of the example POC.

For each high priority POC identified by CSUSM best professional judgment is used to identify the primary urban sources. These are the POC sources that will be the focus of the EAs.

¹¹ See 2015 CASQA Guidance Document, Section 4.4 Outcome Level 4: Source Contributions

Figure 5. Primary Urban Sources of the High Priority POCs



2.2. IDENTIFICATION OF THE KEY TARGET AUDIENCES (OUTCOME LEVEL 2 AND 3)¹²

This section provides an overview of Outcome Levels 2 and 3 and explains the relationship between these two outcome levels.

This component focuses on the actions of target audiences and the factors that influence them. Target audiences are the individuals and populations that a stormwater program is directed to and may include, but are not limited to, CSU employees, contractors, and CSU “public” (e.g., student body, visitors). Because source reductions can only be achieved by the people responsible for pollutant loadings, a successful program will be one that is able to induce positive behavioral changes in the target audiences.

Although Outcome Levels 3 (Target Audience Actions) and 2 (Barriers and Bridges to Action) are closely related, they are distinct outcome levels.

- Outcome Level 3 focuses on the identification of target audiences associated with the primary sources of high priority POCs, as well as the behavioral patterns of these target audiences, with the goal of assessing *behavior change* over time.
- Outcome Level 2 focuses on identification of the factors that influence target audience behaviors, with the goal of using these factors to develop strategies to increase target audience *awareness* of the need to reduce pollutant-generating activities (PGAs) and implement prioritized BMPs. Level 2 Outcomes – Target Audience Actions are often used to gauge progress in, or to refine approaches for, achieving Level 3 Outcomes – Barriers and Bridges to Action (see **Section 2.2.2**).

2.2.1. Target Audience Actions (Outcome Level 3)¹³

This section provides an overview of Outcome Level 3 and identifies the specific target audiences for the high priority POCs. Identifying the target audiences will lead to identifying the desired target audience actions—that is, the prioritized stormwater program activities or BMPs (see Section 2.3).

For each significant source or source type:

- 1) Who are the target audiences?
- 2) What specific target audience behaviors are resulting in significant source contributions?
- 3) What behavioral changes will be targeted (e.g., decrease PGAs, increase implementation of BMPs)?

¹² See 2015 CASQA Guidance Document, Section 5.0: Target Audience Strategies

¹³ See 2015 CASQA Guidance Document, Section 5.2 Outcome Level 3: Target Audience Actions

Level 3 Outcomes address the actions of target audiences and whether or not changes are occurring within these target audiences over time. The major categories of target audience actions are:

- PGAs (Pollutant Generating Activities) – behaviors that contribute pollutants to urban runoff (e.g., pressure washing without containment, improper trash disposal, spills during materials loading and unloading)
- BMPs (Best Management Practices) – activities or other controls that are implemented to reduce or eliminate discharges of pollutants (e.g., integrated pest management (IPM) practices, implementation of secondary containment)
- Supporting behaviors – include a wide range of potential actions that are distinct from BMP implementation but help support the implementation (e.g., pollution incident reporting, public involvement)

CSUSM will focus its evaluation of Outcome Level 3 on the actions of target audiences for the high priority POCs. CSUSM has identified the critical target audience(s) for the specific urban runoff source(s) of each high priority POC (**Figure 6**), along with management questions that delineate the critical target audience actions (**Sections 3 and 4**).

CSUSM will evaluate the effectiveness of its stormwater program at Outcome Level 3 by using the management questions to guide its assessment of target audience implementation of BMPs and reduction of PGAs. It is expected that assessment at this outcome level will be included in the short- and long-term EAs.

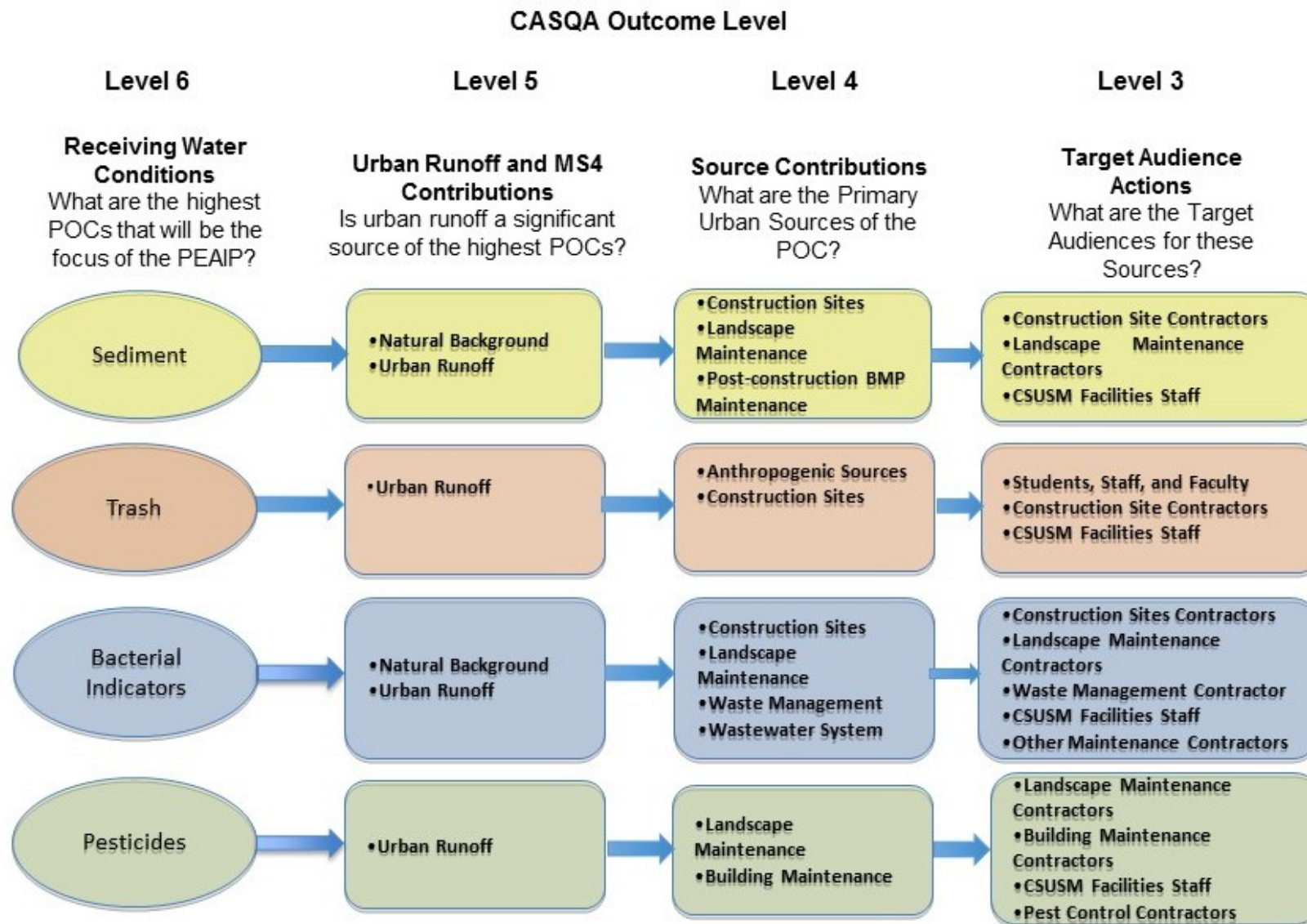


The flow chart in **Figure 6** builds from **Figure 5** and includes the specific target audiences for the primary urban sources.

For each high priority POC, the target audiences listed under Outcome Level 3 should be identified based on the primary urban sources (Outcome Level 4).

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Figure 6. Target Audiences Identified for Urban Runoff Source Contributions of POCs



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2.2.2. Barriers and Bridges to Action (Outcome Level 2)¹⁴

As described below and within the CASQA Guidance Document, the approach for Outcome Level 2 assessments includes the identification of **barriers and bridges** that may be influencing adoption of the desired behaviors. This aspect of the assessment will occur as part of the **adaptive management process**.

This section provides an overview of Outcome Level 2 and describes how it will be assessed. For each desired behavior change that will be targeted:

- 1) How will the desired behavior change be promoted to increase the target audience knowledge and awareness (e.g., outreach, training)?
- 2) How will target audience awareness be assessed (e.g., pre-/post-training surveys, public outreach surveys)?

Level 2 Outcomes are critical because they form the basis for achieving desired behavioral changes (action by audience members instead of mere knowledge of the desired behavior) and provide a means of gauging progress toward their achievement. The term “barriers and bridges” refers to the fact that there are factors that may aid or inhibit a desired behavior and that these need to be understood in order to affect the change that is desired. People won’t act differently unless they understand the problem and are motivated and able to change.

Level 2 Outcomes provide a means of gauging whether the prioritized activities (e.g., outreach, training, poster, postings) are producing changes in the behavior of the target audiences through increases knowledge and awareness, as well as changes in attitudes. Examples of Level 2 Outcomes range from awareness of basic concepts (e.g., why stormwater pollution is a problem; cigarette butt disposal is pollution) to specific knowledge (e.g., how and where to dispose of trash, cigarette butts; how to properly install and maintain a silt fence).

Level 2 Outcomes are often used to gauge progress in, or to refine approaches for, achieving Level 3 Outcomes. That is, an understanding of whether awareness, knowledge, and/or attitudes have changed will allow the identification of barriers and bridges that may be influencing the desired target audience behavior.

CSUSM will work to identify barriers and bridges that may be influencing target audience behavior. CSUSM will assess Outcome Level 2 (**Figure 7**) on an as-needed basis as part of the adaptive management process. It is expected that assessment at this outcome level will be included in the short- and long-term EAs.



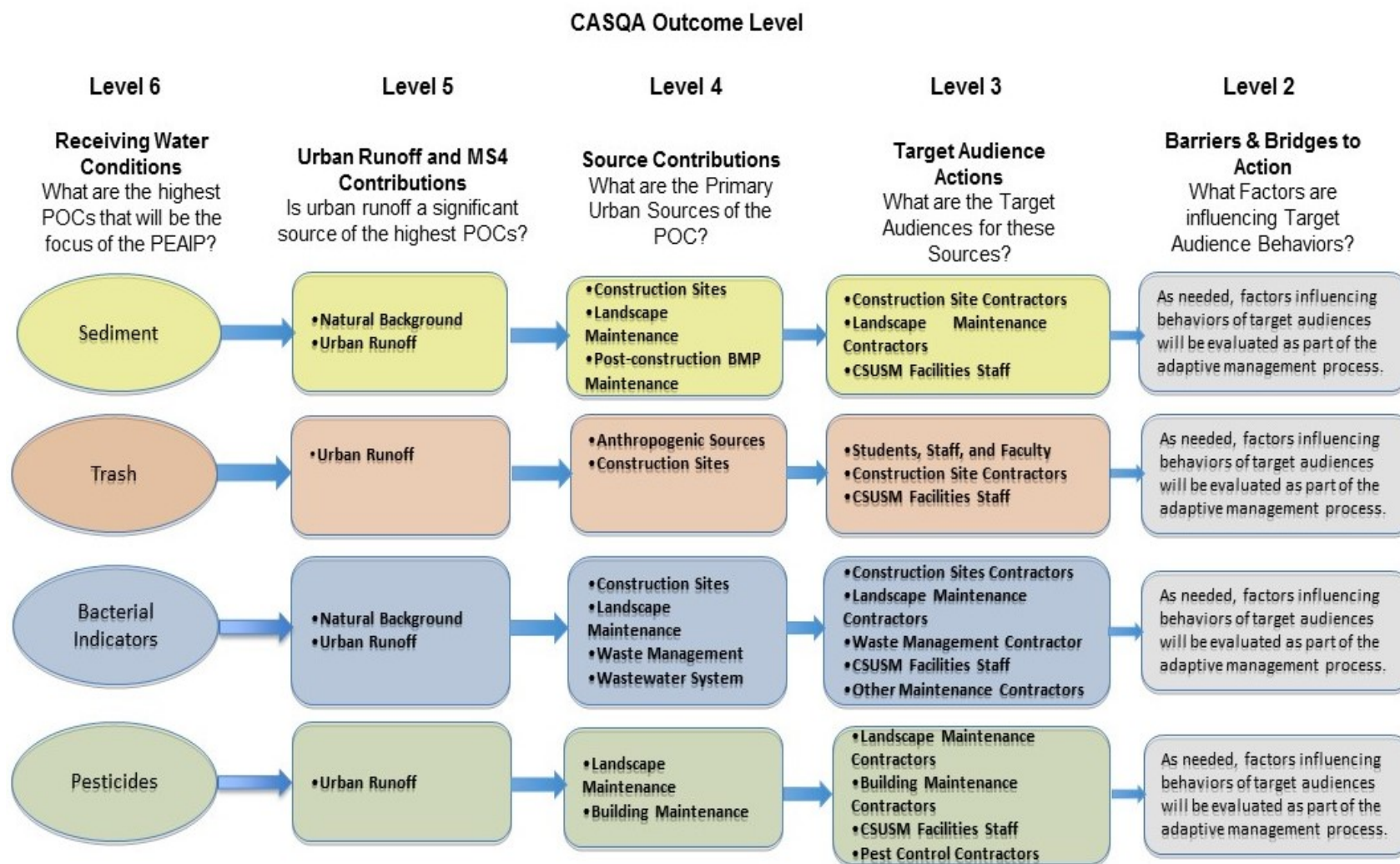
The flow chart in **Figure 7** builds from **Figure 6** and includes standard text addressing Outcome Level 2.

This outcome level should be assessed by your agency on an as-needed basis as part of the adaptive management process (see **Section 5**).

¹⁴ See 2015 CASQA Guidance Document, Section 5.3 Outcome Level 2: Barriers and Bridges to Action

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Figure 7. Assessment of Barriers and Bridges to Action



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2.3. IDENTIFICATION OF THE STORMWATER PROGRAM ACTIVITIES (OUTCOME LEVEL 1)¹⁵

This section provides an overview of Outcome Level 1 and identifies the Program Elements for which the implementation of prioritized stormwater program activities (BMPs) will be evaluated during EAs.

For each desired behavior change that will be targeted:

- 1) What specific activities will be targeted to promote behavior change (i.e., decrease PGAs, increase implementation of BMPs) in the target audience(s) (e.g., outreach, training, incentives, permits)?
- 2) What specific BMPs will be targeted for direct implementation by the MS4 Program?

Level 1 Outcomes focus on the various activities that are conducted within a program. Examples of these activities include providing stormwater pollution and prevention education to students, inspecting facilities and construction sites, conducting surveys of target audiences, and conducting visual inspection and monitoring of MS4 outfalls. Outcome Level 1 only measures the *implementation* of the stormwater program, rather than the *impact* of the program is having. The EAs will focus on the impact of the stormwater program by assessing Outcome Levels 2 through 4 as they relate to the high priority POCs.

Based on the identification of the highest priority POCs and their potential sources, target audiences, and key implementation activities (prioritized BMPs), CSUSM has identified the Program Elements for which the implementation of prioritized BMPs will be assessed (**Table 3**).

The 303(d) list, limited local monitoring data, and local programmatic information were reviewed, and best professional judgment and/or knowledge of local and/or regional water quality issues were used to identify the primary urban sources of the POCs. This understanding was used as the basis for both the management questions (see **Sections 3 and 4**) and the identification of prioritized BMPs, or key implementation activities, for specific target audiences.



The table below provides a visual overview of the Program Elements that will be assessed for the selected POC using the management questions outlined in **Section 3**. In each case, management questions have been identified for each POC for each Program Element (e.g., the Construction Site Stormwater Runoff Control Program and the Pollution Prevention and Good Housekeeping Program) for which it may apply

Table 3 has been customized for CSUSM's POCs and management questions. That is, if a Program Element has POC-specific management questions. If there are no management questions for a Program Element, it is indicated in the table with "--."

¹⁵ See 2015 CASQA Guidance Document, Section 6.0 Program Implementation Strategies and Section 6.2 Step 1-A: Program Implementation Activities

Table 3. Program Elements for Which Prioritized BMPs Will Be Assessed through the Identified Management Questions

Program Element	Phase II Permit Provisions(s)	Pollutants of Concern (POCs)			
		Sediment	Trash	Bacterial Indicators	Pesticides
Education and Outreach	F.5.b	✓	✓	✓	✓
Public Involvement and Participation	F.5.c	✓	✓	✓	✓
Illicit Discharge Detection and Elimination	F.5.d	✓	✓	✓	✓
Construction Site Stormwater Runoff Control	F.5.e	✓	✓	✓	--
Pollution Prevention/Good Housekeeping	F.5.f	✓	✓	✓	✓
Post Construction Stormwater Management	F.5.g	--	--	--	--

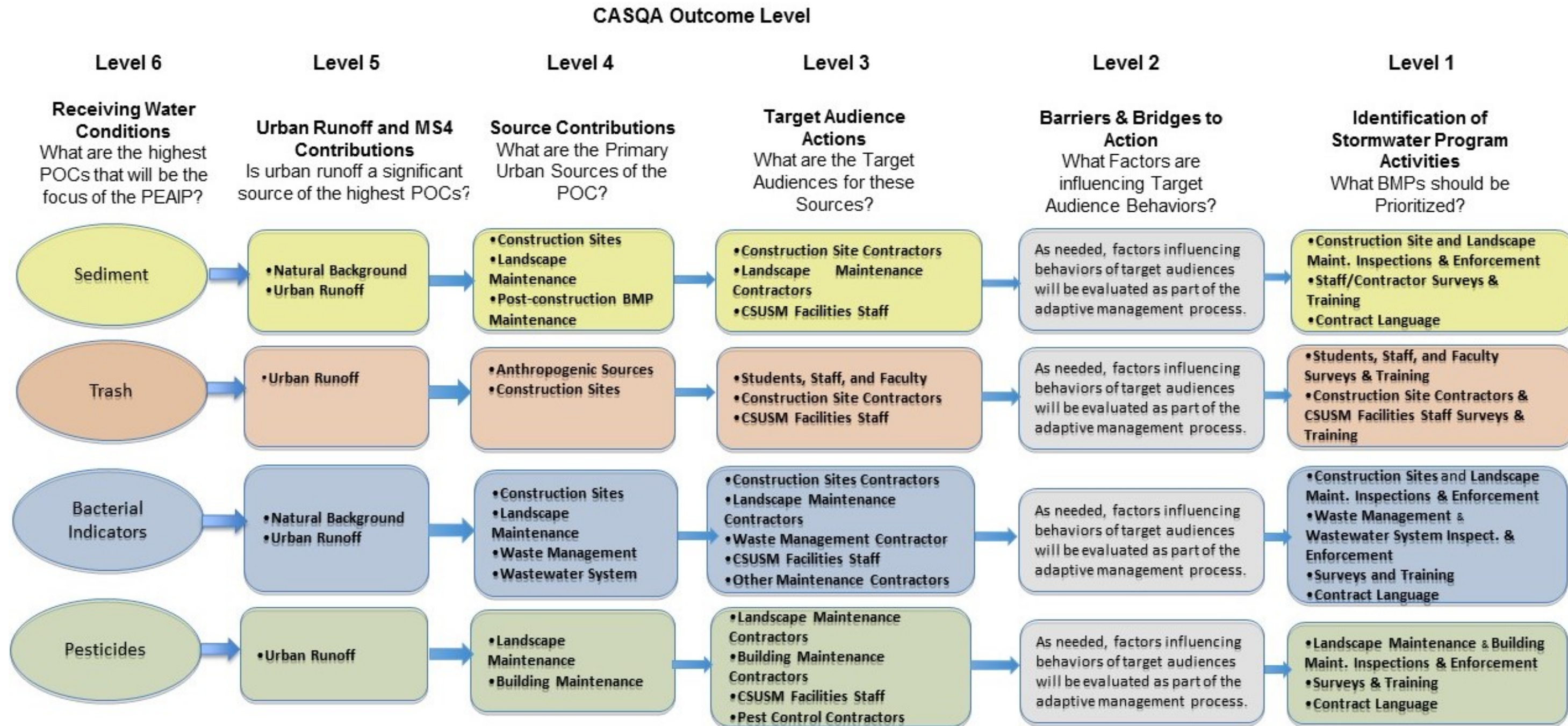
For each high priority POC, a summary of prioritized BMPs for the identified target audiences is provided in **Figure 8**. More detail is provided within the management questions overview (**Section 3**), as well as the management questions, data assessment and collection table(s) within **Section 4**.



The flow chart in **Figure 8** builds from **Figure 7** and identifies the prioritized BMPs for specific target audiences and sources of the high priority POCs.

The implementation of these prioritized BMPs will be assessed by your agency's program using the management questions that will be developed in **Section 3**.

Figure 8. Prioritized BMPs Identified for Target Audiences



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3. Management Questions¹⁶

This section provides an overview of the process by which management questions are developed for the high priority POCs in order to assess the implementation of prioritized stormwater program activities (i.e., BMPs). Management questions are needed to guide the PEAIP process and serve as the framework defining the method by which the stormwater program will be adaptively improved.

In order to focus the EAs, CSUSM has identified management questions for the prioritized BMPs that may be implemented to address the high priority POCs.

The assessment data and information collected by CSUSM (**Section 4**) are focused on Outcome Levels 2 through 4 and will be used to answer programmatic-based management questions related to the prioritized BMPs.

Pursuant to Provision E.14(a)(ii)(e-f), the types of questions that were considered for this PEAIP include the following:¹⁷

- To what extent did prioritized BMPs or group of BMPs reduce pollutant loads from their sources to the storm drain system?¹⁸ [OL4]
- To what extent did prioritized BMPs or group of BMPs change the target audience's behavior?¹⁹ [OL3]
- What barriers or bridges are influencing or could influence the target audience's ability or desire to implement the prioritized BMPs or group of BMPs? [OL2]

Based on a review of the types of management questions that may be utilized (above), the 303(d) list, and limited local monitoring data, as well as an understanding of the primary urban sources of the POCs, CSUSM has identified management questions for each of the high priority POCs as listed in the tables in Section 4.

The management questions and CASQA outcome level(s) that they are addressing are provided for each selected high priority POC in the **Tables 4 through 7** in **Section 4**.

The CASQA Pesticide Subcommittee is developing management questions for **pesticides** that will be assessed annually by the Subcommittee and published as part of its annual report. CSUSM may elect in the future to reference the report and the resulting analyses completed by CASQA.

¹⁶ See 2015 CASQA Guidance Document, Section 7.3 Assessment Objectives, Attachment B: Sources and Activities Profile Sheets, and Attachment C: Pollutant Profile Sheets

¹⁷ The PEAIP is focused on the *impact* that the stormwater program is having rather than the strict *implementation* of the program. Thus, the question listed in Provision E.14.a.(ii)(e)(1) regarding implementation of the Permit requirements is not included in the PEAIP.

¹⁸ E.14.a.(ii)(e)(3)

¹⁹ E.14.a.(ii)(e)(2)

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4. Data Assessment and Collection

This section provides an overview of the data assessment and collection methods that will be used to track, analyze, and report the information during EAs. In addition, the specific assessment data and information that may be tracked and reported as a part of the reporting processes and used within the EAs are identified. The data collected will be used to assist in answering the management questions that have been developed.

4.1. DATA ASSESSMENT METHODS²⁰

This section provides an overview of the types of data assessment methods that may be used to analyze the information and data collected for EAs.

During the EA process, the data collected will be assessed and/or analyzed using a variety of methods such as:

- **Qualitative assessment** includes confirmation that an activity (e.g., construction site inspections) was conducted and/or that a specific task (e.g., completion of a proper trash disposal education posted on website page) was completed, as well as narrative assessment.
- **Descriptive statistics** are numbers that are used to summarize and describe data. Several descriptive statistics are often used at one time, to give a full picture of the data. Examples of descriptive statistics are counts (includes quantification and tabulation), averages, variance, etc. Other information includes: direct quantitative measurements of pollutant load removal, estimates of pollutant load removal for BMPs where direct measurement of pollutant removal is overly challenging, and direct quantitative measurement of behaviors that serve as proxies of pollutant removal or reduction (e.g., number of cigarette butts recovered).
- **Comparisons to established reference points** involve comparing collected data to established targets (targeted outcomes, discharge prohibitions, WQOs, required activity levels, etc.) or other reference points (other programs, previous results, baseline values, visual comparison using photographs over time, etc.).
- **Temporal change** is change over time. This includes variability, trends, and changes due to program implementation (e.g., simple change [absolute or %] or statistical trends).
- **Spatial analysis** allows comparisons between watersheds or other geographic areas. Impacts of runoff and/or control measures can be evaluated based on characteristics of the geographic regions (differences in land use, geology and geomorphology, hydromorphology, etc.).

²⁰ See 2015 CASQA Guidance Document, 6.3 Step 1-B Data Collection and Analysis Activities and 7.5 Data Analysis

4.2. DATA COLLECTION METHODS²¹

This section provides an overview of the types of data collection methods that may be used to obtain information and data to be analyzed during EAs.

The assessment data will be collected through various means such as:

- **Internal Tracking by Stormwater Program** of internal program data only (e.g., inspection data, public outreach and education efforts)
- **Reporting to Stormwater Program** by third parties only (e.g., BMP maintenance certifications, facility monitoring data)²²
- **Site Investigations/Inspections** conducted by stormwater programs to directly observe or assess a practice (e.g., inspections, site visits, complaint investigations)
- **Interviews** conducted by stormwater programs to discern awareness and behavior (e.g., of third parties²³ or stormwater program staff, CSUSM staff, students)
- **Surveying** by stormwater programs of third parties or stormwater program staff to discern knowledge, attitudes, awareness, behavior of a target audience (e.g., pre-/post-training surveys, public outreach surveys)
- **Monitoring and Sampling** data obtained directly by stormwater programs or contractors (e.g., receiving water or MS4 sampling, facility visual observations during inspections)
- **Review of External Data Sources** by stormwater program staff (e.g., of data or information obtained via literature, the Regional Water Board, other regulatory programs, online databases, third parties)
- **Special Investigations** can encompass any of the categories above, but normally involve a more intensive one-time focus.

4.3. DATA REQUIREMENTS FOR SELECTED METRICS AND OUTCOME LEVELS

This section provides an introduction to the table(s) specifying the data requirements (i.e., management questions, data assessment methods, and data analysis methods) for each POC. Once the management questions are established for the high priority POCs, the appropriate data assessment and collection methods are identified to answer these management questions and guide the EA process.

²¹ See 2015 CASQA Guidance Document, 6.3 Step 1-B Data Collection and Analysis Activities, 7.4 Data Collection, Attachment B: Sources and Activities Profile Sheets, and Attachment C: Pollutant Profile Sheets

²² The Phase II Permit requires CSUSMs to identify assessment methods for privately owned BMPs. At this time, the CSUSM does not anticipate that these types of BMPs (e.g., structural, treatment control) will need to be evaluated for the high priority POCs that have been identified.

²³ Third party examples include: construction contractors, maintenance contractors, and pesticide applicators.

In the table(s) below, the POC-specific management questions representing focused program activities and/or prioritized BMPs are presented by Program Element, along with the assessment methods that will be used during the EA process and the associated assessment data that should be collected for evaluation (**Table 4 through 7**). The CASQA outcome levels that may be supported by the EA results are also indicated. Where applicable, the units for the required data are specified.

Although **Table 4 through 7** identify the management questions, data assessment methods, and data collection methods that will initially be used for the EAs, future PEAIPs may modify and/or incorporate other management questions or data assessment/collection methods based on the information gained from the implementation of the PEAIP. Any modifications to the PEAIP will be identified as a part of the Annual Reports.



The tables below outlines data assessment and data collection methods that would be used to address the management questions for **sediment, trash, bacterial indicators and pesticides**.

The content of each column should be as follows:

Management Questions: List the management questions identified in **Tables 4 through 7** for specific Program Elements and outcome levels. Each primary management question should have its own row.

Data Assessment Methods: Identify the specific data assessment type (e.g., Descriptive Statistics). Identify the specific metrics and how they will be analyzed in order to answer the management questions.

Data Collection Methods: Identify the specific data collection type (e.g., Internal Tracking by Stormwater Program). Identify the specific information or data needed and how it will be collected.

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Table 4. Sediment Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

SEDIMENT		
Management Questions	Data Assessment Methods	Data Collection Methods
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7		
<ul style="list-style-type: none"> • Are the construction sites being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing sediment from leaving the site? <ul style="list-style-type: none"> ○ Are Erosion and Sediment Control BMPs being implemented and maintained? ○ Are any of the construction sites a source of illicit discharges of sediment? <ul style="list-style-type: none"> ▪ If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? ▪ What are the common issues with BMP implementation that are identified during inspections? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • Total # of project sites • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving sediment from construction sites • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> • Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

Table 4 - Continued

SEDIMENT		
Management Questions	Data Assessment Methods	Data Collection Methods
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> Are landscape areas a source of sediment (from erosion) to the MS4? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> # inspections conducted # and % of sites adequately implementing BMPs # verified illicit discharges involving sediment from landscaped areas # and % of sites requiring follow-up inspection # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <p>Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified Track illicit discharge source investigation results

Table 4 - Continued

SEDIMENT		
Management Questions	Data Assessment Methods	Data Collection Methods
Post-Construction Stormwater Management Program – New Development & Redevelopment [Outcome Level 2-3] - SWMP Section 8.8		
<ul style="list-style-type: none"> • Are post-construction BMPs being managed so that they are in compliance with the permit, specifications, and contract documents? <ul style="list-style-type: none"> ○ Are post-construction BMPs a source of sediment (from erosion) to the MS4? ○ Are post-construction BMPs inspected and maintained at an adequate frequency to remove accumulated sediment? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # inspections conducted • # and % of post-construction BMPs found to have adequate sediment removal capacity. • # verified illicit discharges involving sediment from post-construction BMPs • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of post-construction BMPs, issues identified • Track illicit discharge source investigation results

Table 5. Trash Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

TRASH		
Management Questions	Data Assessment Methods	Data Collection Methods
Pollution Prevention / Good Housekeeping for Permittee Operations Program - Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> Are the facilities/building trash areas being managed so that they are in compliance with the corresponding requirements and contract documents and preventing trash from being properly disposed and removed from the campus? <ul style="list-style-type: none"> Are trash and debris control BMPs being implemented and maintained? Are any of the facilities a source of illicit discharges of trash? <ul style="list-style-type: none"> If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? What are the common issues with BMP implementation that are identified during inspections? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> Total # of sites subject to inspection # inspections conducted # and % of sites adequately implementing BMPs # verified illicit discharges involving trash from facilities or areas # and % of sites requiring follow-up inspection # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified Track illicit discharge source investigation results

Table 5 - Continued

TRASH		
Management Questions	Data Assessment Methods	Data Collection Methods
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7		
<ul style="list-style-type: none"> Are the construction sites managing trash so that they are in compliance with the corresponding permits, plans, and contract documents and preventing trash from leaving the site? <ul style="list-style-type: none"> Are trash and debris control BMPs being implemented and maintained? Are any of the construction sites a source of illicit discharges of trash? <ul style="list-style-type: none"> If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? What are the common issues with BMP implementation that are identified during inspections? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> Total # of project sites # inspections conducted # and % of sites adequately implementing BMPs # verified illicit discharges involving trash from construction sites # and % of sites requiring follow-up inspection # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified Track illicit discharge source investigation results

Table 6. Bacterial Indicators Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

BACTERIAL INDICATORS		
Management Questions	Data Assessment Methods	Data Collection Methods
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7		
<ul style="list-style-type: none"> • Are the construction sites being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing sediment from leaving the site? <ul style="list-style-type: none"> ○ Are septic waste (portable toilets) being implemented and maintained? ○ Are any of the construction sites a source of illicit discharges of bacteria sources? <ul style="list-style-type: none"> ▪ If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? ▪ What are the common issues with BMP implementation that are identified during inspections? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • Total # of project sites • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving bacteria sources from construction sites • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> • Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

Table 6 - Continued

BACTERIAL INDICATORS		
Management Questions	Data Assessment Methods	Data Collection Methods
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> • Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> ○ Are landscape areas a source of bacterial indicators (from erosion, animal waste) to the MS4? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving sediment from landscaped areas • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

Table 6 - Continued

BACTERIAL INDICATORS		
Management Questions	Data Assessment Methods	Data Collection Methods
Continued. Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> Are the waste management areas (trash areas) being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing bacteria from leaving the site? <ul style="list-style-type: none"> Are trash bins and receptacles in food service areas being implemented and maintained? Are any of the waste management areas a source of illicit discharges of bacteria sources? <ul style="list-style-type: none"> If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? What are the common issues with BMP implementation that are identified during inspections? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> # inspections conducted # and % of sites adequately implementing BMPs # verified illicit discharges involving bacteria sources from waste management areas # and % of sites requiring follow-up inspection # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified Track illicit discharge source investigation results

Table 6 - Continued

BACTERIAL INDICATORS		
Management Questions	Data Assessment Methods	Data Collection Methods
Continued. Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> • Are wastewater system lines/facilities being managed to prevent overflows, spills, etc. and so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> ○ Are wastewater system lines/facilities a source of bacterial indicators (due to overflows, line breaks, etc.) to the MS4? ○ Is the wastewater system operated and maintained at an adequate level to prevent or minimize sanitary sewer overflows? ○ Are spills adequately captured to prevent discharges to the MS4? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving bacterial indicator (sewer spills) reaching the MS4 • # verified illicit discharges involving bacterial indicator (sewer spills) <u>not</u> reaching the MS4 (captured and removed) • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

Table 7. Pesticides Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

PESTICIDES		
Management Questions	Data Assessment Methods	Data Collection Methods
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Pesticides, Herbicide, and Fertilizer Application and New Landscape Design Maintenance [Outcome Levels 2,3] – SWMP 9.11		
<ul style="list-style-type: none"> • Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> ○ Are landscape areas a source of pesticides (from erosion, poor application, over-watering) to the MS4? ○ Are pesticides applicators following the prescribed BMPs? ○ Are BMPs adequate to prevent, minimize pesticide discharges to the MS4? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving pesticides from landscaped areas • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <p>Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results
<ul style="list-style-type: none"> • Are new landscape areas being designed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing pesticides from leaving the site, being used excessively? <ul style="list-style-type: none"> ○ Are new landscaped areas established as designed? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # new landscape projects • # and % of new landscape projects adequately implementing design principles • # and % of sites requiring follow-up inspection to verify corrective actions • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <ul style="list-style-type: none"> • Narrative assessment of common issues with BMP implementation that were identified 	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

Table 7 - Continued

PESTICIDES		
Management Questions	Data Assessment Methods	Data Collection Methods
Pollution Prevention / Good Housekeeping for Permittee Operations Program – General O&M Activities [Outcome Level 2,3] – SWMP Section 9.8-9.10		
<ul style="list-style-type: none"> • Are pesticide applications for facilities being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> ○ Are facilities a source of pesticides (from poor application, over-watering) to the MS4? ○ Are pesticides applicators following the prescribed BMPs? ○ Are BMPs adequate to prevent, minimize pesticide discharges to the MS4? 	<p>Descriptive Statistics</p> <ul style="list-style-type: none"> • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving pesticides from facilities • # and % of sites requiring follow-up inspection • # and % of sites in compliance pre- and post-follow-up inspection <p>Qualitative Assessment</p> <p>Narrative assessment of common issues with BMP implementation that were identified</p>	<p>Internal Tracking by Stormwater Program; Site Investigations/Inspections</p> <ul style="list-style-type: none"> • Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified • Track illicit discharge source investigation results

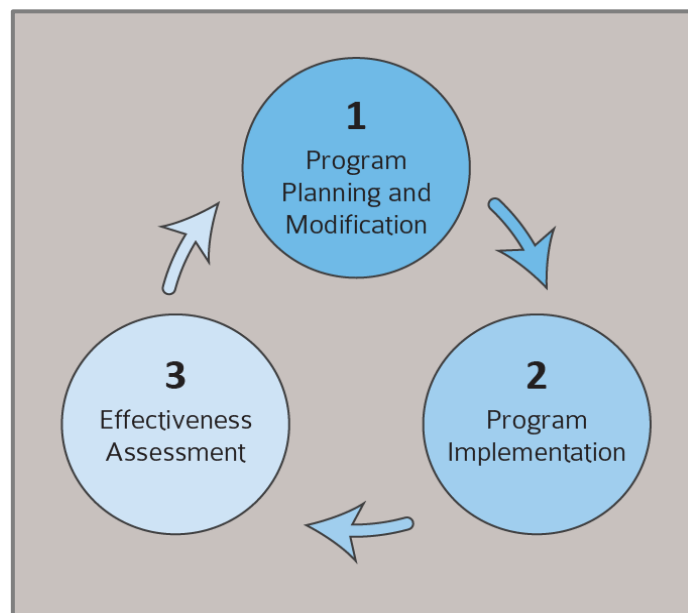
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5. Program Reporting and Modifications²⁴

This section provides more detail on the program management cycle, including conducting EAs and how program modifications may be identified using the results of the EAs.

Beginning in Year 3, the PEAIP will be implemented, and EAs will be conducted each year and submitted along with the Annual Report. The completion of EAs is part of the program management cycle (**Figure 9**) and will, over time, inform program modifications.

Figure 9. The Program Management Cycle (CASQA, 2015)



During the EA process, the data and information collected to assist in answering the management questions (see **Section 4.3**) will be evaluated. These data will be assessed and/or analyzed using a variety of methods (see **Section 4.1**). The analysis methods to be used to address specific management questions have been identified in **Section 4.3**.

The EA may include both written and visual (i.e., tabular, graphical) depictions of the raw data (e.g., inspection data tracked internally by stormwater program) and the analyses that are conducted (e.g., descriptive statistics, qualitative analysis). The results of the analyses will be considered along with the POC-specific management questions. Depending on the availability of

²⁴ See 2015 CASQA Guidance Document, Section 7.0 Assessment Tools and Strategies, Section 7.2 Iterative and Adaptive Management, Section 7.3 Assessment Objectives, and Section 8.2 Program Modifications

historical data, it is expected that more complex trends analyses will occur as part of the long-term EAs.

When EAs are conducted, a few issues (or “problem scenarios”) will be kept in mind when considering cause and effect and evaluating the effectiveness of the prioritized BMPs.²⁵ The issues may be one-to-one, one-to-many, many-to-one, or many-to-many (**Figure 10**). These types of relationships will be taken into consideration when answering management questions and drawing conclusions during the EA process.

Figure 10. Example Problem Scenarios (CASQA, 2015)

A	B	C	D
Single Problem	Single Problem	Multiple Problems	Multiple Problems
⇓	⇓	⇓	⇓
Single Problem	Multiple Problems	Single Problem	Multiple Problems
(One-to-One)	(One-to-Many)	(Many-to-One)	(Many-to-Many)

Real-world relationships between outcomes in a typical stormwater management scenario are more likely to exist in complex webs (i.e., scenarios B, C, and/or D in **Figure 10**) than simple, linear chains. For example, a single MS4 discharge might receive contributions from hundreds or thousands of individual sources, varying with time. Multiple education activities might address the same intended behavioral change in a target audience, and only some of them to any effect. In each of these cases, it can be difficult to determine how any individual outcome is actually causing an observed effect or a desired change. Moreover, this effect can be multiplied as an analysis moves through successive layers of outcome levels. This emphasizes the need for focusing resources on the highest priority outcomes first.

In conjunction with the long-term EAs that will be conducted beginning with the Annual Report in Year 5, CSUSM will review the EAs that have been conducted, as well as recommendations based on the experience of stormwater staff in implementing the program, and identify areas for improvement. The management questions and data collection results will be reviewed and used as the basis for summarizing the short- and long-term progress of the stormwater programs towards reducing the potential impacts of urban runoff on receiving waters. CSUSM will identify modifications that may be necessary to improve program effectiveness at reducing pollutant loads, achieving the MEP standard, and protecting water quality.

CSUSM will provide a summary identifying the following types of modifications (as applicable):

²⁵ See 2015 CASQA Guidance Document, Section 3.0 Introduction to Strategic Planning for Stormwater Management Programs

- Improving upon the PEAIP by identification of any potential data gaps and/or revisions that may be necessary for the evaluation of the POC-specific management questions;
- Improving upon prioritized BMPs (i.e., key implementation activities) that have not been fully implemented and/or did not achieve the expected result;
- Continuing and expanding upon prioritized BMPs that proved to be effective, including identifying new prioritized BMPs or modifications to existing prioritized BMPs, with the goal of increasing pollutant load reductions;
- Discontinuing BMPs that may no longer be effective; and
- Based upon identification of bridges and barriers, changes in how CSUSM intends to provide outreach to target audiences in order to reduce PGAs and increase implementation of prioritized BMPs.

The summary of program modifications will be provided with the fifth year Annual Report and will include the identified priority program areas and the schedule CSUSM will follow to complete the identified modifications during the next permit term. By conducting these assessments and modifying the program as needed, CSUSM will ensure that the program management cycle is utilized (**Figure 9** and described in **Section 2**).

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Appendix A

GLOSSARY OF TERMS

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Glossary of Terms²⁶

Adaptive Management: Adaptive Management is a structured process of directing decision-making with an aim toward achieving identified goals or milestones and addressing/reducing uncertainty over time.

Assessment Methods: Assessment Methods are processes used to obtain or evaluate assessment data or information. Depending on the particular outcome and/or management questions, numerous assessment methods may be used.

Best Management Practice (BMP): Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollutants discharged to waters of the United States.

California Stormwater Quality Association (CASQA): Since 1989 CASQA has been a leader in the stormwater field. CASQA represents a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout the state. The Effectiveness Assessment Subcommittee has provided input and guidance on stormwater program effectiveness assessment issues since 2004; developing a standardized conceptual approach to evaluating municipal program elements in 2007 and updating that approach in 2015.

Effectiveness Assessment (EA): Effectiveness Assessment includes the methods and activities that stormwater managers use to evaluate how well their programs are working, and to identify modifications necessary to improve them. EA is the mechanism by which feedback is evaluated to enable ongoing adaptive management.

Program Management Cycle: The Program Management Cycle broadly divides stormwater program management into three phases:

1. Program planning and modification;
2. Program implementation; and
3. Effectiveness assessment.

Over time, the repeated application of this process—each phase continuously informing the next—should result in the improvement of stormwater programs and the achievement of the desired results that they are designed to achieve.

Maximum Extent Practicable (MEP): The technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) for storm water that operators of MS4s must meet.

Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of source and/or treatment control BMPs. MEP primarily emphasizes pollution prevention and source control BMPs (as the first line of defense) in combination with treatment methods serving as a backup (additional line of defense). MEP considers economics and is generally, but not necessarily, less stringent than best available technology or best available. A definition for MEP is not provided either in the statute or in the

²⁶ The Glossary of Terms is primarily based on the Glossary of Acronyms and Terms in the *Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs*, CASQA 2015

regulations. Instead the definition of MEP is dynamic and will be defined by the following process over time: municipalities propose their definition of MEP by way of the programs set forth in their stormwater management plans/programs. Their total collective and individual activities conducted pursuant to the runoff management programs becomes the proposal for MEP as it applies both to overall effort, as well as to specific activities (e.g., MEP for street sweeping, or MEP for MS4 maintenance).

In the absence of a definition, the State Water Resources Control Board defined MEP as set forth in a memo dated 11 February 1993, entitled "Definition of Maximum Extent Practicable," Elizabeth Jennings, Senior Staff Counsel.²⁷

Municipal Separate Storm Sewer System (MS4)²⁸: An MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is:

- Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.;
- Designed or used to collect or convey stormwater;
- Not a combined sewer; and
- Not part of a Publicly Owned Treatment Works (POTW) (sewage treatment plant).

Outcome Level: The CASQA approach utilizes a series of six categories of outcomes to establish a logical and consistent organizational scheme for assessing and relating individual outcomes. The outcome levels represent a general progression of conditions that are assumed to be related in a sequence of causal relationships.

- **Outcome Level 6 (Receiving Water Conditions):** Level 6 Outcomes describe receiving water conditions. They can apply either to existing conditions or to improvements that will be sought over time through program implementation.
- **Outcome Level 5 (MS4 Contributions):** Level 5 Outcomes may be measured within the MS4, or as discharges from it. Evaluation typically focuses on pollutant concentrations and/or loads. Level 5 Outcomes provide a direct linkage between upstream sources and receiving waters and are a critical expression of program success.
- **Outcome Level 4 (Source Contributions):** Level 4 Outcomes measure reductions in the discharge of pollutants from sources.
- **Outcome Level 3 (Target Audience Actions):** Level 3 Outcomes address the actions of target audiences, and whether or not changes are occurring over time. The major categories of target audience actions are pollutant-generating activities (PGAs); best management practices (BMPs) and supporting behaviors.
- **Outcome Level 2 (Barriers and Bridges to Action):** Level 2 Outcomes provide a means of gauging whether activities are producing changes in the awareness, knowledge,

²⁷ http://www.swrcb.ca.gov/water_issues/programs/stormwater/docs/def_mep_bj_21193.pdf

²⁸ Based on the definition in Title 40 Code of Federal Regulations §122.26 (b)(8)

or attitudes of target audiences. Level 2 Outcomes are often used to gauge progress in, or to refine approaches for, achieving Level 3 Outcomes.

- **Outcome Level 1 (Stormwater Program Activities):** Level 1 Outcomes, which are often defined by specific stormwater permit requirements, address a variety of stormwater program activities. This outcome level measures the *implementation* of the program, not the *impact* that the stormwater program is having.

Phase II MS4 Permit: The Phase II Permit, issued in 1999, requires regulated small MS4s in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges. Each regulated MS4 is required to develop and implement a stormwater management program/approach to reduce and/or eliminate the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and effectively prohibit discharges of non-stormwater into its MS4, unless such discharges are authorized.

Pollutant of Concern (POC): A pollutant that is reasonably expected to be present in urban runoff and may reasonably be expected to affect the designated uses of the receiving water. Urban runoff pollutants of concern may include sediments, non-sediment solids, nutrients, pathogens, oxygen-demanding substances, petroleum hydrocarbons, heavy metals, floatables, polycyclic aromatic hydrocarbons (PAHs), trash, and/or pesticides and herbicides.

Program Element: Program Elements are distinct components of a stormwater program that focus on reducing pollutants from a particular activity or pollutant source/target audience. The Program Elements for the Phase II municipal stormwater program include the following:

- Program Management
- Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction
- Pollution Prevention/Good Housekeeping
- Post Construction
- Water Quality Monitoring

Receiving Water Conditions: Receiving Water Conditions can include any chemical, biological, or physical parameter that can be measured or assessed in receiving waters (i.e., chemical concentrations, dissolved oxygen levels, biological integrity, species diversity, eutrophication, microbiological or toxicological conditions, hydromodification).

Source: “Source” means anything with the potential to generate pollutants prior to their introduction to the MS4. A typical program broadly addresses the following source categories: residential areas, construction and development sites, commercial and industrial sources, and municipal operations. Sources may alternatively be defined by the populations associated with areas, facilities, or activities, e.g., residents, dog-walkers, mobile car washers, or restaurant employees.

Source Contribution: Source Contribution can refer either to a source loading or to a reduction in that loading. Source loadings are the pollutant loadings added by sources to a MS4. Source

reductions are changes in the amounts of pollutants associated with specific sources before and after control measures are employed.

Target Audience: A “Target Audience” consists of the people (individuals and populations) that are expected to gain knowledge or engage in the behaviors that a stormwater program is intended to elicit. BMPs and other controls are implemented by many types of third parties, so the term “target audience” is broadly defined and virtually any group of people could be a target audience, including municipal staff members, the general public, elected and appointed officials, other government agencies, etc.

For each pollutant listed with program element being implemented, the management questions and descriptive statistics are listed in the tables. The assessment or response column is used to complete the entries for each reporting year. Lastly, a qualitative assessment narrative may be provided for each pollutant and program element. The annual assessment analysis is conducted using data collection methods.

Internal Tracking by Stormwater Program - Site Investigations/Inspections

Using the standard inspection form, track inspection results for all sites inspected, including number of initial inspections and follow-up inspections, number and type of BMPs implemented, issues identified. Also, CSUSM tracks illicit discharge source investigation results for reporting.

Sediment Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

SEDIMENT	
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> Are the construction sites being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing sediment from leaving the site? 	
<ul style="list-style-type: none"> Are Erosion and Sediment Control BMPs being implemented and maintained? 	
<ul style="list-style-type: none"> Are any of the construction sites a source of illicit discharges of sediment? 	
<ul style="list-style-type: none"> If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? 	
<ul style="list-style-type: none"> What are the common issues with BMP implementation that are identified during inspections? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> Total # of project sites 	
<ul style="list-style-type: none"> # inspections conducted 	
<ul style="list-style-type: none"> # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> # verified illicit discharges involving sediment from construction sites 	
<ul style="list-style-type: none"> # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> # and % of sites in compliance post-follow-up inspection 	

SEDIMENT	
Qualitative Assessment	
Narrative assessment of common issues with BMP implementation that were identified	

SEDIMENT	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? 	
<ul style="list-style-type: none"> Are landscape areas a source of sediment (from erosion) to the MS4? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> # inspections conducted 	
<ul style="list-style-type: none"> # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> # verified illicit discharges involving sediment from landscaped areas 	
<ul style="list-style-type: none"> # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment	
Narrative assessment of common issues with BMP implementation that were identified	

SEDIMENT	
Post-Construction Stormwater Management Program – New Development & Redevelopment [Outcome Level 2-3] - SWMP Section 8.8	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are post-construction BMPs being managed so that they are in compliance with the permit, specifications, and contract documents? 	
<ul style="list-style-type: none"> ○ Are post-construction BMPs a source of sediment (from erosion) to the MS4? 	
<ul style="list-style-type: none"> ○ Are post-construction BMPs inspected and maintained at an adequate frequency to remove accumulated sediment? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of post-construction BMPs found to have adequate sediment removal capacity. 	
<ul style="list-style-type: none"> • # verified illicit discharges involving sediment from post-construction BMPs 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment	
Narrative assessment of common issues with BMP implementation that were identified	

Trash Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

TRASH	
Pollution Prevention / Good Housekeeping for Permittee Operations Program - Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are the facilities/building trash areas being managed so that they are in compliance with the corresponding requirements and contract documents and preventing trash from being properly disposed and removed from the campus? 	
<ul style="list-style-type: none"> ○ Are trash and debris control BMPs being implemented and maintained? 	
<ul style="list-style-type: none"> ○ Are any of the facilities a source of illicit discharges of trash? 	
<ul style="list-style-type: none"> ○ If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? 	
<ul style="list-style-type: none"> • What are the common issues with BMP implementation that are identified during inspections? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • Total # of sites subject to inspection 	
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> • # verified illicit discharges involving trash from facilities or areas 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	

TRASH	
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> Are the construction sites managing trash so that they are in compliance with the corresponding permits, plans, and contract documents and preventing trash from leaving the site? 	
<ul style="list-style-type: none"> Are trash and debris control BMPs being implemented and maintained? 	
<ul style="list-style-type: none"> Are any of the construction sites a source of illicit discharges of trash? 	
<ul style="list-style-type: none"> If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? 	
<ul style="list-style-type: none"> What are the common issues with BMP implementation that are identified during inspections? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> Total # of project sites 	
<ul style="list-style-type: none"> # inspections conducted 	
<ul style="list-style-type: none"> # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> # verified illicit discharges involving trash from construction sites 	
<ul style="list-style-type: none"> # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	

Bacterial Indicators Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

BACTERIAL INDICATORS	
Construction Site Stormwater Runoff Control [Outcome Level 2-3] – SWMP Section 7	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are the construction sites being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing sediment from leaving the site? 	
<ul style="list-style-type: none"> ○ Are septic wastes (portable toilets) being implemented and maintained? 	
<ul style="list-style-type: none"> ○ Are any of the construction sites a source of illicit discharges of bacteria sources? 	
<ul style="list-style-type: none"> ○ If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? 	
<ul style="list-style-type: none"> • What are the common issues with BMP implementation that are identified during inspections? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • Total # of project sites 	
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> • # verified illicit discharges involving bacteria sources from construction sites 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment	
Narrative assessment of common issues with BMP implementation that were identified	

BACTERIAL INDICATORS	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? 	
<ul style="list-style-type: none"> ○ Are landscape areas a source of bacterial indicators (from erosion, animal waste) to the MS4? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> • # verified illicit discharges involving sediment from landscaped areas 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	

BACTERIAL INDICATORS	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are the waste management areas (trash areas) being managed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing bacteria from leaving the site? 	
<ul style="list-style-type: none"> ○ Are trash bins and receptacles in food service areas being implemented and maintained? 	
<ul style="list-style-type: none"> ○ Are any of the waste management areas a source of illicit discharges of bacteria sources? 	
<ul style="list-style-type: none"> ○ If so, are these sites aware of the BMPs that they should be implementing on site, and are these BMPs implemented and maintained? 	
<ul style="list-style-type: none"> • What are the common issues with BMP implementation that are identified during inspections? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> • # verified illicit discharges involving bacteria sources from waste management areas 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	

BACTERIAL INDICATORS	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Operation and Maintenance Activities [Outcome Level 2-3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
• Are wastewater system lines/facilities being managed to prevent overflows, spills, etc. and so that they are in compliance with the permit, specifications, regulations, and contract documents?	
○ Are wastewater system lines/facilities a source of bacterial indicators (due to overflows, line breaks, etc.) to the MS4?	
○ Is the wastewater system operated and maintained at an adequate level to prevent or minimize sanitary sewer overflows?	
○ Are spills adequately captured to prevent discharges to the MS4?	
Descriptive Statistics	Assessment/Responses
• # inspections conducted	
• # and % of sites adequately implementing BMPs	
• # verified illicit discharges involving bacterial indicator (sewer spills) reaching the MS4	
• # verified illicit discharges involving bacterial indicator (sewer spills) <u>not</u> reaching the MS4 (captured and removed)	
• # and % of sites requiring follow-up inspection	
• # and % of sites in compliance post-follow-up inspection	
Qualitative Assessment	
Narrative assessment of common issues with BMP implementation that were identified	

Pesticides Management Questions, Data Assessment Methods, and Data Collection Methods, by Program Element

PESTICIDES	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – Pesticides, Herbicide, and Fertilizer Application and New Landscape Design Maintenance [Outcome Levels 2,3] – SWMP 9.11	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are landscaped areas being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? <ul style="list-style-type: none"> ○ Are landscape areas a source of pesticides (from erosion, poor application, over-watering) to the MS4? • Are pesticides applicators following the prescribed BMPs? <ul style="list-style-type: none"> ○ Are BMPs adequate to prevent, minimize pesticide discharges to the MS4? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # inspections conducted • # and % of sites adequately implementing BMPs • # verified illicit discharges involving pesticides from landscaped areas • # and % of sites requiring follow-up inspection • # and % of sites in compliance post-follow-up inspection 	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are new landscape areas being designed so that they are in compliance with the corresponding permits, plans, and contract documents and preventing pesticides from leaving the site, being used excessively? • Are new landscaped areas established as designed? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # new landscape projects • # and % of new landscape projects adequately implementing design principles 	

PESTICIDES	
• # and % of sites requiring follow-up inspection to verify corrective actions	
• # and % of sites in compliance pre- and post-follow-up inspection	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	

PESTICIDES	
Pollution Prevention / Good Housekeeping for Permittee Operations Program – General O&M Activities [Outcome Level 2,3] – SWMP Section 9.8-9.10	
Management Questions	Assessment/Responses
<ul style="list-style-type: none"> • Are pesticide applications for facilities being managed so that they are in compliance with the permit, specifications, regulations, and contract documents? 	
<ul style="list-style-type: none"> ○ Are facilities a source of pesticides (from poor application, over-watering) to the MS4? 	
<ul style="list-style-type: none"> ○ Are pesticides applicators following the prescribed BMPs? 	
<ul style="list-style-type: none"> ○ Are BMPs adequate to prevent, minimize pesticide discharges to the MS4? 	
Descriptive Statistics	Assessment/Responses
<ul style="list-style-type: none"> • # inspections conducted 	
<ul style="list-style-type: none"> • # and % of sites adequately implementing BMPs 	
<ul style="list-style-type: none"> • # verified illicit discharges involving pesticides from facilities 	
<ul style="list-style-type: none"> • # and % of sites requiring follow-up inspection 	
<ul style="list-style-type: none"> • # and % of sites in compliance post-follow-up inspection 	
Qualitative Assessment Narrative assessment of common issues with BMP implementation that were identified	