



Dist-County-Route: 04-ALA-80
Post Mile Limits: PM 6.38/6.95
Type of Work: Interchange Improvement
Project ID (EA): 0400020155 (04-0A7700)
Program Identification: 20.20.400.100
Phase: PID PA/ED PS&E

Regional Water Quality Control Board(s): San Francisco Bay (2)

Total Disturbed Soil Area: 5.59 acres
(Caltrans): 2.97 acres (City of Berkeley), 0.27 acres (City of Albany) PCTA: 2.88 acres (Caltrans); 2.80 acres (City of Berkeley); 0.13 acres (City of Albany)

Alternative Compliance (acres): 0 ATA 2 (50% Rule)? Yes No

Estimated Const. Start Date: 12/31/2020 Estimated Const. Completion Date: 01/04/2023

Risk Level: RL 1 RL 2 RL 3 WPCP Other: _____

Is MWEL0 applicable? Yes No **To be determined during PS&E phase**

Is the Project within a TMDL watershed? Yes No

TMDL Compliance Units (acres): 0.72

Notification of ADL reuse (if yes, provide date): Yes Date: _____ No

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Analette Ochoa 6/6/19
Analette Ochoa, P.E., Registered Project Engineer Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Ron Kiaaina 6/11/19
Ron Kiaaina, Project Manager Date

Amrinder Jhaj for 6/20/19
Amrinder Jhaj, Designated Maintenance Representative Date

Alex McDonald 6.11.2019
Alex McDonald, Designated Landscape Architect Representative Date

Norman Gonsalves 6/6/2019
Norman Gonsalves, District SW Coordinator Date

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STORMWATER DATA INFORMATION

1. Project Description

The I-80 Gilman Interchange Improvement Project (Project) is located in Alameda County at the Interstate 80 (I-80)/Gilman Street interchange in the cities of Berkeley and Albany (Post Miles [PM] 6.38 to 6.95). Within the limits of the proposed Project, I-80 is a conventional 10-lane freeway with 12-foot lanes and 11-foot shoulders. Gilman Street is a four-lane major arterial with 11-foot lanes and 6-foot shoulders that passes underneath I-80. The I-80/Gilman Street interchange is a four-lane arterial roadway (Gilman Street), with two lanes in the east/west direction that are intersected with four I-80 on- and off-ramps, West Frontage Road, and the Eastshore Highway. The purpose of the Project is to simplify and improve navigation, mobility, and traffic operations; reduce congestion, vehicle queues, and conflicts; improve local and regional bicycle connections and pedestrian facilities; and improve safety at the I-80/Gilman Street interchange. Current conditions, along with an overall increase in vehicle traffic, have created poor, confusing, and unsafe operations in the interchange area for vehicles, pedestrians, and bicyclists.

The Project's Build Alternative proposes to reconfigure the I-80 ramps and intersections at Gilman Street. The I-80 ramps and frontage road intersections at each ramp intersection would be combined to form a single roundabout intersection on each side of I-80. Gilman Street would be reconstructed on the west from the parking lots at Tom Bates Regional Sports Complex along Gilman Street to the eastern side of the 4th Street intersection. Work would also include reconstruction of West Frontage Road, Gilman Street Extension, and Eastshore Highway within the Project limits. Improvements associated with installation of the roundabouts would extend approximately 280 feet south on West Frontage Road from the Gilman Street interchange and approximately 250 feet north and 1,010 feet south on Eastshore Highway from the Gilman Street interchange. Work associated with reconfiguration of the eastbound I-80 off-ramp and on-ramp would extend approximately 820 feet south and 280 feet north of the interchange. Work associated with reconfiguration of the westbound I-80 off-ramp and on-ramp would extend approximately 370 feet north and 230 feet south of the interchange. There are no proposed improvements to the freeway mainline. The Project would also include a new bicycle/pedestrian overcrossing. The bicycle/pedestrian overcrossing structure would be located south of Gilman Street with two staircases incorporated into the overcrossing, one on each side of I-80. There would also be retaining walls on the east and west side of the overcrossing; they would be approximately 6-feet-tall at the highest point and taper down to zero. The Build Alternative includes a two-way cycle track on the south side of Gilman Street between the eastern I-80/Gilman Street ramps and 4th Street. The addition of the two-way cycle track would require installation of a traffic signal at the intersection of 4th Street and Gilman Street. Improvements would be made along 4th Street to Harrison Street to 5th Street to provide bicycle connectivity between the Codornices Creek Path and the two-way cycle track on Gilman Street. Additional pedestrian and bicycle improvements include upgrading the 3rd Street/Union Pacific Railroad (UPRR) crossing at Gilman Street to accommodate the cycle track.

West of the I-80/Gilman Street interchange, the existing San Francisco Bay Trail (Bay Trail) would be extended approximately 660 feet west along the south side of Gilman Street from its current terminus at the intersection of West Frontage Road and Gilman Street west on Gilman Street and also north on Gilman Street Extension to just beyond Berkeley's city limits. Existing Pacific Gas & Electric (PG&E) overhead electric lines along Gilman Street, West Frontage Road, and Eastshore Highway would be relocated as part of the Build Alternative. A separation device would be installed underground along Gilman Street to separate trash, mercury, and polychlorinated biphenyls (PCBs). An existing East Bay Municipal Utility District (EBMUD) recycled water transmission line would be relocated and extended

as part of the Project. Approximately 1,100 feet of new 12-inch recycled water transmission pipeline within Eastshore Highway from Page Street to Gilman Street and approximately 1,050 feet of pipeline within Gilman Street from 2nd Street to the Buchanan Street extension are part of the Build Alternative. Approximately 1,100 feet of an existing 10-inch EBMUD recycled water pipeline located within California Department of Transportation (Caltrans) right-of-way (ROW) along the eastbound Gilman Street off-ramp shoulder, would be abandoned in place or removed. A new City of Berkeley sewer line would be installed underneath Gilman Street, beginning at a point east of the Interchange and ending on the west side I-80 at the approximate entrance to the Tom Bates Sports Complex parking lots. Existing PG&E overhead electric lines along Gilman Street, West Frontage Road, and Eastshore Highway would be relocated as part of the Roundabout Alternative. Some of these overhead lines may be placed underground. Minor drainage modifications would also be required to conform to the new roundabout alignment and drainage improvements associated with the two-way cycle track along Gilman Street would also be required. The project would also include installation of new light poles and ramp metering poles.

Construction of the roundabout would expand the ramp intersection to the north and would require relocation of the Golden Gate Fields entrance and exit gate to their stables. The Build Alternative would relocate the Golden Gate Fields entrance and exit gate to the Gilman Street Extension. The intersection of Gilman Street Extension with Golden Gate Fields Access Road would be improved and Gilman Street would be widened to the south to provide space for two two-lane roads separated by a median. Two Golden Gate Fields parking lots would be improved. Partial acquisitions will be required for ROW from Golden Gate Fields and EBRPD.

Disturbed Soil Area and New Impervious Area

The disturbed soil area (DSA), the pre- and post-Project impervious areas, and impervious area improvement values are listed in Table 1. These values were calculated from Bentley MicroStation drawings superimposed over the existing topography of the Project area and separated based on ROWs. The DSA includes the proposed impervious area work, planned grading, and other unpaved areas that may be disturbed due to construction. The new impervious surface (NIS) consists of areas of net new impervious (NNI) and replaced impervious surface (RIS). NNI considers pre- and post-impervious area balance resulting from the Project, and RIS considers impervious surface that would be replaced down to subgrade or native soil. There would be 0.44 acres of added impervious area and 0.66 acres of removed impervious area within Caltrans' ROW. Therefore, the NNI is -0.22 acres. There is 0.25 acres of added impervious area and 0.09 acres of removed impervious area within the City of Berkeley's ROW. There would be 0.002 acres of added impervious area and 0.14 acres of removed impervious area within Golden Gate Fields, located within the City of Albany.

Stormwater treatment must comply with Caltrans' 2012 Municipal Separate Storm Sewer System (MS4) Permit, Order No. 2012-0011-DWQ, within Caltrans' ROW, and the San Francisco Bay Municipal Regional Permit (MRP), Order No. R2-2015-0049, within the cities of Berkeley and Albany. The NNI is less than 50 percent of the post-Project impervious area in Caltrans ROW, and the RIS is less than 50 percent of the post-Project impervious area in the City of Berkeley and Golden Gate Fields. Therefore, the Project would treat the NIS.

The Project is also required to comply with the San Francisco Bay Regional Water Quality Control Board (RWQCB)'s *Memorandum of California Department of Transportation Post-Construction Stormwater and Hydromodification Standards* (CIWQS Place No. 212806 [BT]) (2008) for projects requiring a Section 401 Water Quality Certification. Criteria includes the use of bioretention devices and local hydromodification assessment criteria.

Table 1. DSA and Impervious Areas

ROW	DSA (acres)	Pre-project Impervious Area (acres)	Post-project Impervious Area (acres)	NNI (acres)	RIS (acres)	NIS (acres)
Caltrans	5.59	3.73	3.51	-0.22	3.10	2.88
City of Berkeley	2.97	7.90	8.15	0.25*	2.55	2.80*
Golden Gate Fields (City of Albany)	0.27	5.13	5.13	0.002*	0.13	0.13*
Total	8.83	16.76	16.79	0.03	5.78	5.81

* The MRP quantifies added and replaced impervious areas for treatment goals and does not take into account removed impervious area.

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2. Site Data and Stormwater Quality Design Issues

The Project limits are within the jurisdiction of the San Francisco Bay RWQCB, Region 2.

Hydrologic Unit

Per the CalWater watershed delineation in Caltrans Water Quality Planning Tool (2012), the Project area is mostly within an undefined Hydrologic Sub-Area (#203.30) of the Berkeley Hydrologic Area and Bay Bridges Hydrologic Unit, and a portion of the Gilman Street extension is within an undefined Hydrologic Sub-Area (#203.10) of the Bay Waters Hydrologic Area and Bay Bridges Hydrologic Unit.

Receiving Water Bodies

The Project's receiving waterbodies are the San Francisco Bay Central, Schoolhouse Creek, and Codornices Creek. There are no surface waters within the Gilman Street watershed. Runoff from the Project is either collected or conveyed through a system of culverts or sheet flows directly into the San Francisco Bay Central, Schoolhouse Creek, or Codornices Creek. Schoolhouse Creek is located outside the Project limits and runs under Virginia Street, crossing I-80 at approximately PM 6.15. Sheet flow from 5th Street would discharge into Codornices Creek. Codornices Creek is located at the border of the Project limits on 5th Street, crossing I-80 at approximately PM 6.91. No work is proposed at this creek crossing.

Clean Water Act 303(d) List

The *2014/2016 California Integrated Report (Clean Water Act Section 303[d] List / 305[b] Report)* (SWRCB 2018) does not list the drainage outfall to the bay or Schoolhouse Creek as pollutant impaired. The San Francisco Bay Central and Codornices Creek are impaired with pollutants listed in Table 2. Of these pollutants, Caltrans and the cities of Berkeley and Albany are named stakeholders for the mercury, PCBs (including dioxin-like PCBs), and trash total maximum daily loads (TMDLs) at the San Francisco Bay Central under their MS4 permits.

Table 2. 303(d) Listed Pollutants

Water Body	Pollutant	Potential Source	Estimated TMDL Completion Date
Codornices Creek	Temperature, water	Source Unknown	2021
	Trash	Source Unknown	Attainment by 2029
San Francisco Bay Central	Chlordane	Source Unknown	2013
	DDT (Dichlorodiphenyl-trichloroethane)	Source Unknown	2013
	Dieldrin	Source Unknown	2013
	Dioxin compounds (including 2,3,7,8-TCDD)	Source Unknown	2019
	Furan Compounds	Source Unknown	2019
	Invasive Species	Source Unknown	2019
	Mercury	Atmospheric Deposition Industrial Point Sources Municipal Point Sources Natural Sources Nonpoint Source Resource Extraction	U.S. EPA Approved February 12, 2008
	PCBs	Source Unknown	U.S. EPA Approved March 29, 2010
	PCBs (dioxin-like)	Source Unknown	U.S. EPA Approved March 29, 2010
	Selenium	Source Unknown	U.S. EPA Approved August 23, 2016
Trash	Source Unknown	2021	

Source: SWRCB 2018

Beneficial Uses

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) (2017) does not list any beneficial uses for the Project-related drainage outfalls to the Gilman Street watershed or Schoolhouse Creek, but does list the following beneficial uses for the San Francisco Bay Central and Codornices Creek.

Table 3. Listed Beneficial Uses for Project Receiving Waters

Water Body	Beneficial Uses													
	IND	PROC	COMM	SHELL	COLD	EST	MIGR	RARE	SPWN	WILD	REC-1	REC-2	NAV	
San Francisco Bay Central	E	E	E	E	-	E	E	E	E	E	E	E	E	
Codornices Creek	-	-	-	-	E	-	E	E	E	E	E	E	-	

Source: San Francisco Bay RWQCB 2017

Notes:

- IND - industrial service supply
- PROC - industrial process supply
- COMM - commercial and sports fishing
- SHELL - shellfish harvesting
- EST - estuarine habitat
- MIGR- fish migration
- RARE - preservation of rare and endangered species
- SPWN - fish spawning
- WILD - wildlife habitat
- REC-1 - water contact recreation
- REC-2 - non-contact water recreation
- NAV - navigation
- E - existing

Drinking Water Reservoirs and/or Recharge Facilities

The Caltrans District 4 Work Plan (Caltrans 2017) does not identify any drinking water reservoirs and recharge facilities along I-80 or near the Project area. The San Francisco Bay RWQCB Basin Plan (2017) does not identify the San Francisco Bay Central or Codornices Creek as having the beneficial use of municipal and domestic supply.

Local Agency Requirements/Concerns

The Project includes work within the City of Berkeley and Golden Gate Fields, located within the City of Albany, which are municipalities covered under the MRP. Improvements within their ROWs would need to comply with this permit. The permanent stormwater treatment requirements, hydromodification assessment criteria, and measures to comply with these requirements are presented in the C.3 Stormwater Technical Guidance (Alameda County Clean Water Program [ACCWP] 2017). Permits would be required for work within the City of Berkeley and Golden Gate Fields; these could include local grading and development permits or agreements.

404/401 Permits

A Section 401 Water Quality Certification from the San Francisco Bay RWQCB and a Nationwide 404 Permit from the United States Army Corps of Engineers are required for work at the Gilman Street outfall to the San Francisco Bay.

Climate

According to the Köppen climate classification system, the Project area has a Mediterranean climate, characterized by hot, dry summers and mild, moist winters (George 2015). The Project area generally experiences precipitation between mid-October and mid-April. A climate summary for the nearest NOAA weather station with similar elevation and topography to the Project reports the following precipitation and temperature information (Western Regional Climate Center 2016):

Berkeley Station 040693

- Average annual rainfall for Berkeley is 23.41 inches
- Average temperatures range seasonally from 49.2 to 64.9 degrees Fahrenheit (°F)

The maximum average temperature reported for the Berkeley area was 71.8 °F in September and the minimum average temperature was 42.7 °F in December. The wettest month of the year is January with an average rainfall of 4.98 inches, and the driest month is July with an average of 0.03 inches. Winter storms are usually of moderate duration and intensity (Western Regional Climate Center 2016).

Soil Classification

An available log of test borings identifies the soils within the top 10 feet of the surface as very loose to loose sand and very soft organic clay (Bay Mud) with approximately 5 to 10 feet of the surface soils being fill material (Caltrans 2014).

The Natural Resources Conservation Service's Web Soil Survey (U.S. Department of Agriculture 2018) classifies the area as Urban Land. Urban Land is defined as land covered by buildings, roads, parking lots, and other structures. The soil within this unit is heterogeneous fill derived from various sources. Many areas designated under this map unit consist of reclaimed land adjacent to San Francisco Bay. The Urban Land soil unit has not been assigned a Hydrologic Soil Group.

Slope Stabilization

The erosion factor (K) indicates the erodibility of the fine-earth fraction of the soil. The factor is given as a percentage or fraction ranging from 0.02 to 0.69; the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The Caltrans Water Quality Planning Tool (2012) identifies the K value of the area to be 0.37, which suggests the soils have a moderate potential for erosion. See the Risk Level Determination in the Required Attachments for the map of K factors. However, the Caltrans *District 4 Work Plan* (Caltrans 2017) does not identify any slopes prone to erosion along I-80 near or within the Project area.

Groundwater

The Project lies within the East Bay Plain sub-basin of the Santa Clara Valley Groundwater Basin (Basin No. 2-9.04). This sub-basin has the existing beneficial uses of municipal and domestic, industrial process and service, and agricultural water supplies. Although the groundwater basin has the above-listed existing beneficial uses, the groundwater is not used for water supply by the cities within the Project area. According to the *Preliminary Geotechnical Design Recommendations for I-80/Gilman Interchange Technical Memorandum* (WRECO 2016), the available log of test borings identifies groundwater to be encountered approximately 7 to 8 feet below current grade.

Hazardous Waste

According to the *Initial Site Assessment* (Parsons 2016), 11 facilities have been reported to have hazardous materials/waste and/or groundwater contamination within the Project area. These facilities have either removed underground storage tanks or implemented monitoring and remediation programs. Other pollutants include metals, asbestos from the overpass, lead chromate, and petroleum hydrocarbons.

Aerially deposited lead from vehicle emissions and lead-based paint that has weathered from older, painted structures are potential sources of lead contamination along roadways. Because the Eastshore Highway and I-80 are travelled heavily and commercial services have been present in the area since the 1920s, there is a high potential that lead is present at concentrations greater than native levels in soil along the road shoulders where soil is or has been exposed. Surface and near-surface soils adjacent to the roadways have the potential to contain elevated concentrations of lead ranging from background up to several thousand milligrams/kilogram, particularly near the intersection of I-80 and Gilman Street where vehicles stop, idle, and accelerate. See the *Initial Site Assessment* (Parsons 2016) for further information.

Topography

The Project area is relatively flat, sloping from east to west toward the San Francisco Bay. Along Gilman Street the elevations range from 11.7 feet west of West Frontage Road to 13.8 feet at the I-80 eastbound ramp intersection. I-80 is elevated on fill north and south of Gilman Street and crosses over Gilman Street in an elevated bridge structure with a vertical clearance of approximately 15 feet (Caltrans 2014).

ROW Acquisition

Partial acquisitions would be required for ROW from Golden Gate Fields and the EBRPD. Relocation of the driveway would be required from a property located on the south side of Gilman and 2nd streets. Additionally, a permit to construct from Golden Gate Fields would be required to complete improvements on their property. Temporary construction easements would be required for construction equipment storage, staging, and laydown from EBRPD and various property owners along Gilman Street, 4th Street, Harrison Street, and 5th Street.

It is not anticipated that additional ROW acquisition, easements, or rights-of-entry would be required for the design, construction, or maintenance of best management practices (BMPs).

Land Use

The land use immediately surrounding the Project area is highly urbanized. Locally, the land use within the existing interchange is dedicated freeway. Land use along Gilman Street consists primarily of manufacturing and industrial uses with commercial and residential land uses existing near Gilman Street to the east of I-80. Land use along Harrison Street consists of manufacturing, industrial, and open space. The area west of I-80 is designated as open space and waterfront/marina (City of Berkeley 2009). The Tom Bates Regional Sports Complex, which is within the Eastshore State Park, is located west of I-80. Land use at Golden Gate Fields is designated as commercial recreation (City of Albany 2016).

Measures for Avoiding or Reducing Potential Stormwater Impacts

Disturbed areas would be stabilized by applying permanent erosion control measures. Retaining walls would be constructed on the east and west sides of the proposed bicycle/pedestrian overcrossing to avoid potential erosion.

Temporary stormwater BMPs to avoid or reduce potential stormwater impacts are discussed in Section 3. Permanent BMPs for stormwater pollution prevention and treatment within Caltrans ROW, City of Berkeley ROW, and Golden Gate Fields (located within the City of Albany ROW) are discussed in Section 6.

Existing Treatment BMPs

There is an existing biofiltration strip located along the eastbound Gilman Street off-ramp at PM 6.2 to PM 6.4. The preliminary design plans developed at this phase indicate that there is no work within the area of the existing strip. If work is performed in the area of the strip, then the strip should be protected during construction, and the impervious watershed flowing to the biofiltration strip should be maintained in the post-Project condition. The location of this existing biofiltration strip, along with the Planting and Erosion Control Plans, are included in the Supplemental Attachments.

3. Construction Site BMPs to be used on Project

Risk Level Determination

This Project would disturb more than 1 acre of soil and must comply with the SWRCB Construction General Permit (CGP) (Order No. 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ). Compliance with the CGP includes performing a risk-level determination to determine the required monitoring and sampling of stormwater during construction. The risk-level assessment is determined from the combined receiving water risk and sediment risk.

The Project has a high receiving water risk because Codornices Creek has the combined existing beneficial uses of cold freshwater habitat, fish spawning, and fish migration.

The sediment risk factor is determined from the product of the rainfall erosivity factor (R), the K factor, and the length-slope factor (LS). The R, K, and LS factor information is included in the Required Attachments of this report. Using the method described in the U.S. EPA's "Construction Rainfall Erosivity Waiver" fact sheet (U.S. EPA 2012), for a construction duration of approximately two years, the calculated R factor at the Project site is 80. The K factor, as stated in the Soil Stabilization section, is 0.37. The Caltrans *Water Quality Planning Tool* (2012) identifies the LS factor as 0.47 for the Project area. The product of these values is 14 ($80 \times 0.37 \times 0.47$); because this value is less than 15, the Project has a low sediment risk. The sediment risk may be updated during the Plans, Specifications, and Estimates (PS&E) phase as more detailed Project information becomes available.

The high receiving water and low sediment risks result in the Project being classified as Risk Level 2. Therefore, in addition to implementation of standard construction site BMPs, the Contractor would be required to perform quarterly non-stormwater discharge visual inspections and rain event visual inspections for pre-storm, daily during a storm event, and post-storm events. Risk Level 2 projects are also required to implement Rain Event Action Plans and comply with Numeric Action Level effluent limits for pH and turbidity. This assessment may be updated during the PS&E phase as more detailed Project information becomes available.

Storm Water Pollution Prevention Plan (SWPPP)

This Project would disturb more than one acre of soil and must prepare a SWPPP per the CGP requirements. A SWPPP would be prepared by the Contractor and approved by the Caltrans Resident Engineer prior to the start of construction. The SWPPP describes the measures to be implemented by the Contractor to comply with the CGP. It includes the development of a Construction Site Monitoring Program that presents procedures and methods related to the visual monitoring and sampling and analysis plans based on the Project's Risk Level. Three discharge locations, shown in the Supplemental Attachments, would be monitored per CGP requirements. The lump sum cost for the SWPPP and other stormwater fees is included in the Estimate Support Information of the Supplemental Attachments and would be updated during the PS&E phase.

Construction Site BMP Strategy

Construction work for this Project is anticipated to be approximately two years. To avoid and minimize any potential sediment-laden or contaminated runoff or run-on within the Project area, construction site BMPs should be installed prior to the start of construction or as early as feasibly possible during construction. The lump sum cost of construction site BMPs is included in the BMP Cost Summary and would be separated into individual items during the PS&E phase.

Measures that are to be considered for this Project would be detailed during the PS&E phase. The general construction site BMP strategy for this Project consists of the following, in accordance with Caltrans' *Standard Specifications* (2015):

- Soil Stabilization Measures
- Sediment Control Measures
- Tracking Control
- Non-stormwater Management Measures
- General Construction Site Management
- Stormwater Sampling and Analysis

There would be minor earth-disturbing activities on the on- and off-ramps. Fiber rolls would be placed along these areas during construction at intervals specified in the *Caltrans Standard Specifications* (Caltrans 2015).

Tracking control measures would be used to limit sediment and debris from being tracked onto I-80, Gilman Street, and the other local roadways where work is proposed or may be used for access to the Project. Off-site tracking of sediment would be limited by placing stabilized construction entrances in combination with regular street sweeping and vacuuming.

A temporary clear water diversion system may be necessary for the work at the Gilman Street outfall. Design and management of the clear water diversion system would adhere to the *Standard Specifications* (Caltrans 2015).

Dewatering activities are expected to be necessary for this Project due to the shallow groundwater and work within the San Francisco Bay. Work that would likely require dewatering activities include placement of the pedestrian bridge overcrossing footings and retaining wall piles and installation and removal of the cofferdam at the Gilman Street outfall. Dewatering activities would comply with Caltrans' *Field Guide to Construction Site Dewatering* (2014), Caltrans' *Standard Specifications* (2015), and, if required, a separate dewatering permit would be obtained prior to the start of construction. Groundwater extracted from temporary dewatering activities would be managed based on the groundwater quality within the Project area. Clean groundwater could be used for dust control, collected on-site using desilting basins and/or tanks prior to discharging to receiving waters, and transported to a publicly owned treatment works. If the Project area contains contaminated groundwater or groundwater that may release contaminated plumes when disturbed, applicable waste discharge requirements or permits would be obtained during the PS&E phase. An active treatment system may also be necessary to treat contaminated groundwater exposed during excavation activities. Dewatering requirements, costs, and design of the active treatment system would be determined during the PS&E phase.

Temporary concrete washouts would be used to collect concrete, hot mix asphalt, and slurry waste generated by construction activities. Concrete waste management would be implemented during these activities and would comply with Caltrans *Standard Specifications* (2015).

Construction site management includes spill prevention and control, material management, waste management, non-stormwater management, and dewatering activities. Job site management would be used throughout the duration of the Project to protect water quality. There is potential for wind erosion, which could be adequately addressed through job site management or the other construction site BMPs previously discussed in this section; as necessary, application or spraying of water can be

used to control dust and wind erosion, in compliance with Caltrans, local, and Statewide drought ordinances.

Various waste management, materials handling, and other housekeeping BMPs would be used throughout the duration of the Project. Stockpiles of various kinds are anticipated and shall be maintained with the appropriate BMPs. Measures would also be taken to prevent and reduce trash from entering storm drain inlets. Locations and details would be identified and discussed during the PS&E phase.

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4. Maintenance BMPs

Drainage inlet markers would be required for this Project because proposed drainage inlets would be placed in areas accessible to pedestrians and bicycle traffic. Caltrans standard drainage inlet markers would be placed for inlets within Caltrans' ROW and City of Berkeley, City of Albany, or Alameda County standard drainage inlet markers placed for inlets outside of Caltrans ROW.

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5. Other Water Quality Requirements and Agreements

Since a 401 certification is anticipated for the project, compliance to the local's requirements regarding treatment BMPs and hydromodification may be required. In addition, The San Francisco Regional Water Quality Control Board adopted Order No. R2-2019-0007 (effective in Feb 2019) that requires Caltrans to provide trash control in areas identified as Significant Trash Generation Area (STGA). Although there are no STGA identified within the project limits, the Region 2 Water Board may require trash control requirement since the project has section 401 certification.

A 1602 Lake or Streambed Alteration Agreement Permit from the California Department of Fish and Wildlife is not anticipated. A dewatering permit may be required due to excavation activities unless the water is taken to a local publicly owned treatment works plant managed by EBMUD. Dewatering permit requirements would be determined during the PS&E phase. The Project is required to obtain a permit from the San Francisco Bay Conservation and Development Commission for work at the Gilman Street outfall. This permit would be obtained before construction.

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6. Permanent BMPs

Permanent BMPs are strategies and measures to minimize and avoid water quality impacts in the post-construction condition. Permanent BMPs include design pollution prevention (DPP) and treatment BMP strategies. This Project is considering the use of treatment BMPs within all ROWs due to the common plan of development having an NIS of 5.81 acres. DPP and treatment strategies are separated by Caltrans, and the City of Berkeley, and Golden Gate Fields (located within the City of Albany). The lump sum for permanent BMPs is included in the Estimate Support Information and would be separated into individual items during the PS&E phase.

DPP BMP Strategy

Downstream Effects Related to Potentially Increased Flow

The Project in Caltrans ROW is required to consider the Alameda County hydromodification assessment criteria as part of the *Memorandum of California Department of Transportation Post-Construction Stormwater and Hydromodification Standards* (San Francisco Bay RWQCB 2008). The cities of Berkeley and Albany would also adhere to this hydromodification assessment criteria.

Although the Project would increase the impervious area from the pre-Project condition, hydromodification impacts are minimal or not anticipated. The majority of the Project area is within an area that is tidally influenced or primarily depositional. A portion of the I-80 westbound off-ramp and a portion of 4th and 5th streets along Harrison Street are within the Codornices Creek special consideration area; however, the Project does not propose adding impervious area to these locations. Therefore, hydromodification impacts are not anticipated at Codornices Creek, contingent upon coordination with the City of Berkeley. Mapping from the Alameda County Clean Water Program's (ACCWP's) *Hydromodification Susceptibility Map Application* (2010) that identifies areas susceptible and not susceptible to hydromodification is included in the Supplemental Attachments. This assessment and additional information about susceptibility of the outfalls are discussed in the Project's *Drainage Study and Preliminary Hydromodification Report* (WRECO 2018).

Slope/Surface Protection Systems

The Project area is generally flat with minimal slopes. Replacement landscaping and vegetation for slope stabilization within Caltrans ROW would be placed wherever existing landscaping is disturbed. Further information on vegetated surfaces, including the need for a Model Water Efficient Landscape Ordinance worksheet, would receive concurrence from the Caltrans District 4 Landscape Architect and be provided in the PS&E phase.

Source control measures applicable to the Project within the City of Berkeley and Golden Gate Fields (located within the City of Albany), include proper plant selection, irrigation, and pesticide management for new landscaping (City of Berkeley 2016 and City of Albany 2012). Locations and designs for source control measures would be determined during the PS&E phase.

Concentrated Flow Conveyance Systems

Concentrated flow conveyance systems, such as bioretention devices and storm drains, are considered for the whole Project. The existing roadway drainage design would either be modified to fit with new drainage systems or be removed and replaced by new systems. The modifications to existing drainage facilities would likely result in changes in the interception of surface runoff. Markers on storm drain inlets would be considered for the whole Project limits. Conceptual drainage improvements are

shown in the *Drainage Impact Study and Preliminary Hydromodification Report* prepared by WRECO (2018). Proposed drainage facilities would be designed during the PS&E phase.

Source control measures applicable to the Project within the City of Berkeley and Golden Gate Fields (located within the City of Albany) include markers on storm drain inlets (City of Berkeley 2016 and City of Albany 2012). Locations and designs for source control measures would be determined during the PS&E phase.

Preservation of Existing Vegetation

Existing mature vegetation and landscaping within the whole Project limits would be protected in place where possible. Areas of clearing and grubbing would be limited to those areas impacted by new construction. Existing wetlands, other environmentally sensitive areas (ESAs), and the existing biofiltration strip would be preserved during construction with the use of temporary high-visibility fencing. ESA fencing locations would be identified during the PS&E phase.

Treatment BMP Strategy

Treatment BMPs are considered because the whole Project has over 1 acre of NIS. Dry-weather flow diversion and traction sand traps were not considered for this Project within Caltrans ROW because there is no dry-weather diversion and traction sand is not regularly applied to I-80 within the Project area. Delaware filters, multi-chambered treatment trains, and wet basins are not considered for this Project due to vector concerns within District 4. Since the project requires a 401 certification, the San Francisco RWQCB will require permanent stormwater treatment within the areas covered under the San Francisco Bay MRP to follow local guidance. For this project, the local guidance is the Alameda County Clean Water Program C.3. Technical Guidance (2017).

Treatment BMP devices to be considered for this Project include biofiltration devices designed for bioretention and detention basins. All treatment BMPs would be installed with impermeable liners to reduce the impacts of potentially contaminated groundwater. The use of bioretention type devices allows for pollutant removal or reduction while promoting the effort to mimic predevelopment hydrology by reducing flow rates and velocities. The use of detention basins allows for treatment by temporarily detaining runoff during storms. The use of trash capture devices allows for trash removal or reduction to comply with the trash TMDL listed for San Francisco Bay Central. The goal of the Project is to treat the 2.88 acres of NIS within Caltrans ROW. The Project would treat 3.94 acres of impervious area and 0.45 acres of pervious area within Caltrans ROW; therefore, the Project is over 100% for full treatment. There is 0.72 acres of potential Compliance Unit (CU) credits within the Project limits. These areas would be refined during the PS&E phase and coordinated with the District 4 Stormwater Coordinator. Treatment calculations, types, and final sizing and locations of BMPs would be determined during the PS&E phase. Proposed treatment BMP locations within the Caltrans ROW were calculated using the Rational Method and are listed in Table 4. These BMPs are labeled in green on the Conceptual Treatment Watershed Maps included in the Supplemental Attachments. These values would be updated during the PS&E phase based on the final sizing and locations.

Considered treatment BMPs within the City of Berkeley and Golden Gate Fields (located in the City of Albany) include bioretention facilities, tree well filters, and trash capture devices. The use of bioretention facilities allows for filtration of stormwater runoff in a landscaped area through percolation and engineered soil media. The use of tree well filters allows for biofiltration in areas with clay soils, high groundwater levels, and contaminated runoff. All treatment BMPs would be installed with impermeable liners due to high groundwater. The use of trash capture devices allows for trash removal measures required by the MRP.

The goal of the Project is to provide full treatment for 2.80 acres of NIS within the City of Berkeley and 0.13 acres of NIS within Golden Gate Fields. The Project would treat 1.86 acres of impervious area and 0.08 acres of pervious area within the City of Berkeley and 0.28 acres of impervious area and 0.05 acres of pervious area within Golden Gate Fields. Due to site constraints within the City of Berkeley, treatment BMPs within Caltrans ROW have the capacity to treat the remaining 0.94 acres of NIS. Further coordination with the cities of Berkeley and Albany would be done during the PS&E phase to determine treatment requirements and calculations, BMP designs, final locations and, if feasible, green infrastructure measures per the City of Berkeley and City of Albany requirements. Proposed treatment BMP locations are labeled in pink and blue in the City of Berkeley and purple in Golden Gate Fields on the Conceptual Treatment Watershed Maps included in the Supplemental Attachments. These values, which are summarized in Table 5, would be updated during the PS&E phase.

Biofiltration/Bioretenion Devices

Biofiltration devices that provide bioretention are the most feasible treatment BMPs for the Project. Underdrains would be installed in the bioretention devices to promote flow into the storm drain system. As a general rule, biofiltration/bioretenion devices in the whole Project limits are sized to be 4 percent of the receiving impervious area to treat the receiving impervious area; if the value is less than 4 percent, then the BMP size should be increased, or more detailed calculations are needed. Retention may be limited due to potential groundwater contamination. The District 4 Hazardous Waste Office would confirm if retention is allowed for the Project. Conceptual BMP locations within the whole Project limits are shown in the Supplemental Attachments. Detailed design calculations to size the biofiltration/bioretenion devices and determination of final locations would be completed during the PS&E phase.

Detention Devices

Detention devices could be placed in the interchange areas in Caltrans ROW for the purpose of achieving stormwater treatment. The recommended detainment period is between 40 and 48 hours. These devices would be placed on areas with 4:1 (H:V) slopes to encourage low-velocity flows. Basins would be designed with debris screens, a freeboard of 12 inches, and an 8-inch maintenance gravity drain. Locations, sizes, and designs would be determined during the PS&E phase.

Trash Capture Devices

Trash capture devices are required for the whole Project due to the trash impairment for the San Francisco Bay Central. Considered devices include separation devices, GSRDs (Gross Solid Removal Devices), and trash inserts.

A separation device would be installed underground along Gilman Street within the City of Berkeley to separate trash, mercury, and PCBs within the Project limits. The location of the separation device is shown in black on the Conceptual Treatment Watershed Maps included in the Supplemental Attachments. GSRD would also be considered for centralized trash capture. GSRD would remove litter and solids greater than 5 mm and would be sized for 1-year, 1-hour storm events, with an overflow release device based on the 25-year, 24-hour storm event. Trash inserts would be placed in storm drain inlets and at the downstream end of the swales away from the shoulders and in areas where no flooding of the travel way would occur. The preferred size of the screens would be 5 millimeters, and filtration would be designed for the 1-year, 1-hour flow. Feasibility, locations, and design for trash capture devices would be determined during the PS&E phase.

Tree Well Filters

Tree well filters would be placed near curbs and gutters along sidewalks and the bike path within the City of Berkeley ROW. Tree well filters would receive downstream flows through these locations to ensure stormwater treatment. As a general rule, tree well filters were sized to be 4 percent of the receiving impervious area to treat the receiving impervious area; if the value is less than 4 percent, then the BMP size should be increased, or more detailed calculations are needed. The long-term infiltration rate would be at most 10 inches per hour. Final locations and design would be determined during the PS&E phase.

Table 4. Treatment BMP Summary Table in Caltrans ROW

ID	PM Begin	PM End	BMP Type	Imperv WS (CT ROW) (ac)	Perv WS (CT ROW) (ac)	BMP Area (ac)
CT1	6.67	6.70	Biofiltration/ Bioretention	0.09	0.06	0.06
CT2	6.66	6.68	Biofiltration/ Bioretention	0.59	0.05	0.05
CT3	6.59	6.63	Biofiltration/ Bioretention	0.36	0.17	0.17
CT4	6.67	6.69	Biofiltration/ Bioretention	1.83	0.09	0.09
CT5	6.63	6.64	Biofiltration/ Bioretention	0.82	0.04	0.04
CT6	6.67	6.67	Biofiltration/ Bioretention	0.11	0.02	0.02
CT7	6.63	6.64	Biofiltration/ Bioretention	0.09	0.01	0.01
CT8	6.65	6.66	Biofiltration/ Bioretention	0.05	0.01	0.01
Total				3.94	0.45	

Notes:

Imperv WS = Impervious Watershed

Perv WS = Pervious Watershed

CT ROW = Caltrans Right-of-Way

Trash capture devices such as separation devices, GSRDs, and trash inserts are also considered

Table 5. Treatment BMP Summary Table in City of Berkeley ROW and Golden Gate Fields

ID	BMP Type	Impervious Watershed (ac)	Pervious Watershed (ac)	BMP Area (ac)
City of Berkeley				
G1	Bioretention	0.05	0.002	0.002
G2	Bioretention	0.05	0.003	0.003
G3	Tree-Well Filter	0.03	0.001	0.001
G4	Trash Capture	TBD in PS&E	TBD in PS&E	TBD in PS&E
S1	Bioretention	0.08	0.004	0.003
S2	Bioretention	0.04	0.003	0.002
S3	Bioretention	0.12	0.002	0.005
S4	Bioretention	0.06	0.005	0.003
S5	Bioretention	0.16	0.003	0.007
S6	Bioretention	0.08	0.007	0.005
S7	Bioretention	0.07	0.005	0.004
S8	Bioretention	0.04	0.003	0.002
S9	Bioretention	0.14	0.002	0.006
S10	Bioretention	0.10	0.006	0.004
H1	Bioretention	0.10	0.004	0.004
P1	Bioretention	0.11	0.005	0.005
P2	Bioretention	0.09	0.005	0.005
EH1-EH3	Tree-Well Filter (3)	0.10	0.004	0.004
EH4-EH6	Tree-Well Filter (3)	0.11	0.005	0.005
EH7-EH9	Tree-Well Filter (3)	0.10	0.004	0.004
EH10-EH12	Tree-Well Filter (3)	0.12	0.005	0.005
EH13-EH15	Tree-Well Filter (3)	0.11	0.004	0.004
City of Berkeley Total		1.86	0.08	-
Golden Gate Fields (City of Albany)				
GGF1	Bioretention	0.28	0.05	0.05
Golden Gate Fields (City of Albany) Total		0.28	0.05	

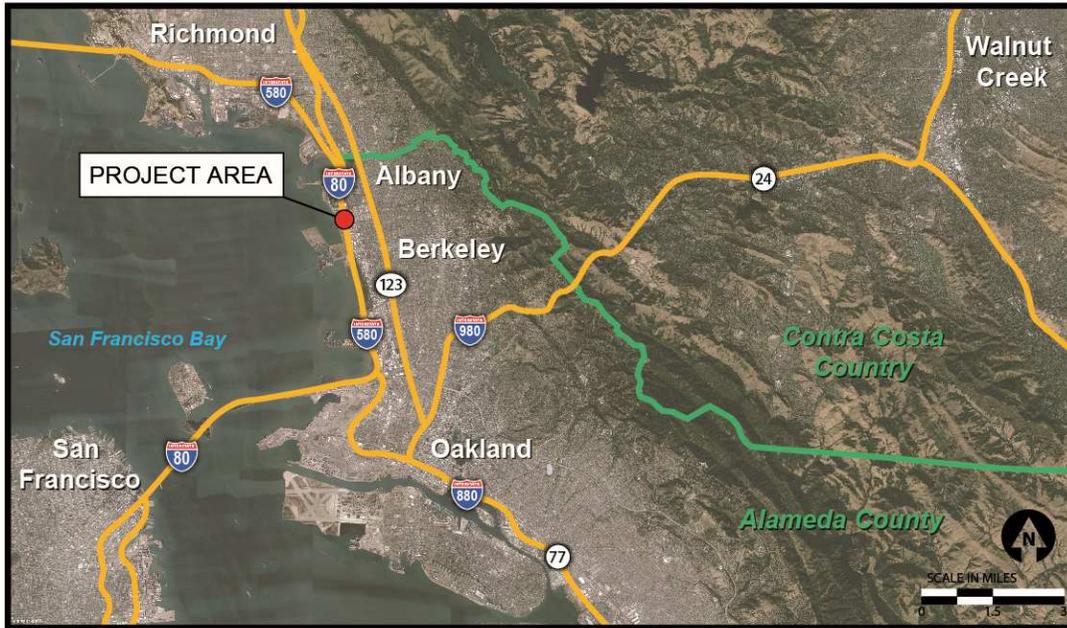
Overall Project Treatment Summary Table		
	PCTA (ac)	5.81
Total Area to be Treated	Treated Impervious Area (CT RW) (ac)	3.94
	Treated Pervious Area (CT RW) (ac)	0.45
	Treated Impervious Area (Outside CT RW) (ac)	2.14
	PCTA Balance (ac)	0.27
	Potential CU Balance (ac)	0.72

Required Attachments

- Vicinity and Location Maps
- Project Layout Map
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation

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Project Vicinity Map

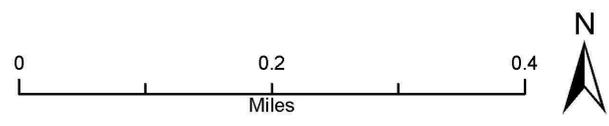


Source: Parsons

Project Location Map



-  Project Limits
-  City Limits
-  Rail



Source: Parsons

Project Layout Map



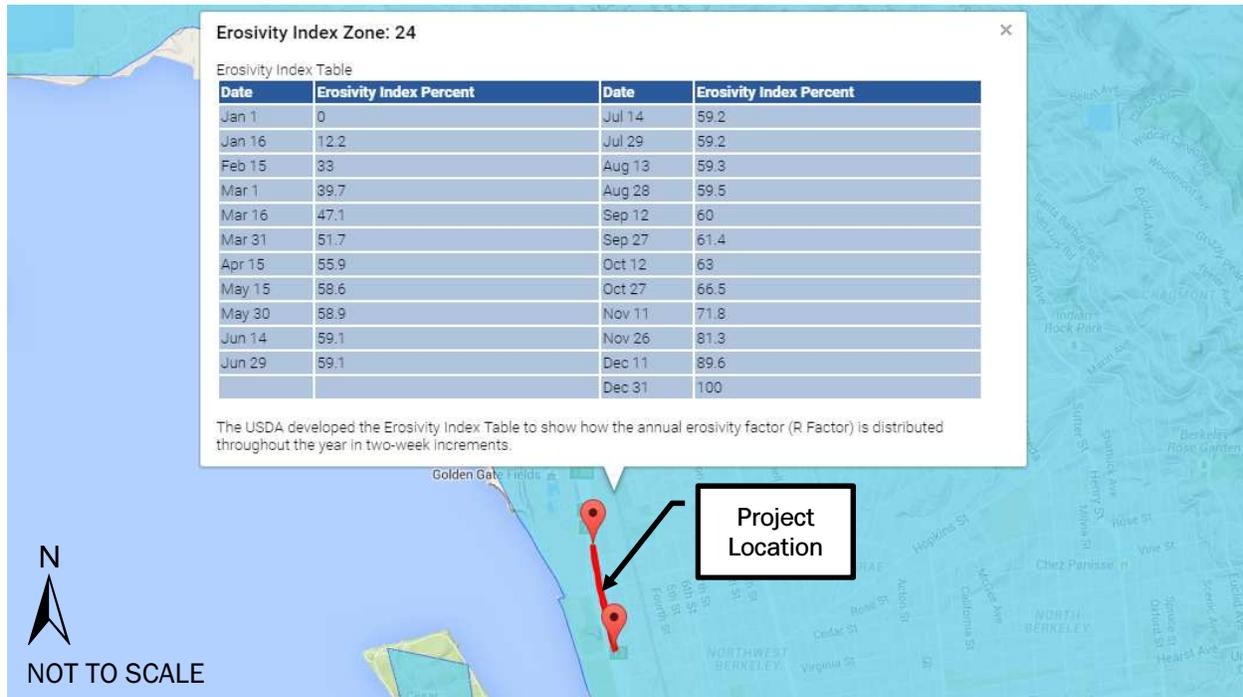
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DATE: _____ August 2018

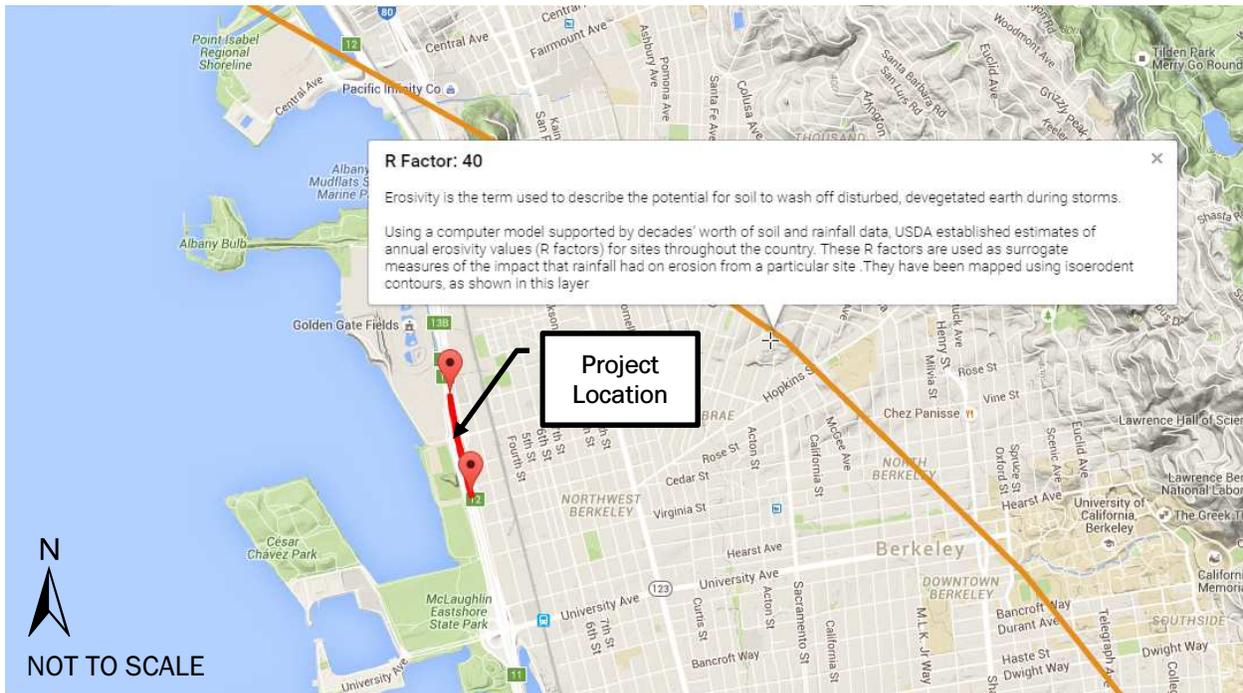
Project ID (EA): 0400020155 (04-0A7700)

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If Yes, go to 8. If No, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If Yes, continue to 4. If No, go to 9.
4.	As defined in the WQAR or ED, does the project:		✓	If Yes to any, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____(Dist./Reg. Coordinator initials) If No to all, continue to 5.
	a. discharge to Areas of Special Biological Significance (ASBS), or			
	b. discharge to a TMDL watershed where Caltrans is named stakeholder, or	✓		
	c. have other pollution control requirements for surface waters within the project limits?		✓	
5.	Are any existing Treatment BMPs partially or completely removed? (ATA Condition 1, Section 4.4.1)		✓	If Yes, go to 8 AND continue to 6. If No, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If Yes, go to 9. If No, continue to 7.
7.	Does the project result in an increase of <u>one acre or more</u> of new impervious surface (NIS)?	✓		If Yes, go to 8. If No, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _____(Dist./Reg. Design SW Coord. Initials) _____(Project Engineer Initials) _____(Date)	Document for Project Files by completing this form and attaching it to the SWDR.		

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Source: Caltrans 2012



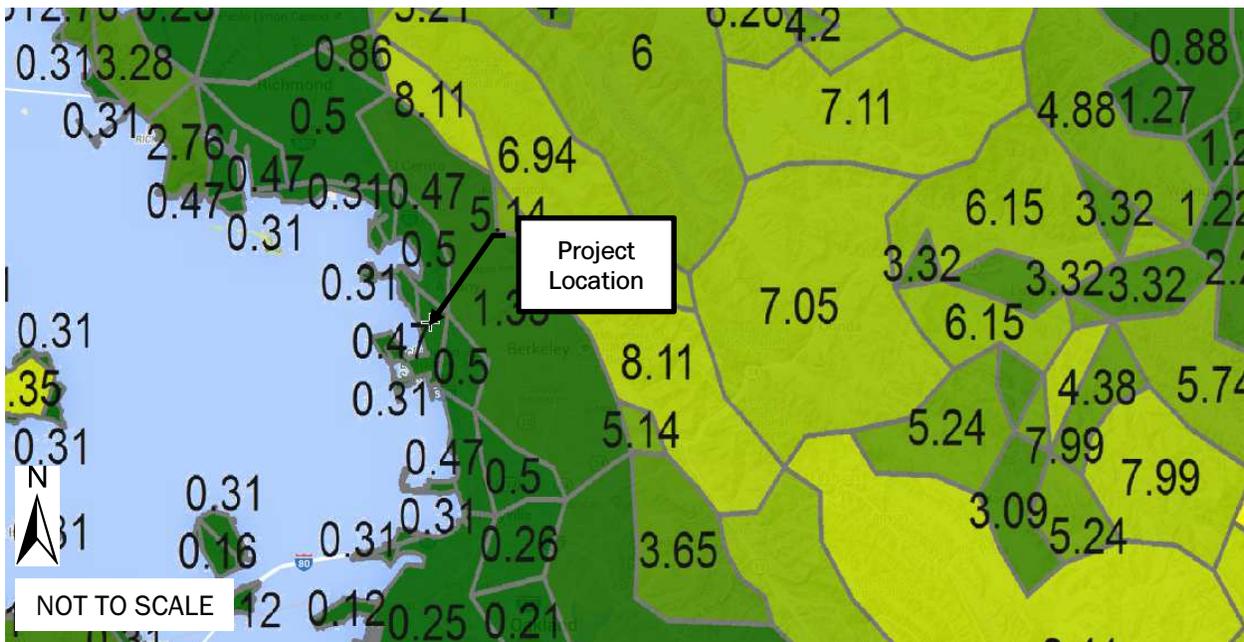
Source: Caltrans 2012

Estimated Construction Dates: 12/31/2020 to 01/04/2023
 EI Percentage: (Dec. 31, 2020 to Dec. 31, 2022): 100% X 2 = 200%
 EI Percentage: (Jan. 1, 2023 to Jan. 4, 2023): 0%
 Total EI Percentage = 200% + 0% = 200%
 R Factor = 200% x 40 = **80**



Source: Caltrans 2012

K = 0.37



Source: Caltrans 2012

LS = 0.47

Sediment Risk Factor Worksheet		Entry
A) R Factor		
<p>Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.</p> <p>http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm</p>		
R Factor Value		80
B) K Factor (weighted average, by area, for all site soils)		
<p>The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.</p> <p>Site-specific K factor guidance</p>		
K Factor Value		0.37
C) LS Factor (weighted average, by area, for all slopes)		
<p>The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.</p> <p>LS Table</p>		
LS Factor Value		0.47
Watershed Erosion Estimate (=R_xK_xLS) in tons/acre		14
Site Sediment Risk Factor		Low
Low Sediment Risk: < 15 tons/acre		
Medium Sediment Risk: >=15 and <75 tons/acre		
High Sediment Risk: >= 75 tons/acre		

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed waterbody impaired by sediment (For help with impaired waterbodies please visit the link below) or has a USEPA approved TMDL implementation plan for sediment ? http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	yes	High
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix				
		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1	Level 2	
	High	Level 2		Level 3
Project Sediment Risk:		Low		
Project RW Risk:		High		
Project Combined Risk:		Level 2		

Supplemental Attachments

- Checklist SW-1, Site Data Sources
- Checklist T-1, Part 1 (Treatment BMPs)
- Estimate Support Information for Construction Site, DPP, and/or Treatment BMPs, electronic copies accepted (Costs are for Caltrans internal use only)
- SWDR Summary Spreadsheets
- Project Discharge Locations Map
- Alameda County Hydromodification Susceptibility Map
- Checklist SW-2, Stormwater Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts
- Checklist DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklist T-1, Part 3, 4, 7 (Treatment BMPs)
- Construction Site BMP Consideration Form
- Checklist CS-1, Parts 1–6 (Construction Site BMPs)
- SWDR-ID
- WPC Form
- Plans of Existing Treatment BMP
- Plans showing BMP deployment

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Checklist SW-1, Site Data Sources		
Prepared by: <u>WRECO</u>	Date: <u>August 2018</u>	District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u>	Project ID/EA: <u>0400020155 (04-0A7700)</u>	RWQCB: <u>San Francisco Bay (2)</u>

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect available project reports and any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 6.4.3.2. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Water Quality	
<ul style="list-style-type: none"> • Alameda County Clean Water Program. <i>C.3 Stormwater Technical Guidance</i>. 	October 31, 2017
<ul style="list-style-type: none"> • California Department of Transportation. <i>Stormwater Quality Handbook: Project Planning and Design Guide</i>. CTSW-RT-17-314.11.1. 	July 2017
<ul style="list-style-type: none"> • California Department of Transportation. "Water Quality Planning Tool." <http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx> 	Last Accessed June 2018
<ul style="list-style-type: none"> • California Regional Water Quality Control Board, San Francisco Bay Region. <i>Municipal Regional Stormwater NPDES Permit</i>. Order R2-2015-0049, NPDES Permit No. CAS612008. 	November 19, 2015
<ul style="list-style-type: none"> • San Francisco Bay Regional Water Quality Control Board. <i>San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)</i>. 	May 4, 2017
<ul style="list-style-type: none"> • State Water Resources Control Board. <i>National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities</i>. Order No. 2012-0006-DWQ, NPDES No. CAS000002. 	July 17, 2012
<ul style="list-style-type: none"> • State Water Resources Control Board. <i>National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit for State of California Department of Transportation</i>. Order No. 2012-0011-DWQ, amended by Order No. 2014-0077-DWQ. 	July 1, 2014
<ul style="list-style-type: none"> • State Water Resources Control Board. <i>Final 2014/2016 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report)</i>. <http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml> 	Last Accessed April 2018
<ul style="list-style-type: none"> • United States Environmental Protection Agency. <i>Stormwater Phase II Final Rule Construction Rainfall Erosivity Waiver Fact Sheet 3.1</i>. EPA 833-F-00-014. 	Revised March 2012
<ul style="list-style-type: none"> • WRECO. <i>Water Quality Assessment Report</i>. 	May 2018
Geotechnical	

<ul style="list-style-type: none"> WRECO. <i>Preliminary Geotechnical Design Recommendations for I-80/Gilman Interchange Technical Memorandum.</i> 	April 13, 2016
Topographic	
<ul style="list-style-type: none"> California Department of Transportation. <i>Project Study Report-Project Development Support (PSR-PDS) to Request Approval for Locally Funded project to Proceed to the Project Approval and Environmental Document Phase (PA/ED) on Route Interstate 80 at Gilman Street Undercrossing between 0.7 Mile East of University Avenue Overcrossing and 0.5 Mile West of Buchanan Street Undercrossing.</i> 	August 2014
Hydraulic	
<ul style="list-style-type: none"> Alameda County Clean Water Program. <i>Hydromodification Susceptibility Map Application. Version 1.</i> 	2010
<ul style="list-style-type: none"> WRECO. <i>Location Hydraulic Study Report.</i> 	May 2018
<ul style="list-style-type: none"> WRECO. <i>Drainage Impact Study and Preliminary Hydromodification Report.</i> 	May 2018
Soils	
<ul style="list-style-type: none"> California Department of Transportation. <i>Project Study Report-Project Development Support (PSR-PDS) to Request Approval for Locally Funded project to Proceed to the Project Approval and Environmental Document Phase (PA/ED) on Route Interstate 80 at Gilman Street Undercrossing between 0.7 Mile East of University Avenue Overcrossing and 0.5 Mile West of Buchanan Street Undercrossing.</i> 	August 2014
<ul style="list-style-type: none"> United States Department of Agriculture, Natural Resources Conservation Service. "Web Soil Survey." <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> 	Last Accessed April 2018
Climatic	
<ul style="list-style-type: none"> WRECO. <i>Natural Environment Study.</i> 	June 2018
<ul style="list-style-type: none"> National Oceanic and Atmospheric Administration. <i>Climatology of the United States.</i> <https://data.noaa.gov/dataset/climatology-of-the-united-states>. 	Last Accessed July 2016
Other Data Categories	
<ul style="list-style-type: none"> California Department of Transportation. <i>Storm Water Quality Handbooks – Construction Site Best Management Practices (BMPs) Manual.</i> 	May 2017
<ul style="list-style-type: none"> California Department of Transportation. <i>Storm Water Quality Handbooks – Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual.</i> CTSW-RT-16-314.14.1 	October 2016
<ul style="list-style-type: none"> California Department of Transportation Stormwater Management Program. <i>District 4 Work Plan Fiscal Year 2018-2019.</i> CTSW-RT-17-316.11.1. 	October 1, 2017
<ul style="list-style-type: none"> Parsons. <i>I-80/Gilman Street Interchange Improvement Project Final Initial Site Assessment.</i> 	October 2016
<ul style="list-style-type: none"> City of Albany. <i>City of Albany Stormwater Requirements Checklist.</i> 	September 28, 2012
<ul style="list-style-type: none"> City of Berkeley. <i>City of Berkeley Stormwater Requirements Checklist</i> 	January 14, 2016

Treatment BMPs Checklist T-1, Part 1

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each BMP contributing drainage area within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project. This will help to determine if any changes to the BMP strategy are necessary, based on site specific information gathered during later phases. Use the responses to the questions as the basis of developing the narrative in Section 6 of the Stormwater Data Report to document that Treatment BMPs have been appropriately considered and/or incorporated.

Before evaluating an area for treatment capabilities or to incorporate a Treatment BMP, calculate the numeric sizing requirement for each contributing drainage area (WQV from the 85th percentile 24-hour storm event or WQF rate). Soil and geometric information for the project area will be necessary to use this Checklist.

Identify the overall project PCTA

Refer to Section 4.4 Treatment Areas for more information on defining these areas.

$PCTA = NNI + RIS + ATA (1 \text{ Impervious}) + ATA (2)$

NNI = Net New Impervious Area

RIS = Replaced Impervious Surface

ATA (1 Impervious) = Additional Treatment Area required for existing Treatment BMPs that were removed or modified as part of the project

ATA (2) = Additional Treatment Area required when NNI is 50 percent or greater than total project impervious

What is the PCTA for the project? 2.88 (Caltrans), 2.80 (City of Berkeley), 0.13 (City of Albany) Acres

The PCTA is the impervious area required to be treated by the project. The PE is to incorporate BMPs until the summation of the treated impervious area of all the BMPs is equivalent to the PCTA for the Project.

Once this area and any ATA 1 (Pervious) has been treated, the project is in compliance with the post construction treatment requirement.

Total Maximum Daily Load (TMDL) Retrofit Projects

If the project is installing Treatment BMPs to only address TMDL requirements, then there is no required PCTA. The Treatment BMPs for a TMDL retrofit project should be designed to treat the impervious and pervious contributing drainage areas, as they are both eligible for compliance unit (CU) credits.

Overall Project Evaluation

Answer all questions, unless otherwise directed.

A. Overall Project Consideration

1. Is the project in a watershed with prescriptive Treatment BMP requirements in an adopted TMDL implementation plan or are there any other requirements for project area (e.g., District, Regional Board, Lawsuit)? Yes No

If Yes, consult the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if there are written agreements related to specific Treatment BMPs. In this case, determine if the rest of this checklist needs to be followed to address other post construction requirements. If not, document BMP(s) in the Individual Treatment BMP Summary Table, provide information on the basis of the BMP requirement and any regulatory coordination in the SWDR narrative, and complete Table E-2. Otherwise, continue.

If No, continue.

2. Does the receiving water have a TMDL for litter/trash, or is there a region specific requirement related to trash? Yes No

If Yes, first evaluate BMPs that can treat other pollutants and are considered to be full capture devices (GSRDs or other) for litter/trash. If other BMPs cannot be sited, consult with the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if standalone full capture devices (GSRDs or other) are required to be incorporated. If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation".

If No, continue.

3. Is the project located in an area that uses traction sand more than twice a year? Yes No

If Yes, first consider BMPs that can treat other pollutants and can capture traction sand. If other BMPs cannot be sited, consult the District/Regional Design Stormwater Coordinator to determine if standalone traction sand trap devices should be incorporated.

If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation". Otherwise, continue with this checklist to identify Treatment BMPs that provide traction sand and other pollutant removal, or to design Treatment BMPs in series.

If No, continue.

B. Dual Purpose Facilities

Does the project have (or propose to include) any dual purpose facilities that could meet treatment requirements (e.g., Dry Weather Flow Diversion, flood control basins, etc.)? Yes No

If Yes and 100 percent of the PCTA and ATA 1 (Pervious) will be treated by the dual purpose facility, go to question 6 of "Individual BMP Evaluation".

If Yes, but 100 percent of the PCTA and ATA 1 (Pervious) has not been addressed, continue.

If No, continue.

C. Evaluate overall project area for infiltration opportunities using existing and proposed roadside surfaces (DPP Infiltration Areas). Assure the DPP Infiltration Area is stabilized to handle highway drainage design flows, for both sheet and concentrated flows (See HDM Section 800).

Document DPP Infiltration Areas on the "Individual Treatment BMP Summary Table" located at the end of this checklist.

1. Based on site conditions, do the DPP Infiltration Areas infiltrate 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) for the project? Yes No

Yes, go to question 6 of "Individual BMP Evaluation".

If No, account for area infiltrated and continue.

2. Can infiltration for these areas be increased by using soil amendments or other means? Yes No

If Yes, and 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is infiltrated, go to question 6 of "Individual BMP Evaluation".

If Yes, but 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is not infiltrated, continue with this checklist to identify Treatment BMPs that will treat the remaining PCTA and ATA 1 (Pervious).

If No, continue.

Individual BMP Evaluation

Answer the following questions for each Treatment BMP location being considered. The following process must be followed until the PCTA and ATA 1 (Pervious) or desired treatment area (Alternative Compliance or TMDL CUs) has been achieved; for TMDL CUs, consider both impervious and pervious contributing drainage areas. Use the Individual Treatment BMP Summary Table at the end of the checklist to summarize the selected BMP(s) based on the findings of the following questions for each BMP contributing drainage area.

1. Infiltration Devices (Infiltration Basin, Trench, or other device)

- a. Can 100 percent of the BMP contributing drainage area WQV (or remaining WQV, if in series with a DPP Infiltration Area or other BMP) be infiltrated? Yes No

If Yes, go to question 6.

If No, continue.

2. Biofiltration Devices (Biofiltration Strips and Swales)

- a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? Yes No

If Yes, when designing the biofiltration device, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage areas. Consider using existing or amended soils:

- i. If infiltration is >50 percent, continue to b.
- ii. If infiltration is ≤50 percent, go to question 3.

If No, continue to b.

- b. Can biofiltration devices be designed to: Yes No

- i. Treat 100 percent of the WQF/WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and
- ii. Meet the siting and design criteria of the Caltrans biofiltration device design guidance.

If Yes, continue to c.

If No, go to question 3.

- c. Biofiltration devices are considered to be an effective method of treatment, go to question 6.

3. Earthen type BMPs (Detention Devices, Media Filters, or other devices)

- a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? Yes No

If Yes, when designing the earthen type BMP, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage area. Consider using existing or amended soils:

- i. If infiltration is >50 percent, continue to b.
- ii. If infiltration is ≤50 percent, go to question 4.

If No, continue to b.

- b. Can earthen type BMPs (standalone or in series with other approved Treatment BMPs) be designed to: Yes No

- iii. Treat 100 percent of the WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and
- iv. Meet the criteria of the Caltrans design guidance for the treatment device being considered.

If Yes, continue to c.

If No, go to question 4.

- c. Earthen type BMPs are considered to be an effective method of treatment, go to question 6.

4. Targeted Design Constituent (TDC)

This approach will compare the effectiveness of individual BMPs and allow the PE to use judgment when evaluating BMP feasibility (site constraints, safety, maintenance requirements, life-cycle costs, etc.).

- a. Does the project discharge to a 303(d) impaired receiving water or a receiving water in a TMDL watershed where Caltrans is a named stakeholder? Yes No

If Yes, is the identified pollutant(s) considered to be a TDC (check all that apply below)? Continue to b. Yes No

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> sediments | <input type="checkbox"/> copper (dissolved or total) |
| <input type="checkbox"/> phosphorus | <input type="checkbox"/> lead (dissolved or total) |
| <input type="checkbox"/> nitrogen | <input type="checkbox"/> zinc (dissolved or total) |
| | <input type="checkbox"/> general metals (dissolved or total) ¹ |

If No or if no TDC is identified, use Matrix A to select BMPs and go to question 5.

- b. Treating Only Sediment. Is sediment a TDC? Yes No

If Yes, use Matrix A to select BMPs and go to question 5.

If No, continue to c.

- c. Treating Only Metals. Are copper, lead, zinc, or general metals listed TDCs? Yes No

If Yes, use Matrix B to select BMPs, and go to question 5.

If No, continue to d.

- d. Treating Only Nutrients. Are nitrogen and/or phosphorus listed TDCs? Yes No

If Yes, use Matrix C to select BMPs, and go to question 5.

If No, continue e.

- e. Treating both Metals and Nutrients. Is copper, lead, zinc, or general metals AND nitrogen or phosphorous a TDC? Yes No

If yes, use Matrix D to select BMPs, and go to question 5.

If No, continue.

¹ General metals is a designation used by Regional Water Boards when specific metals have not yet been identified as causing the impairment.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*In cases where earthen BMPs also infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			

5. Does the project discharge to a 303(d) receiving water that is listed for mercury or low dissolved oxygen? Yes No

If Yes, contact the District/Regional NPDES Coordinator to determine if standing water in a Delaware Media Filter or Wet Basin would be a risk to downstream water quality. Continue to question 6.

If No, continue to question 6.

6. Identify the Treatment BMPs being considered and complete the Individual Treatment BMP Summary Table and Overall Project Treatment Summary Table on the following pages. Refer to Appendix B of the PPDG and review the checklists identified below for every Treatment BMP under consideration. Complete

Document the basis of design in the SWDR narrative and complete Table E-2.

___ DPP Infiltration Areas: Checklist T-1, Part 11

___ Infiltration Devices: Checklist T-1, Part 2

X Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 3

X Detention Devices: Checklist T-1, Part 4

___ Traction Sand Traps: Checklist T-1, Part 5

___ Dry Weather Diversion: Checklist T-1, Part 6

X GSRDs: Checklist T-1, Part 7

___ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8

Note:

Multi-Chamber Treatment Train (MCTT) is not listed here because Caltrans has found that other approved BMPs are equally effective and more sustainable due to lower life cycle costs.

Wet Basins are not listed here due to feasibility issues due to site feasibility and issues with long term operation and maintenance.

MCTT and Wet Basins may be considered or implemented upon the recommendation of the District/Regional Design Stormwater Coordinator.

7. Prepare cost estimate, including ROW, and identify any pertinent site specific determination of feasibility for selected Treatment BMPs and include in the SWDR for approval. Complete

Individual Treatment BMP Summary Table

List the selected BMPs based on the findings of this checklist and the treated areas associated with each BMP in Table E-2. For projects with multiple BMPs, add rows (if needed), or attach a separate sheet displaying the following information.

Complete

Each BMP must be tracked in Table E-2. Districts may use a modified table based upon their needs. See Section 6.6 for additional information.

Table E-2. Individual Treatment BMP Summary Table ¹						
BMP Identifier-Number	BMP Type	Treated Impervious Area (CT RW) (ac)	Treated Impervious Area (Outside CT RW) (ac)	Treated Pervious Area (CT RW) (ac)	Treated Pervious Area (Outside CT RW) (ac)	Treated WQV/WQF (%)
Total Area to be Treated (acre)		(B in Table E-1)	(C in Table E-1)			

¹ The treated areas identified in this table are a product of the BMP CDA and Treated WQV/WQF (%).

See Tables 4 and 5 in SWDR for treatment BMPs in Caltrans ROW and treatment BMPs in City of Berkeley ROW and Golden Gate Fields respectively.

Storm Water BMP Cost Summary- PA/ED Phase
THIS INFORMATION IS FOR CALTRANS INTERNAL USE ONLY

Project Name:	I-80/Gilman Street Interchange Improvement Project
District:	04
County:	Ala
Route:	80
Postmile Limits:	6.38/6.95
Project ID (or EA):	0400020155 (04-0A7700)

1.0 DPP BMPs

Total Roadway Cost*	1.00% Estimated	
\$22,302,000	\$223,020	SUBTOTAL \$ 223,020

2.0 Treatment BMPs

New Impervious Surface (acres)	Treatment cost per acre	
5.8	\$200,000	SUBTOTAL \$ 1,160,000

3.0 Prepare SWPPP (or WCPC)

Total Roadway Cost*	Cost per Table F-4	
\$22,302,000	\$12,067	SUBTOTAL \$ 12,067

RQM Value (if SWPPP is required): \$6,067

4.0 Construction Site BMPs

Total Roadway Cost*	1.25% per Table F-2	
\$22,302,000	\$278,775	SUBTOTAL \$ 278,775

5.0 ROW Acquisition

Length of ROW	Unit Cost per Length	
0	\$0	SUBTOTAL \$ -

5.0 Stormwater Monitoring

Project Risk Level	SWM Cost (PPDG Appen F)**	
2	\$59,067	SUBTOTAL \$ 59,067

TOTAL COST FOR STORM WATER BMPs \$ 1,732,928

*Total Roadway Cost based on Escalated Costs
 **Based on NOAA climatology data for Berkeley, CA

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SWDR Signed Date	District	EA/Project ID	County	Route	Beg_PM	End_PM	Project Description	Project Phase	Long SWDR	Risk Level	DSA (ac)
	4	EA 04-0A7700/ 0400020155	ALA	80	6.38	6.95	Interchange improvement through roundabouts, utilities placement, flap gate installation at Gilman Street outfall	PAED	Yes	RL2	8.66

Biofiltration Strips and Swales	Detention	Infiltration Devices	GSRD	TST	MedFilter	DPPIA	SA	Other BMP	Est. Const_Start	Est. Const_Comp
8	TBD in PS&E	0	1	0	0	0	0	0	12/31/2020	1/4/2023

Net New Impervious area (NNI)	Replaced Impervious Surface (RIS)	Additional Treatment Area (ATA)	Post Const Treatment Area (ac)	Treated Impervious Area (ac)	Treated Impervious Area Balance (ac)	Treated Pervious Area (ac)	Stabilized Area (ac)	MWELO	RSA
0.03	5.78	0.00	5.81	6.08	0.27	0.58	0.00	TBD in PS&E	No- local hydromodification criteria

SW Comment
The Project must comply with the Project Planning and Design section requirements of Caltrans 2012 MS4 Permit and the Region 2 criteria for stormwater treatment and hydromodification assessment. There is no dry weather flow.

****To be updated during the PS&E phase**

IDNO	EA / Project ID	BMP Type	District	County	Route	LocBPM	Begin Latitude (d.d)	Begin Longitude (d.d)
EA 04-0A7700/ 0400020155-1	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.672	37.878370	-122.307926
EA 04-0A7700/ 0400020155-2	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.658	37.878211	-122.307655
EA 04-0A7700/ 0400020155-3	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.594	37.877251	-122.307535
EA 04-0A7700/ 0400020155-4	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.668	37.878559	-122.306914
EA 04-0A7700/ 0400020155-5	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.632	37.878050	-122.306787
EA 04-0A7700/ 0400020155-6	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.666	37.878542	-122.306880
EA 04-0A7700/ 0400020155-7	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.632	37.877859	-122.307543
EA 04-0A7700/ 0400020155-8	EA 04-0A7700/ 0400020155	BioSwale	4	ALA	80	6.653	37.878300	-122.307012

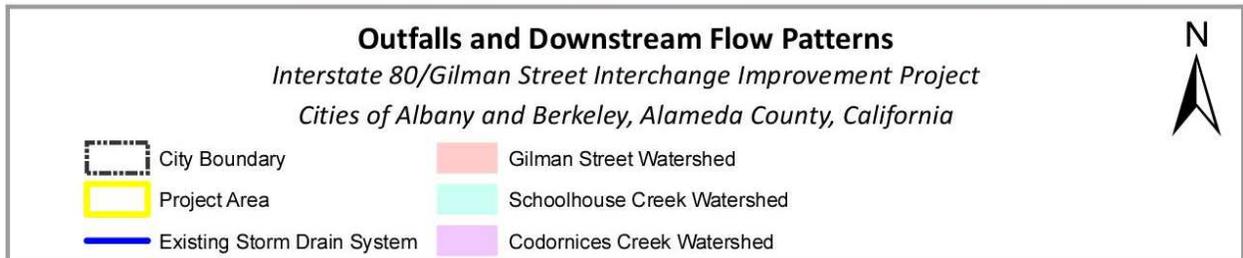
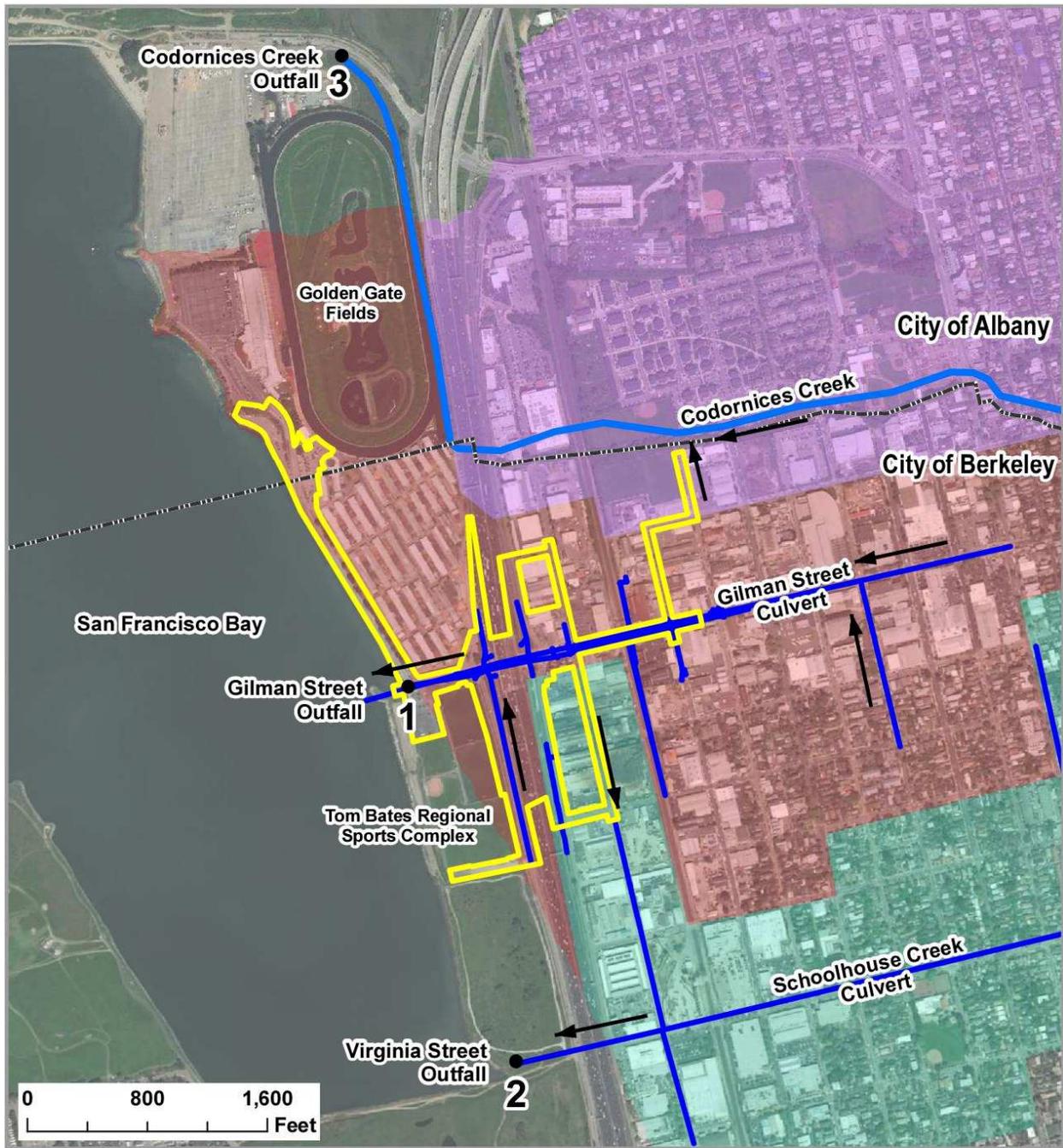
LocEPM	End Latitude (d.d)	End Longitude (d.d)	Direction	Trash/ Sand Capacity (cyd)	BMP Specific Comments	Treated Impervious Area (ac CT R/W)	Treated Pervious Area (ac CT R/W)
6.697	37.878740	-122.307945	W		The center of the swale is located 15 feet from the existing Caltrans ROW.	0.09	0.06
6.676	37.878468	-122.307748	W		The center of the swale is located 53 feet from the existing Caltrans ROW.	0.59	0.05
6.629	37.877742	-122.307774	W		The center of the swale is located 86 feet from the existing Caltrans ROW.	0.36	0.17
6.690	37.878842	-122.306954	E		The center of the swale is located 65 feet from the proposed Caltrans ROW.	1.83	0.09
6.639	37.878109	-122.306966	E		The center of the swale is located 154 feet from the proposed Caltrans ROW.	0.82	0.04
6.671	37.878651	-122.306757	E		The center of the swale is located 69 feet from the proposed Caltrans ROW.	0.11	0.02
6.640	37.877966	-122.307573	W		The center of the swale is located 139 feet from the existing Caltrans ROW.	0.09	0.01
6.661	37.878444	-122.306925	E		The center of the swale is located 160 feet from the proposed Caltrans ROW.	0.05	0.01
						3.94	0.45

****To be updated during the PS&E phase**

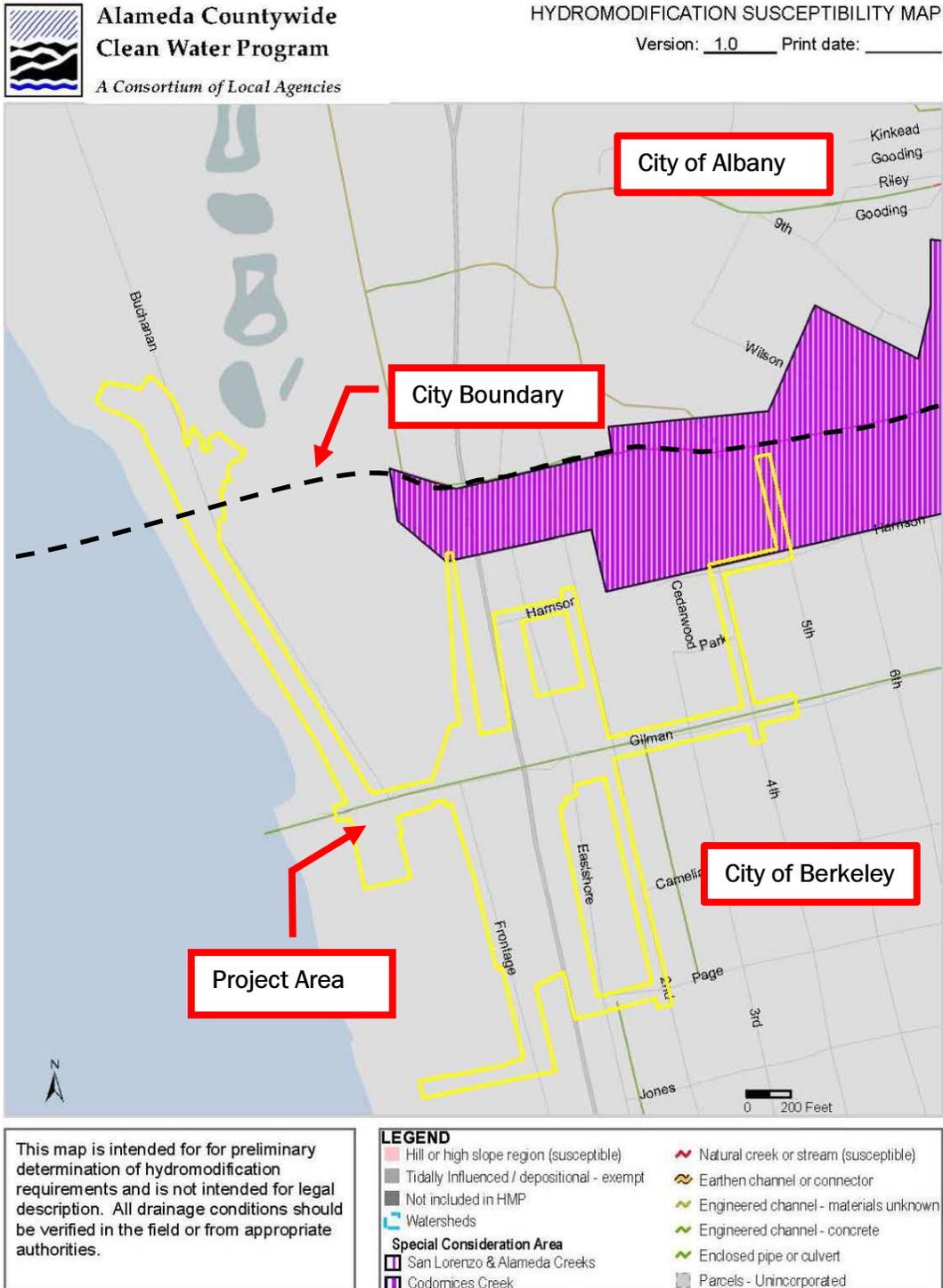
WQV Capacity (cf)	WQF Capacity (cfs)	Basis of BMP Requirement (non 402)	Stabilized Area (ac)	TMDL Waterbody	BMP Capital Cost	Watershed	RWB
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (Mercury)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (PCBs)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (Mercury)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (PCBs)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (Mercury)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (PCBs)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (Mercury)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
TBD	TBD	401 Cert./404 Permit	0.00	San Francisco Bay (PCBs)	TBD	undefined (203.30)	San Francisco Bay (Region 2)
0.00	0.00		0.00				

****To be updated during the PS&E phase**

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Source: ACCWP 2010 and overlay of project area and city boundary by WRECO

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Checklist SW-2, Stormwater Quality Issues Summary

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
 PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Consult other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Design Stormwater Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

- | | | |
|---|--|--|
| 1. Determine the receiving waters for the project | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 2. For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 3. Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits, as shown by DWP. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 4. Determine the RWQCB special requirements, including TMDLs, effluent limits, etc. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 5. Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 6. Determine if a 401 certification will be required. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 7. Identify rainy season. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 8. If applicable, determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 9. If considering Treatment BMPs, determine the soil classification, permeability, erodibility and depth to groundwater. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 10. Determine contaminated soils within the project area. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 11. Determine the total disturbed soil area of the project. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 12. Describe the topography of the project site. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 13. List any areas outside of the Caltrans ROW that will be included in the project (e.g., contractor's staging yard, work from barges, easements for staging). | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 14. Determine if additional ROW acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much? | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 15. Determine the estimated unit costs for ROW should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches. | <input type="checkbox"/> Complete | <input checked="" type="checkbox"/> NA |
| 16. Determine if project area has any slope stabilization concerns. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 17. Describe the local land use within the project area and adjacent areas. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 18. Evaluate the presence of dry weather flow. | <input type="checkbox"/> Complete | <input checked="" type="checkbox"/> NA |

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Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80

PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

The PE should confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

Options for avoiding or reducing potential impacts during project planning include the following:

1. Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions? Yes No NA

2. Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts? Yes No NA

3. Can any of the following methods be utilized to minimize erosion from slopes:
 - a. Disturbing existing slopes only when necessary? Yes No NA
 - b. Minimizing cut and fill areas to reduce slope lengths? Yes No NA
 - c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes? Yes No NA
 - d. Acquiring ROW easements (such as grading easements) to reduce steepness of slopes? Yes No NA
 - e. Avoiding soils or formations that will be particularly difficult to re-stabilize? Yes No NA
 - f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates? Yes No NA
 - g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows? Yes No NA
 - h. Rounding and shaping slopes to reduce concentrated flow? Yes No NA
 - i. Collecting concentrated flows in stabilized drains and channels? Yes No NA

4. Does the project design allow for the ease of maintaining all BMPs? Yes No

5. Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season? Yes No

6. Can permanent stormwater pollution controls such as paved slopes, vegetated slopes, basins, and conveyance systems be installed early in the construction process to provide additional protection and to possibly utilize them in addressing construction stormwater impacts? Yes No NA

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Design Pollution Prevention BMPs Checklist DPP-1, Part 1

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

Consideration of Design Pollution Prevention BMPs

Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]

Will the project increase velocity or volume of downstream flow? Yes No NA

Will the project discharge to unlined channels? Yes No NA

Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability? Yes No NA

If Yes was answered to any of the above questions, consider **Downstream Effects Related to Potentially Increased Flow**, complete the Checklist DPP-1, Part 2.

Slope/Surface Protection Systems

Will the project create new slopes or modify existing slopes? Yes No NA

If Yes was answered to the above question, consider **Slope/Surface Protection Systems**, complete the Checklist DPP-1, Part 3.

Concentrated Flow Conveyance Systems

Will the project create or modify ditches, dikes, berms, or swales? Yes No NA

Will project create new slopes or modify existing slopes? Yes No NA

Will it be necessary to direct or intercept surface runoff? Yes No NA

Will cross drains be modified? Yes No NA

If Yes was answered to any of the above questions, consider **Concentrated Flow Conveyance Systems**; complete the Checklist DPP-1, Part 4.

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

It is the goal of the Stormwater Program to maximize the protection of desirable existing vegetation, soils, and stream buffer areas to provide erosion and sediment control benefits on all projects. Complete

Consider **Preservation of Existing Vegetation, soils, and stream buffer areas**, complete the Checklist DPP-1, Part 5.

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Design Pollution Prevention BMPs Checklist DPP-1, Part 2

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Downstream Effects Related to Potentially Increased Flow

1. Review total paved area and reduce to the maximum extent practicable. Complete
2. Review channel lining materials and design for stream bank erosion control. Complete
 - (a) See Chapters 860 and 870 of the HDM. Complete
 - (b) Consider channel erosion control measures within the construction limits as well as downstream. Consider scour velocity. If erosion control measures are required downstream of construction limits obtain the appropriate permits and right of way documents to include work within the construction limits. Complete
3. Include, where appropriate, energy dissipation devices at culvert outlets. Complete
4. Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. Complete
5. Include, if appropriate, peak flow attenuation basins or devices to reduce peak discharges. Complete
6. Calculate the water quality volume infiltrated within the project limits. These calculations will be used in the Checklist T-1, Part 1. Complete

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Design Pollution Prevention BMPs Checklist DPP-1, Part 3

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Slope / Surface Protection Systems

1. What are the proposed areas of cut and fill? (attach plan or map) Complete
2. Were benches or terraces provided on high cut and fill slopes to shorten slope length? Yes No
3. Were concentrated flows collected in stabilized drains or channels? Yes No
4. Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)? Yes No

If Yes, District Landscape Architect is responsible for an erosion control strategy and may prepare an erosion control plan.

5. Are new or disturbed slopes > 2:1 (h:v)? Yes No

If Yes, DES Geotechnical Design unit must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Stormwater Coordinator for slopes steeper than 2:1 (h:v).

VEGETATED SURFACES

1. Identify existing vegetation. Complete
2. Evaluate site to determine soil types, appropriate vegetation and planting strategies. Complete
3. How long will it take for permanent vegetation to establish? Complete
4. Plan transition BMPs from construction to permanent establishment. Complete
5. Have vegetated areas and supporting permanent irrigation systems been designed to comply with the Model Water Efficient Landscape Ordinance (MWELO)? Yes No
6. Minimize overland and concentrated flow depths and velocities. Complete

HARD SURFACES

1. Are hard surfaces minimized? Yes No
Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems. Complete

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Design Pollution Prevention BMPs Checklist DPP-1, Part 4

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, 835, and Chapter 860 of the HDM. Complete
2. Review existing and proposed conditions to remove any dike not required for slope stability, erosion control, and water conveyance. Complete
3. Evaluate risks due to erosion, overtopping, flow backups or washout. Complete
4. Consider outlet protection where localized scour is anticipated. Complete
5. Examine the site for run-on from off-site sources. Complete
6. Consider permissible shear and velocity when selecting lining material (See Table 865.2 in the HDM). Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. Complete
2. Consider paved spillways for side slopes flatter than 4:1 h:v. Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. Complete

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Design Pollution Prevention BMPs

Checklist DPP-1, Part 5

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80

PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

1. Review Preservation of Property, (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation, soils, and stream buffer areas. Complete
2. Has all vegetation, soils, and stream buffer areas to be retained been coordinated with Environmental, and identified and defined in the contract plans? Yes No
3. Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling? Complete
4. Have impacts to preserved vegetation, soils, and stream buffer areas been considered while work is occurring in disturbed areas? Yes No
5. Are all areas to be preserved delineated on the plans? Yes No

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Treatment BMPs Checklist T-1, Part 3		
Prepared by: <u>WRECO</u>	Date: <u>August 2018</u>	District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u>	Project ID/EA: <u>0400020155 (04-0A7700)</u>	RWQCB: <u>San Francisco Bay (2)</u>

****To be completed during the PS&E phase**

Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? Yes No
If "No", evaluate other BMPs.
2. Can biofiltration swale be designed with a slope between 0.25 and 6 percent (with 1 to 2 percent preferred)? Yes No
If "No", Biofiltration Swales are not feasible.
3. Can biofiltration strips be designed with a maximum slope of 2H:1V (with 4H:1V or flatter preferred)? Yes No
If "No", Biofiltration Strips are not feasible.
4. Are Biofiltration device(s) proposed at sites where known contaminated soils exist? Yes No
If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.
5. Does adequate area exist within the RW to place Biofiltration device(s)? Yes No
If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Biofiltration devices and how much RW would be needed to treat WQF?
_____ acres Yes No
If "Yes", continue to Design Elements section. If "No", continue to Question 7.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. Complete

Design Elements

* **Required Design Element** – A “Yes” response to these questions is required to further the consideration of this BMP into the project design. Document a “No” response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended Design Element** – A “Yes” response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * Yes No
2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g., freeboard, minimum slope) Yes No
3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.4.3)* Yes No
4. Is the maximum length of a biofiltration strip \leq 100 ft? Strips > 100 ft. may still be considered as long as potential erosion issues have been addressed. ** Yes No
5. Has the minimum width (perpendicular to flow) of the invert of the biofiltration swale received the concurrence of District Maintenance? * Yes No
6. Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? * Yes No
7. Has the infiltration rate of the bio-filtration device been calculated and maximized through amendments where appropriate? ** Yes No
8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train or pretreatment? ** Yes No
If “Yes”, document the amount of runoff treated (WQV/WQF).
9. Has the lining material been selected based on the permissible shear and velocity (refer to HDM Chapter 860 and Table 865.2)?* Yes No

Treatment BMPs		
Checklist T-1, Part 4		
Prepared by: <u>WRECO</u>	Date: <u>August 2018</u>	District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u>	Project ID/EA: <u>0400020155 (04-0A7700)</u>	RWQCB: <u>San Francisco Bay (2)</u>

****To be completed during the PS&E phase**

Detention Devices

Feasibility

1. Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems? Yes No
2. Is basin invert ≥ 5 ft above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.) Yes No

If No to any question above, then Detention Devices are not feasible.
3. If the Detention Device is being used to capture traction sand, is the total volume of the device at least equal to the WQV designed to be treated plus the anticipated volume of traction sand, while maintaining a minimum 12-inch freeboard (1 ft)? Yes No

If No, then Detention Devices are not feasible.
4. Does adequate area exist within the RW to place Detention Device? Yes No

If Yes, continue to the Design Elements section. If No, continue to Question 5.
5. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Detention Device and how much RW would be needed to treat WQV? _____ Yes No

If Yes, continue to the Design Elements section. If No, continue to Question 6.
6. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. Complete

Design Elements

* **Required Design Element** – A “Yes” response to these questions is required to further the consideration of this BMP into the project design. Document a “No” response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended Design Element** – A “Yes” response is preferred for these questions, but not required for incorporation into a project design.

1. Has the location of the Detention Device been evaluated for any effects to the adjacent roadway and subgrade? * Yes No
2. Can a minimum freeboard of 12 inches be provided above the overflow event elevation? * Yes No
3. Is an upstream bypass or overflow outlet provided? * Yes No
4. Is the drawdown time of the Detention Device a maximum of 96 hours? * Yes No
5. Is the basin outlet designed to minimize clogging (minimum outlet orifice diameter of 0.5 inches)? * Yes No
6. Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? * Yes No
7. Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? Otherwise include rock or similar protective system. Note: Detention Basins may be lined, in which case no vegetation would be required for lined areas.* Yes No
8. Has sufficient access for maintenance been provided? * Yes No
9. Is the side slope 4:1 (h:v) or flatter for interior slopes? **
(Note: Side slopes up to 3:1 (h:v) allowed with approval by District Maintenance.) Yes No
10. If significant sediment is expected from nearby slopes, can the Detention Device be designed with additional volume equal to the expected annual loading? ** Yes No
11. Is flow path as long as possible (> 2:1 length to width ratio at WQV elevation is recommended)? ** Yes No

Treatment BMPs		
Checklist T-1, Part 7		
Prepared by: <u>WRECO</u>	Date: <u>August 2018</u>	District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u>	Project ID/EA: <u>0400020155 (04-0A7700)</u>	RWQCB: <u>San Francisco Bay (2)</u>

****To be completed during the PS&E phase**

Gross Solids Removal Devices (GSRDs)

Feasibility

1. Is the receiving water body downstream of the tributary area to the proposed GSRD on a 303(d) list or has a TMDL for litter been established? Yes No
2. Are the devices sized for flows generated by the peak drainage facility design event (1-year, 1-hour) or can peak flow be diverted? Yes No
3. Are the devices sized to contain gross solids (litter and vegetation) for a period of one year? Yes No
4. Is there sufficient access for maintenance and large equipment (vacuum truck)? Yes No

If "No" to any question above, then Gross Solids Removal Devices are not feasible. Note that Biofiltration Systems, Infiltration Devices, Detention Devices, Dry Weather Flow Diversion, and Media Filters may be considered for litter capture, but consult with District/Regional NPDES Coordinator if proposed to meet a TMDL for litter.
5. Does adequate area exist within the RW to place Gross Solids Removal Devices? Yes No
If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Gross Solids Removal Devices and how much RW would be needed? _____ acres
If "Yes", continue to Design Elements section. If "No", continue to Question 7.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. Complete

Design Elements – Linear Radial Device

* **Required Design Element** – A “Yes” response to these questions is required to further the consideration of this BMP into the project design. Document a “No” response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended Design Element** – A “Yes” response is preferred for these questions, but not required for incorporation into a project design.

1. Does sufficient hydraulic head exist to place the Linear Radial GSRD? * Yes No
2. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** Yes No
3. Was the litter accumulation rate of 10 ft³/ac/yr (or a different rate recommended by District Maintenance) used to size the device? * Yes No
4. Was the overflow release device sized for the design storm event? * Yes No
5. Were the standard detail sheets used for the layout of the devices? **
If No, consult with OHSD and District/Regional Design Stormwater Coordinator. Yes No
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * Yes No

Design Elements – Inclined Screen

* **Required Design Element** – A “Yes” response to these questions is required to further the consideration of this BMP into the project design. Document a “No” response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended Design Element** – A “Yes” response is preferred for these questions, but not required for incorporation into a project design.

1. Does sufficient hydraulic head exist to place the Inclined Screen GSRD? * Yes No
2. Was the litter accumulation rate of 10 ft³/ac/yr (or a different rate recommended by District Maintenance) used to size the device? * Yes No
3. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** Yes No
4. Was the overflow release device sized for the design storm event? * Yes No
5. Were the standard details sheets used for the layout of the devices? **
If No, consult with OHSD and District/Regional Design Stormwater Coordinator. Yes No
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * Yes No

DATE: August 2018

Project ID / EA: 0400020155 (04-0A7700)

Project Evaluation Process for the Consideration of Construction Site BMPs

No.	Criteria	Yes ✓	No ✓	Supplemental Information
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	✓		If Yes, Construction Site BMPs for Soil Stabilization (SS) will be required. Review CS-1, Part 1. Continue to 2. If No, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the RW, etc.?	✓		If Yes, Construction Site BMPs for Sediment Control (SC) will be required. Review CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	✓		If Yes, Construction Site BMPs for Tracking Control (TC) will be required. Review CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	✓		If Yes, Construction Site BMPs for Wind Erosion Control (WE) will be required. Review CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	✓		If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	✓		If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Parts 5 & 6. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with stormwater; be dispersed by wind; be dumped and/or spilled into storm drain systems?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6.

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Construction Site BMPs Checklist CS-1, Part 1

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Temporary Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? 3
2. What is the total disturbed soil area for the project? (ac) 8.83
3. Consult your District/Regional Design Stormwater Coordinator for the minimum required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. Complete

Scheduling

4. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres? Yes No
 - (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) Complete
 - (b) Edit specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. Complete
 - (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. Complete

Preservation of Existing Vegetation

5. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the construction limits? (Verify the completion of DPP-1, Part 5) Yes No
 - (a) Verify the protection of ESAs through delineation on all project plans. Complete
 - (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. Complete

6. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed or existing Treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent practicable.) Yes No
- (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. Complete
- (b) Protect with high visibility plastic fence or other BMP. Complete
7. If yes for 5, 6, or both, then designate ESA fencing as a separate contract bid line item, if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5). Complete

Slope Protection

8. Provide a temporary soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District Landscape Architect.)
- (a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Straw Mulch, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching, other BMPs or a combination to cover the DSA throughout the project's rainy season. Complete
- (b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) Complete
- (c) Designate as a separate contract bid line item. Complete

Slope Interrupter Devices

9. For projects with temporary erosion control requirements, provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 20 ft in length, in accordance with CGP requirements.
- (a) Select Fiber Rolls or other BMPs to protect slopes throughout the project's rainy season. Complete
- (b) For slope inclination of 4:1 (h:v) and flatter, Fiber Rolls or other BMPs shall be placed along the contour and spaced 20 ft on center. Complete
- (c) For slope inclination between 4:1 (h:v) and 2:1 (h:v), Fiber Rolls or other BMPs shall be placed along the contour and spaced 15 ft on center. Complete
- (d) For slope inclination of 2:1 (h:v) and greater, Fiber Rolls or other BMPs shall be placed along the contour and spaced 10 ft on center. Complete

- (e) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) Complete
- (f) Designate as a separate contract bid line item. Complete

Channelized Flow

10. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the RW (off-site run-on). Complete
- (a) Utilize Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Earth Dikes/Swales, Ditches, Outlet Protection/Velocity Dissipation, Slope Drains, Check Dams, or other BMPs to convey concentrated flows in a non-erosive manner. Complete
 - (b) Designate as a separate contract bid line item, as appropriate. Complete

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Construction Site BMPs Checklist CS-1, Part 2
Prepared by: <u>WRECO</u> Date: <u>August 2018</u> District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u> Project ID/EA: <u>0400020155 (04-0A7700)</u> RWQCB: <u>San Francisco Bay (2)</u>

****To be completed during the PS&E phase**

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? Yes No
 - (a) Select linear sediment barrier such as Silt Fence, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) Complete
 - (b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) Complete
 - (c) Designate as a separate contract bid line item. Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? Yes No
 - (a) Utilize linear sediment barriers such as Earth Dike/Drainage Swales and Lined Ditches, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) Complete
 - (b) Designate as a separate contract bid line item, as appropriate. Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the construction limits? Yes No
 - (a) Select Drainage Inlet Protection to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) Complete
 - (b) Designate as a separate contract bid line item. Complete

4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in Drainage Inlet Protection - Type 2? Yes No
- (a) Include with other types of Drainage Inlet Protection. Complete

Sediment/Desilting Basin

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? Yes No
- (a) Consider feasibility for desilting basin allowing for available ROW within the construction limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. Complete
- (b) If feasible, design desilting basin(s) per the guidance in the *CASQA Construction BMP Guidance Handbook* to maximize capture of sediment-laden runoff. Complete
- (c) Designate as a separate contract bid item Complete
6. Is ATS to be used for controlling sediment? Yes No
- (a) If yes, then will desilting basin or other means of natural storage be used? Yes No
- (b) If no, then plan for storage tanks sufficient to hold treatment volume. Complete
7. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) Yes No
- (a) Edit specifications for permanent Treatment BMP work to be implemented in a manner that will allow its use as a Construction Site BMP. Complete

Sediment Trap

8. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge? Yes No
- (a) Design sediment traps in accordance with the *CASQA Construction BMP Guidance Handbook*. Complete
- (b) Designate as a separate contract bid line item. Complete

Construction Site BMPs
Checklist CS-1, Part 3

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

****To be completed during the PS&E phase**

Tracking Controls

Stabilized Construction Entrance/Exit

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) Yes No
- (a) Identify and designate these entrance/exit points as stabilized construction entrances. Complete
- (b) Designate as a separate contract bid line item. Complete

Tire/Wheel Wash

2. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) Yes No
- (a) Designate as a separate contract bid line item. Complete

Stabilized Construction Roadway

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) Yes No
- (a) Designate these temporary access roads as stabilized construction roadways. Complete
- (b) Designate as a separate contract bid line item. Complete

Street Sweeping and Vacuuming

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) Yes No
- (a) Designate as a separate contract bid line item. Complete

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Construction Site BMPs

Checklist CS-1, Part 4

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80

PM: 6.38/6.95 Project ID/EA: 0400020155 (04-0A7700) RWQCB: San Francisco Bay (2)

Wind Erosion Controls

Wind Erosion Control

1. Is the project located in an area where standard dust control practices in accordance with *Standard Specifications*, Section 14-903: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind? Yes No
(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.)
 - (a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) Complete
 - (b) Designate as a separate contract bid line item. Complete

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Construction Site BMPs Checklist CS-1, Part 5

Prepared by: WRECO Date: August 2018 District-Co-Route: 04-ALA-80
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****To be completed during the PS&E phase**

Non-Stormwater Management

Temporary Stream Crossing & Clear Water Diversion

1. Will construction activities occur within a water body or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) Yes No
- (a) Select from types offered in Temporary Stream Crossing to provide access through watercourses consistent with permits and agreements.¹ Complete
- (b) Select from types offered in Clear Water Diversion to divert watercourse consistent with permits and agreements.¹ Complete
- (c) Designate as a separate contract bid line item(s). Complete

Other Non-Stormwater Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? Yes No
- (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as Water Conservation Practices, Dewatering Operations, Paving and Grinding Operations, Potable Water/Irrigation, Vehicle and Equipment Cleaning, Vehicle and Equipment Fueling, Vehicle and Equipment Maintenance, Pile Driving Operations, Concrete Curing, Material and Equipment Use Over Water, Concrete Finishing, and Structure Demolition/Removal Over or Adjacent to Water.¹ Complete
- (b) Verify that costs for non-stormwater management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. Complete

¹ Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 and 401 permits and Dept. of Fish and Game 1601 Streambed alteration Agreements.

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Construction Site BMPs		
Checklist CS-1, Part 6		
Prepared by: <u>WRECO</u>	Date: <u>August 2018</u>	District-Co-Route: <u>04-ALA-80</u>
PM: <u>6.38/6.95</u> Project ID/EA: <u>0400020155 (04-0A7700)</u> RWQCB: <u>San Francisco Bay (2)</u>		

****To be completed during the PS&E phase**

Waste Management & Materials Pollution Control

Concrete Waste Management

1. Does the project include concrete placement or mortar mixing?

Yes No

(a) Select from types offered in Concrete Waste Management to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.)

Complete

(b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd³ or if requested by Construction.

Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants?

Yes No

(a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as Material Delivery and Storage, Material Use, Spill Prevention and Control, Solid Waste Management, Hazardous Waste Management, Contaminated Soil Management, Sanitary/Septic Waste Management, and Liquid Waste Management

Complete

(b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction.

Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction?

Yes No

(a) Verify that costs for stockpile management and associated sediment control and temporary soil stabilization BMPs for temporary stockpiles are identified in the contract documents. Designate as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction.

Complete

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