THIS REPORT IS PROVIDED AS AN EXAMPLE ONLY. ALL PROJECT INFORMATION, NAMES, AND DATES ARE FICTITIOUS. THIS IS NOT INTENDED TO BE A FINAL REPRESENTATION OF THE WORK DONE OR RECOMMENDATIONS MADE BY CALTRANS FOR AN ACTUAL PROJECT.

Long Form - Storm Water Data Report

Dist-County-Route: 04-SCl-101, 05-SBt-101,04, 04-SCL-25

Post Mile Limits: 0.0/5.0, 4.9/7.5, 1.6/2.5

Project Type: Highway Widening

Project ID (or EA): 04-XXXXXX

Program Identification: HB5

Phase: ☒ PID ☐ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Central Coast (Region 3)

Is the Project required to consider Treatment BMPs? Yes ☒ No ☐

If yes, can Treatment BMPs be incorporated into the project? Yes ☒ No ☐

If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date:

Total Disturbed Soil Area: Option A: 431.8 ac, Option B: 411.7 ac Risk Level: 3

Estimated: Construction Start Date: 01/31/2013 Construction Completion Date: 12/03/2014

Notification of Construction (NOC) Date to be submitted: 12/31/2012

Erosivity Waiver	Yes ☐	Date:	No ☒
Notification of ADL reuse (if Yes, provide date)	Yes ☐	Date: TBD in PS&E Phase	No ☐
Separate Dewatering Permit (if yes, permit number)	Yes ☐	Permit # TBD	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.

Betsy Ross 08/26/10

[Betsy Ross], Registered Project Engineer/Landscape Architect — Date

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

George Washington 08/26/10

[George Washington), Project Manager — *Date*

Paul Revere 08/26/10

[Paul Revere), Designated Maintenance Representative — *Date*

Horatio Gates 08/26/10

[Horatio Gates), Designated Landscape Architect Representative — *Date*

Friedrich Wilhelm von Steuben 08/26/10

[Stamp Required for PS&E only) — *[Friedrich Wilhelm von Steuben), District/Regional Design SW Coordinator or Designee* — *Date*

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STORM WATER DATA INFORMATION

1. Project Description

The California Department of Transportation (Caltrans), in cooperation with the Santa Clara Valley Transportation Authority (VTA), proposes to construct improvements to a 7.6-mile segment of US 101 that is located in southern Santa Clara County/northern San Benito County. The primary improvements will consist of the following:

- Widen and upgrade US 101 to a six-lane freeway between the Monterey Road interchange in Gilroy and the State Route (SR) 129 interchange in northern San Benito County.
- Reconstruct the US 101/SR 25 interchange.
- Construct an auxiliary lane in each direction of US 101 between the Monterey Road and SR 25 interchanges.
- Extend Santa Teresa Boulevard approximately 0.5 miles from Castro Valley Road to the new US 101/SR 25 interchange.
- Construct improvements at the southbound US 101 off-ramp to SR 129.
- Construct frontage roads, as needed, to replace existing access to US 101 from adjacent properties.
- Grade-separate the Union Pacific Railroad (UPRR) crossing on SR 25 just west of Bloomfield Avenue.
- Construct bicycle facilities, as needed, to replace access that will be lost when US 101 is upgraded to a freeway and to improve bicycle access in the project area.

The proposed project includes the reconstruction of the existing US 101/SR 25 interchange. There are two design options under consideration for this component of the project:

Design Option A will reconstruct the US 101/SR 25 interchange at a location approximately 0.2 miles north of the existing interchange. The interchange will include a new bridge to convey SR 25 over US 101. It will also include ramps to allow all traffic movements between US 101 and SR 25. The proposed work at the reconstructed US 101/SR 25 interchange will include the realignment of SR 25 to a location just east of the UPRR crossing, at which point it will either transition to the existing SR 25 or tie into an upgraded four-lane SR 25.

Design Option B will reconstruct the US 101/SR 25 interchange at the existing interchange location. The interchange will include a new bridge to convey SR 25 over US 101. It will also include ramps to allow all traffic movements between US 101 and SR 25. The proposed work at the reconstructed US 101/SR 25 interchange will include a minor realignment of SR 25 to a location just east of the UPRR crossing, at which point it will either transition to the existing SR 25 or will into an upgraded four-lane SR 25.

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Disturbed Soil Area and Net Additional Impervious Area

The existing impervious area for this project is estimated to be 84.9 acres. Table 1 and Table 2 show the disturbed soil area (DSA) and net added impervious area (AIA) for the project by design option and county.

Table 1. Project DSA

Design Option	DSA (ac)		
	Santa Clara	San Benito	Total
A	325.6	106.2	431.8
B	305.5		411.7

Table 2. Project AIA

Design Option	Net AIA (ac)		
	Santa Clara	San Benito	Total
A	62.5	13.0	75.5
B	60.6		73.6

The DSA was calculated by subtracting the overlay impervious area from the proposed total construction area, including staging areas. This includes any soil that will be exposed; including soil beneath the existing pavement - also to be removed. The net additional impervious area was calculated by subtracting the total existing impervious area intended to be removed from the total new impervious area.

From post mile (PM) 3.7 to PM 5.0 along US 101 in Santa Clara County, the project is within the combined City of Gilroy, City of Morgan Hill and County of Santa Clara Phase II Municipal Separate Storm Sewer System (MS4). All other areas within the project are not within an MS4.

2. Site Data and Storm Water Quality Design Issues (refer to Checklists SW-1, SW-2, and SW-3)

The project is located within the jurisdiction of Caltrans Districts 4 and 5 and within the jurisdiction of the Central Coast Regional Water Quality Control Board-Region 3 (RWQCB).

Hydrologic Units

The entire project is within the Pajaro River hydrologic unit. The South Santa Clara Valley Hydrologic Area (sub-area 305.30) covers all the areas within the Santa Clara portion of the project and the project areas between US 101 PM 4.9 and PM 5.2 in San Benito County. The project areas between US 101 PM 5.2 and PM 7.5 in San Benito County are within the Santa Cruz Mountains Hydrologic Area (sub-area 305.20).

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Receiving Water Bodies

There are nine waterways that are adjacent to or cross the roadways within the project limits. Seven of the crossings are direct receiving water bodies for US 101 and SR 25. From north to south, the receiving water bodies are: Uvas-Carnadero Creek, Gavilan Creek, Tick Creek, Tar Creek, Pajaro River, San Benito River, and San Juan Creek. The United States Geological Survey (USGS) topographic map for the project area (see Vicinity Maps in the attachments) identifies three unnamed streams, located between San Benito River and Pajaro River that cross the project. The unnamed crossing, approximately 900 feet south along US 101, has been previously identified as Murphy Creek on available as-builts; however, current USGS and Federal Emergency Management Agency (FEMA) information do not provide a name for this crossing. These three unnamed waterways are tributaries of Pajaro River. Via Pajaro River, the flows ultimately reach the Pacific Ocean at the Monterey Bay, which is approximately 23 miles west of US 101.

Uvas Creek flows northwest to southeast as it crosses US 101. Gavilan Creek flows from the west to east of the project. Uvas Creek eventually becomes Carnadero Creek after crossing US 101. Carnadero Creek merges with Pajaro River to the east of US 101. The Pajaro River flows northeast to southwest, and crosses US 101 south of Tar Creek. The Pajaro River continues parallel to US 101 from this crossing until it merges with San Benito River. Tick Creek is located south of Gavilan Creek and flows from west to east of US 101, crossing US 101 before a tributary merges with Tick Creek. Tick Creek merges with Carnadero Creek east of US 101. The San Benito River flows from southeast to northwest as it crosses US 101. The San Benito River merges with Pajaro River after crossing US 101. San Juan Creek flows almost parallel to San Benito River, crosses US 101, and then merges with San Benito River upstream of the confluence of San Benito River and Pajaro River.

2006 Clean Water Act 303(d) List

The RWQCB has listed Pajaro River as an impaired water body for the following pollutants: boron, fecal coliform, nitrate, nutrients and sedimentation/siltration in the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. The list also shows that San Benito River is impaired by fecal coliform and sedimentation/siltation.

Total Maximum Daily Loads

TMDLs were approved by the United States Environmental Protection Agency (EPA) for sediment and nitrates for Pajaro River on May 3, 2007 (effective November 27, 2006) and October 13, 2006, respectively.

On December 2, 2005, the RWQCB amended the Water Quality Control Plan for the Central Coast Basin (Basin Plan) and adopted the TMDL for sediment for Pajaro River including San Benito River. The sources of impairment are indicated as agriculture, silviculture, urban/residential, stream bank erosion, sand and gravel mining, range land/grazing, unpaved roads and landslides.

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Beneficial Uses

The RWQCB Basin Plan lists the identified beneficial uses of inland surface waters for the project's receiving water bodies as follows:

- Uvas Creek, downstream (as identified on the Basin Plan of RWQCB): Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Ground Water Recharge (GWR), Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Fresh Water Habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction and/or Early Development (SPWN), Rare, Threatened, or Endangered Species (RARE), Commercial and Sporting Fish (COMM)
- Carnadero Creek: MUN, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, RARE, COMM
- Pajaro River: MUN, AGR, IND, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, SPWN, Fresh Replenishment (FRESH), COMM
- San Benito River: MUN, AGR, IND, GWR, REC1, REC2, WILD, WARM, SPWN, FRESH, COMM
- Gavilan Creek, Tick Creek, Tar Creek and San Juan Creek have no listed beneficial uses.

CWA Section 401 Water Quality Certification

Because it is anticipated that there will be widening at the creek crossings, a Clean Water Act 401 Water Quality Certification is required from the RWQCB. The 401 Certification will be prepared and submitted during the PS&E phase.

Sensitive Issues

The Preliminary Environmental Analysis Report indicates there may be areas of archeological significance and that further studies should be completed to further confirm these findings.

Studies to determine potential areas of biological significance will also be required for the project area given the amount of new grading work in previously undisturbed areas.

Local Agency Requirements/Concerns

Stormwater from the proposed project will discharge to both the Santa Clara Valley Water District and San Benito County Water District's jurisdiction. The proposed drainage and treatment design will be reviewed by the water districts during the design phase of the project.

Climate

The climate in Santa Clara County and San Benito County is warm and dry in the summers, and cool and rainy in the winters. The average annual temperature ranges from 56ºF to

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58ºF. The mean freeze-free period is between 250 and 300 days. The normal temperatures for summer and winter are 73ºF and 46ºF, respectively. Temperatures may rise above 100ºF in the summer and may fall below 40ºF in the winter. The average annual precipitation is about 18 inches, and the rainy season is between October 15 and April 15. Extreme weather conditions, such as thunderstorms and snowfalls, are rare.

Topography

The project is located in the Santa Clara Valley, adjacent to the Santa Cruz Mountains in the west. The San Benito River Valley is located on the south side of the project site. Creeks originate from both the Diablo Range and the Santa Cruz Mountains.

Pajaro River approaches the site from the northeast, flowing south along the project site before flowing west through the Chittenden Pass. Eventually, the river flows into the Monterey Bay and the Pacific Ocean.

Soil Characteristics

Hydrologic Soil Groups (HSGs) on-site consist mostly of Groups B and C, with small sections of Group D adjacent to the Uvas-Carnadero Creek and scattered throughout the area from Tick Creek to SR 129.

According to available geologic maps from the Natural Resources Conservation Service (NRCS) Web Soil Survey, the project is mainly located on artificial fill. Active stream deposits, etchegoin formation and older alluvium are located on the east and west sides of the project.

Hazardous Waste Material

There are areas where hazardous waste material may be present, primarily at the railroad crossings. There is also a possibility for contaminated groundwater from the Chevron Service Station, located in the northern portion of the alignment. Soil and groundwater hazardous waste studies are ongoing, and the findings of these studies will be summarized during the later phases of this project.

If hazardous waste is present within the project, coordination with the Stormwater Coordinator and the Hazardous Waste Branch will take place to ensure that runoff during construction and placement of infiltration type treatment Best Management Practices (BMPs) will not further impact downstream water bodies or the groundwater.

Aerially Deposited Lead (ADL)

ADL due to the historic use of lead in gasoline may have been deposited on exposed soil at the median and the shoulders of the freeway. These soils may be encountered during the construction of the project. Further investigation into the levels of ADL will be completed

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during later phases of the project. If soils containing ADL are reused, a Notification of ADL reuse will be obtained for the project.

Groundwater Information

According to the NRCS Web Soil Survey, the depth to water table is greater than 4.92 feet for most of the project site.

Slope Failures

Historic maintenance records indicate that two relatively large slope failures have been observed in the drainage courses east of US 101 and southeast of the Lomerias overcrossing. The slope failures are mainly from slump/debris flows and are considered unstable to the frontage road and US 101.

There are areas where cut slopes will be necessary to fit the proposed roadway geometry. Further geotechnical studies, during later phases, are necessary to determine if slopes greater than 2:1 (H:V) present a slope stabilization concern. If necessary, the project will propose retaining walls at areas where steep slopes are not geotechnically feasible. Any slopes greater than 4:1 (H:V) and 2:1 (H:V) will be reviewed and approved by the appropriate Caltrans functional units.

Erosion Potential

The soil erodibility factor, K, for the soils within the project area varies from 0.10 to 0.37. The soil is generally more susceptible to erosion toward the northern end of US 101 and less susceptible toward the southern end. The soils closest to the US 101 and SR 25 interchange were found more erodible than the soils in the outlying areas.

Risk Assessment

This project is subject to the "NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities," (NPDES Number CAS000002), or CGP. The R factor was determined from the United States Environmental Protection Agency "Rainfall Erosivity Factor Calculator" to be 51.92; the K and LS factors were determined from the Caltrans CGP GIS map; the K factor is 0.26 and LS factor is 6.16. The product of these values is 83. Because this value is larger than 75, the project is classified as having a high sediment risk. See the attachments for the sediment risk factor input values.

The receiving water risk is classified as high because Pajaro River has an approved TMDL for sediment. Some water bodies within the project limits also have the beneficial uses of SPWN, COLD and MIGR. The Caltrans CGP GIS map was used to confirm that the entire project has a high receiving water risk.

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The combined high sediment risk and high receiving water risk results in the project being classified as Risk Level 3 (see attachments). Furthermore, bioassessment is required for this project because the project DSA is greater than 30 acres.

Measures for Avoiding or Reducing Potential Stormwater Impacts

All work in creeks and waterways will be scheduled per regulatory requirements and will be detailed in the project's special provisions during the design phase. Maintenance pullouts will be considered for the project, and side slopes will be specified to be as flat as possible, for easy maintenance. Concentrated flows will be collected into stabilized drains and channels.

Land Use

In Santa Clara County, the land on the west side of US 101 is used as ranchland, and on the east side, it is used as agriculture. In San Benito County, land use on the west side of US 101 is mostly agricultural, whereas on the east side it is composed of natural vegetation.

Right-of-Way (R/W) Requirements

R/W requirements are currently under investigation. Additional cost of R/W is currently anticipated to be $60,000 per acre in urban areas and $25,000 per acre in agricultural areas.

3. Regional Water Quality Control Board Agreements

On August 19, 2010 the project team along with Solomon Cruz, the Caltrans Storm Water Coordinator, met with Thomas Sanchez from the RWQCB to discuss the project. At this phase of the project no negotiations or agreements have been made between the RWQCB and the project team.

It is anticipated that the following permits will be necessary for the project:

- CWA Section 401 Water Quality Certification from the RWQCB
- CWA Section 404 from the U.S. Army Corps of Engineers for wetlands
- 1602 Agreement from the California Department of Fish and Game

It is also anticipated that coordination will be necessary with the National Marine Fisheries Service and the United States Fish and Wildlife Service, due to necessary permits for aquatic and wildlife habitats within the project's limits.

4. Proposed Design Pollution Prevention BMPs to be used on the Project.

Downstream Effects Related to Potentially Increased Flow, Checklist DPP-1, Parts 1 and 2

The project will result in an increase in impervious surface in the project area. Additional impervious areas proposed for the project may increase the volume and velocity of the

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stormwater discharge. The increase in impervious area may impact the downstream waterways without pollution prevention BMPs for the project. The net additional impervious area for the project is shown in Table 2 (in Section 1 of this report). This Project will incorporate low impact development (LID) efforts to maintain or restore pre-project hydrology, as well as provide overall water quality improvement of discharges. These LID efforts will be incorporated in the development and placement of permanent BMPs during the design phase to the maximum extent practicable. Potential LID measures that will be considered for this Project to improve water quality include:

- Minimizing impervious surface area and using pervious material for hardened surfaces outside of the roadway prism,
- Grading slopes to blend with the natural terrain and decreasing the need for dikes, promoting sheet flow to vegetated areas that can provide water quality benefits and promote infiltration,
- Designing permanent drainage facilities that mimic the existing drainage pattern of the area through the use of permanent check dams for attenuation of flow and disconnected drainage facilities,
- Constructing permanent vegetated drainage ditches to decrease the velocity of discharge, plus decreasing the volume of discharge by promoting infiltration and allowing for pollutant removal, and
- Maintaining existing vegetated areas

To examine the effectiveness of these LID efforts, the pre and post project hydrology will be compared during the design phase.

Slope/Surface Protection Systems, Checklist DPP-1, Parts 1 and 3

Areas of cut and fill are required throughout the project to satisfy the proposed project geometry. Cut and fill areas for the project will be developed further during the design phase and will be shown on the contract plans.

All disturbed slopes shall be revegetated for erosion control. Because this project will result in slopes steeper than 4:1 (H:V), an erosion control plan will be developed during the design phase and submitted to the District Landscape Architect for approval. Areas with slopes between 4:1 (H:V) and 2:1 (H:V) will be coordinated with the Geotechnical Design unit. Because this project will most likely result in new slopes greater than 2:1 (H:V), a Geotechnical Design Report will be prepared and maintenance concurrence will be obtained. All coordination efforts with the various functional units will be completed during later phases of the project. If geotechnical studies find that slopes greater than 2:1 (H:V) are not permissible, then retaining walls will be considered. The locations and types of retaining walls will be developed during the design phase.

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At this phase of the project, a general lump sum for design pollution prevention is calculated from the total construction cost. Individual design pollution prevention measures, including slope stabilization measures, will be identified during the design phase.

The effectiveness of the proposed erosion control materials will be verified during the design phase by using the Revised Universal Soil Loss Equation 2 (RUSLE2).

Unlined gutters and dikes should be designed in areas where concentrated flow collects, redirecting flow away from side slopes in order to reduce gullying.

Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4

Concentrated flow conveyance systems, such as ditches, berms, dikes, swales, overside drains, flared end sections and outlet protection/velocity dissipation devices will be considered to minimize soil erosion. The design of these facilities will take place during the design phase of the project.

Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5

It is the goal of the project to maximize the protection of desirable existing vegetation for erosion and sediment control. This involves the identification of desirable vegetation capable of providing erosion and sediment control benefits; vegetation will be delineated in the design phase plans and protected with temporary fencing during construction.

Existing wetlands will be preserved during construction with the use of Environmentally Sensitive Area (ESA) fencing. Existing wetlands that cannot be preserved will be mitigated with appropriate measures to be developed during the design phase.

5. Proposed Permanent Treatment BMPs to be used on the Project

Treatment BMP Strategy, Checklist T-1

The project is required to consider treatment BMPs because the project involves major reconstruction with direct discharges to surface water bodies and creates of more than one acre of impervious area.

Based on current available soil information, at this phase of the project, to be conservative, it is assumed that the estimated overall infiltration ranking will be less than 90% for biofiltration and infiltration devices. Detailed studies to determine the infiltration capacity and soil amendments to increase infiltration capacity will be investigated at later phases of the project.

The TMDLs and pollution control requirements have been established for two surface waters within the project limits: Pajaro River and San Benito River (for sediment and nitrate). It will be necessary to coordinate BMPs with the District Stormwater Coordinator to discuss any Caltrans obligations under the TMDLs or other pollution control requirements. These

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coordination efforts will be conducted at later phases of the project. The potential BMP locations have been identified and are listed Table 3. It is anticipated that these BMPs will treat 100% of the added impervious areas shown in. The feasibility, design and watersheds for these treatment locations will be further developed during later phases of the project.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2

Areas not within a MS4 are considered as being within a rural area, and the PPDG states that biofiltration devices are the preferred treatment method in rural areas.

Due to the presence of steep slopes, adjacent river crossings, and limited space in some locations, it is not feasible to drain all project areas to these devices. The project will acquire additional R/W for BMPs when feasible. At this phase, it has not been determined which BMPs will be swales and which BMPs will be strips, plus these devices have not been fully designed. These design efforts will be made during the design phase.

Infiltration Devices – Checklist T-1, Parts 1 and 4

Johan Kumar, the District NPDES Coordinator, and Ryle Montoya, the Headquarters Office of Stormwater Management representative, stated by email that infiltration devices are not allowed because the groundwater is expected to be less than 10 feet below the existing grade.

Detention Devices, Checklist T-1, Parts 1 and 5

Detention devices are not proposed as a treatment method for stormwater runoff because these areas are being considered for construction of detention basins for floodplain and/or environmental mitigation. Based on current regulations, areas used for these mitigation purposes cannot also be used concurrently for treatment because these basins will eventually be designated as ESAs.

Media Filters, Checklist T-1, Parts 1 and 8

Austin sand filters are feasible for the project, but due to limited R/W and limited areas available to construct this device plus provide maintenance access, other treatment such as biofiltration devices may be preferred. If Austin sand filters are determined to be necessary for the project, then detailed studies and calculations to investigate Austin sand filter feasibility will be completed during the later phases of the project.

Alvin Yan from the local vector agency was contacted, via phone, on August 22, 2010, and Mr. Yan stated that independent of the design, Delaware filters should not be used as a treatment device. This same restriction was stated to include the use of wet basins.

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Table 3. Treatment BMP Summary

BMP #	Proposed Preferred Treatment BMP Type	Begin Station	End Station	Offset	Treated Impervious Area (sf)	Treated Impervious Area (ac)	WQF (cfs)
1	Biofiltration Device	"M" Line 91+10	"M" Line 98+50	Lt	57,025	1.3	0.26
2	Biofiltration Device	"M" Line 101+45	"M" Line 106+00	Lt	20,816	0.5	0.10
3	Biofiltration Device	"M" Line 106+00	"M" Line 107+40	Lt	6,649	0.2	0.03
4	Biofiltration Device	"M" Line 101+45	"M" Line 106+00	Rt	26,487	0.6	0.12
5	Biofiltration Device	"M" Line 106+00	"M" Line 115+00	Rt	41,174	0.9	0.19
6	Biofiltration Device	"M" Line 107+30	"M" Line 115+00	Lt	49,805	1.1	0.23
7	Biofiltration Device	"M" Line 123+00	"M" Line 134+00	Rt	61,082	1.4	0.28
8	Biofiltration Device	"M" Line 123+00	"M" Line 134+60	Lt	73,936	1.7	0.34
9	Biofiltration Device	"M" Line 135+00	"M" Line 151+00	Lt	73,850	1.7	0.34
10	Biofiltration Device	"M" Line 151+00	End of SB on-ramp	Lt	94,035	2.2	0.43
11	Biofiltration Device	"M" Line 139+92	"M" Line 168+00	Rt	146,332	3.4	0.67
12	Biofiltration Device	"M" Line 172+18	"M" Line 175+80	Rt	21,781	0.5	0.10
13	Biofiltration Device	"M" Line 172+71	"M" Line 175+90	Lt	14,059	0.3	0.06
14	Biofiltration Device	"M" Line 175+90	"M" Line 182+78	Lt	31,337	0.7	0.14
15	Biofiltration Device	"M" Line 176+50	"M" Line 182+74	Rt	28,644	0.7	0.13
16	Biofiltration Device	"M" Line 183+10	"M" Line 184+60	Lt	9,247	0.2	0.04
17	Biofiltration Device	"M" Line 183+21	"M" Line 194+07	Rt	50,030	1.1	0.23
18	Biofiltration Device	"M" Line 185+21	"M" Line 196+20	Lt	59,362	1.4	0.27
19	Biofiltration Device	"M" Line 195+70	"M" Line 206+00	Rt	60,837	1.4	0.28
20	Biofiltration Device	"M" Line 199+00	"M" Line 203+00	Lt	23,167	0.5	0.11
21	Biofiltration Device	"M" Line 203+00	"M" Line 220+00	Lt	97,210	2.2	0.45
22	Biofiltration Device	"M" Line 206+00	"M" Line 210+00	Rt	19,411	0.4	0.09
23	Biofiltration Device	"M" Line 215+00	"M" Line 220+30	Lt	25,025	0.6	0.11
24	Biofiltration Device	"M" Line 210+00	"M" Line 236+50	Rt	148,259	3.4	0.68
25	Biofiltration Device	"M" Line 232+00	"M" Line 236+40	Lt	24,167	0.6	0.11
26	Biofiltration Device	"M" Line 240+00	"M" Line 247+00	Rt	60,346	1.4	0.28
27	Biofiltration Device	"M" Line 240+00	"M" Line 246+00	Lt	28,803	0.7	0.13
28	Biofiltration Device	"M" Line 246+80	"M" Line 269+00	Rt	248,604	5.7	1.14
29	Biofiltration Device	"M" Line 246+00	"M" Line 252+50	Lt	22,042	0.5	0.10
30	Biofiltration Device	"M" Line 257+70-	"M" Line 260+50	Lt	11,312	0.3	0.05
31	Biofiltration Device	"M" Line 260+50	"M" Line 266+00	Lt	21,872	0.5	0.10
32	Biofiltration Device	"M" Line 266+70-	"M" Line 269+00	Lt	78,518	1.8	0.36
33	Biofiltration Device	"F1" Line 22+00	"F1" Line 26+30	Lt	4,748	0.1	0.02
34	Biofiltration Device	"F1" Line 22+00	"F1" Line 26+30	Rt	4,689	0.1	0.02
35	Biofiltration Device	"SJH" Line 33+20	"SJH" Line 38+00	Lt	7,899	0.2	0.04
36	Biofiltration Device	"SJH" Line 33+20	"SJH" Line 38+00	Rt	7,871	0.2	0.04
37	Biofiltration Device	"A" Line 66+00	"A" Line 85+30	Lt	90,634	2.1	0.37
38	Biofiltration Device	"A" Line 60+50	"A" Line 65+80	Rt	29,572	0.7	0.12
39	Biofiltration Device	"A" Line 66+06	"A" Line 141+05	Rt	419,772	9.6	1.73
40	Biofiltration Device	"A" Line 86+40	"A" Line 100+00	Lt	62,274	1.4	0.26
41	Biofiltration Device	"A" Line 100+00	"A" Line 113+00	Lt	59,752	1.4	0.25
42	Biofiltration Device	"A" Line 114+50	"A" Line 139+20	Lt	152,015	3.5	0.63
43	Biofiltration Device	"A" Line 155+00	"A" Line 161+20	Lt	55,266	1.3	0.23
44	Biofiltration Device	"A" Line 160+10	"A" Line 164+50	Lt	23,218	0.5	0.10
45	Biofiltration Device	"B" Line 659+50	"B" Line 669+90	Lt	18,118	0.4	0.07
46	Biofiltration Device	"A" Line 170+80	"A" Line 179+00	Lt	60,967	1.4	0.25
47	Biofiltration Device	"A" Line 182+00	"A" Line 187+00	Lt	22,499	0.5	0.09
48	Biofiltration Device	"A" Line 196+00	"A" Line 208+50	Lt	101,771	2.3	0.42
49	Biofiltration Device	"A" Line 210+00	"A" Line 231+00	Lt	192,096	4.4	0.79
50	Biofiltration Device	"A" Line 212+70	"A" Line 230+00	Rt	98,518	2.3	0.41
51	Biofiltration Device	"A" Line 237+50	"A" Line 245+00	Lt	48,010	1.1	0.20
52	Biofiltration Device	"R4" Line 37+70	"R4" Line 47+00	Lt	25,346	0.6	0.10
53	Biofiltration Device	"F6" Line 190+50	"F6" Line 194+00	Lt	17,022	0.4	0.07
				Total Area		74.3	ac

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6. Proposed Temporary Construction Site BMPs to be used on Project

As presented in Section 2 of this report, this project is classified as Risk Level 3. Project specific BMP measures will be specified and quantified during the design phase. The costs of stormwater BMPs were calculated using the Percent of Total Project Cost Method per Appendix F of the PPDG.

A coordination meeting with the Caltrans Construction Stormwater Coordinator will be held during later phases of the project for BMP concurrence.

Storm Water Pollution Prevention Plan

The project has a DSA of 431.8 acres for Design Option A and 411.7 acres for Design Option B. A Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to the start of construction. The SWPPP should also include the development of a Construction Site Monitoring Program (CSMP) that presents procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, pH, receiving waters and temporary active treatment systems (if used).

Rain Event Action Plan

Risk Level 3 projects are required to prepare a Rain Event Action Plan (REAP). The quantities and costs for REAP will be determined during the design phase.

Construction Site BMP Strategy

The construction work for this project is scheduled to cover two years. Whenever possible, the scheduling of earth-disturbing construction activities should not be made during anticipated rain events. To mitigate any potential 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.

Disturbed soil areas (DSAs) will be protected in accordance with the project's pollution control measures. Measures that are to be considered for this project will be detailed during the design phase and are shown below. The construction site BMP strategy for this project shall consist of the following:

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

Soil stabilization and sediment control include placing linear sediment barriers such as silt fence at the toe of all excavation and embankment slopes. Contour grading of slopes shall

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include surface roughening by walking the slopes with tracked equipment. Immediately thereafter, slope interruption devices such as fiber rolls shall be installed and soil stabilizer shall be hydraulically applied. Wherever possible, early implementation of permanent erosion control seeding or landscape planting shall be performed.

Storm drain inlet protection will be deployed throughout the project.

It is not anticipated that active treatment systems will be necessary for this project. Further consideration will be made during the design phase.

There are riparian areas adjacent to creeks that will be designated as ESAs and protected with temporary high visibility fencing. Construction within the creek channels is anticipated, so temporary stream crossings and clear water diversions shall be considered to protect water quality; details for these systems will be developed during the design phase.

The project has medium wind erosion potential. Off-site tracking of sediment shall be limited by placing stabilized construction entrances in combination with regular street sweeping and vacuuming. Stabilized construction roadways shall be used to provide access for construction activities. Locations these tracking control BMPs will be considered during the design phase.

Various waste management, materials handling, and other housekeeping BMPs shall be used throughout the duration of the project. Stockpiles of various kinds are anticipated and shall be maintained with the appropriate BMPs.

The project includes work on bridges for widening, and the project team may propose upsizing or extending cross culverts located within the project limits. Some of these waterways are perennial and may need dewatering operations or temporary creek diversions during construction to protect water quality. A dewatering permit may be needed from the RWQCB for the proposed work near these perennial waterways.

Storm Water Sampling and Analysis

This project is required to perform stormwater sampling at all discharge locations. Numeric Action Levels and Numeric Effluent Limitations are applicable to this project because the project is Risk Level 3. This project is required to incorporate bioassessment monitoring for impaired receiving waters. Bioassessment monitoring is required both upstream and downstream of the impacted areas. The required specifications will be prepared during the design phase included in the project Special Provisions.

7. Maintenance BMPs (Drain Inlet Stenciling)

Drain inlet stenciling is anticipated to be required for this project because inlets will be placed in areas accessible to pedestrians and bicycle traffic, generally at the ramps and frontage roads. Design standards regarding the drain inlet stenciling will be developed

EXAMPLE ONLY

during the design phase. Other types of maintenance BMPs will be considered during the design phase and coordinated with the Caltrans Maintenance Area Manager.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation
- SWDR Tracking Form

Supplemental Attachments

- Storm Water BMP Cost Summary
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklists T-1, Parts 1,2 and 8 (Treatment BMPs)

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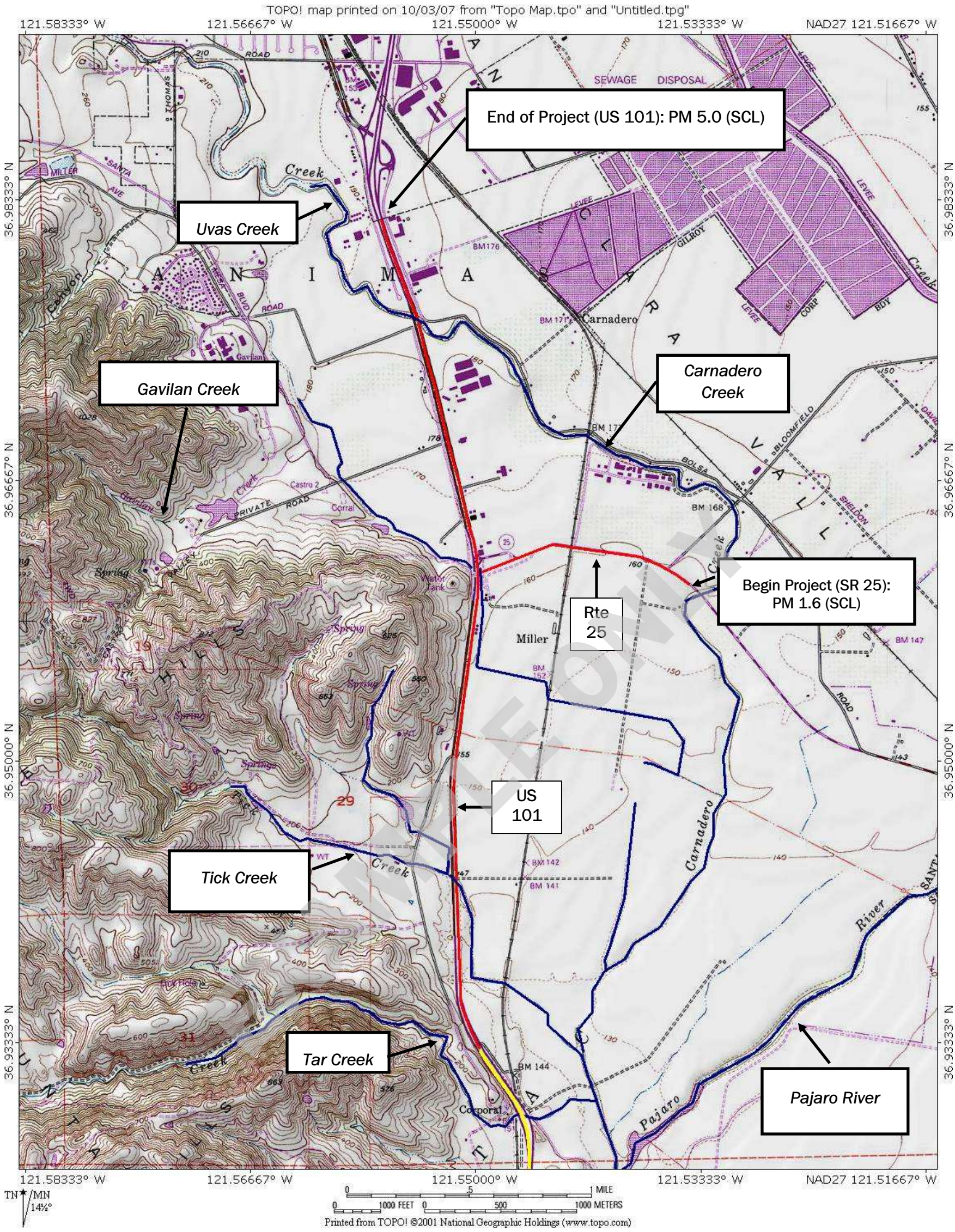

Figure 1. Vicinity Map-North Half of Project

Source: USGS

EXAMPLE ONLY

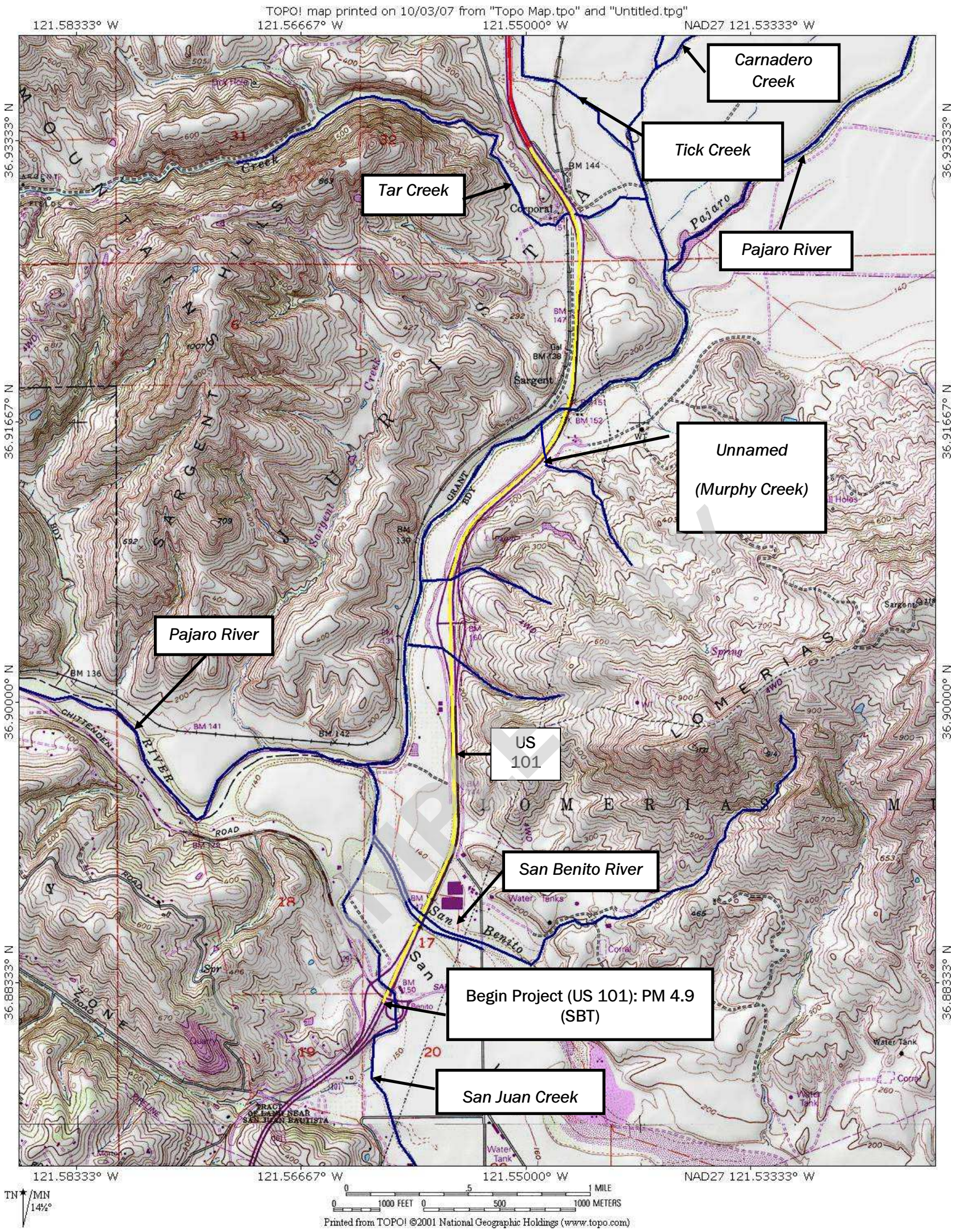

Figure 2. Vicinity Map-South Half of Project

Source: USGS

EXAMPLE ONLY

DATE: August 2010_____

Project ID (or EA): 04-XXXXXX_____

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2
2.	Is this an emergency project?		✓	If Yes, go to 10. If No, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	✓		If Yes, contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 9 or 4. FWS *(Dist./Reg. SW Coordinator initials)* If No, continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	✓		If **Yes**. *(Gilroy, Morgan Hill, Santa Clara County)*, go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If Yes, continue to 6. If No, go to 10.
6.	Is it a new facility or major reconstruction?	✓		If Yes, continue to 8. If No, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?			If Yes, continue to 8. If No, go to 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	✓		If Yes, continue to 9. If No, go to 10. *75.5 acres (Option A); 73.6 acres (Option B)* *(Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.	✓	See Sections 2.4 and either Section 5.5or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
10.	Project is not required to consider 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.	

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs

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Figure 3 . R Factor (Value=51.92)

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: 101/25 Highway Widening
Start Date: 01/31/2013
End Date: 12/03/2014
Latitude: 36.9620
Longitutde: -121.5501

Erosivity Index Calculator Results

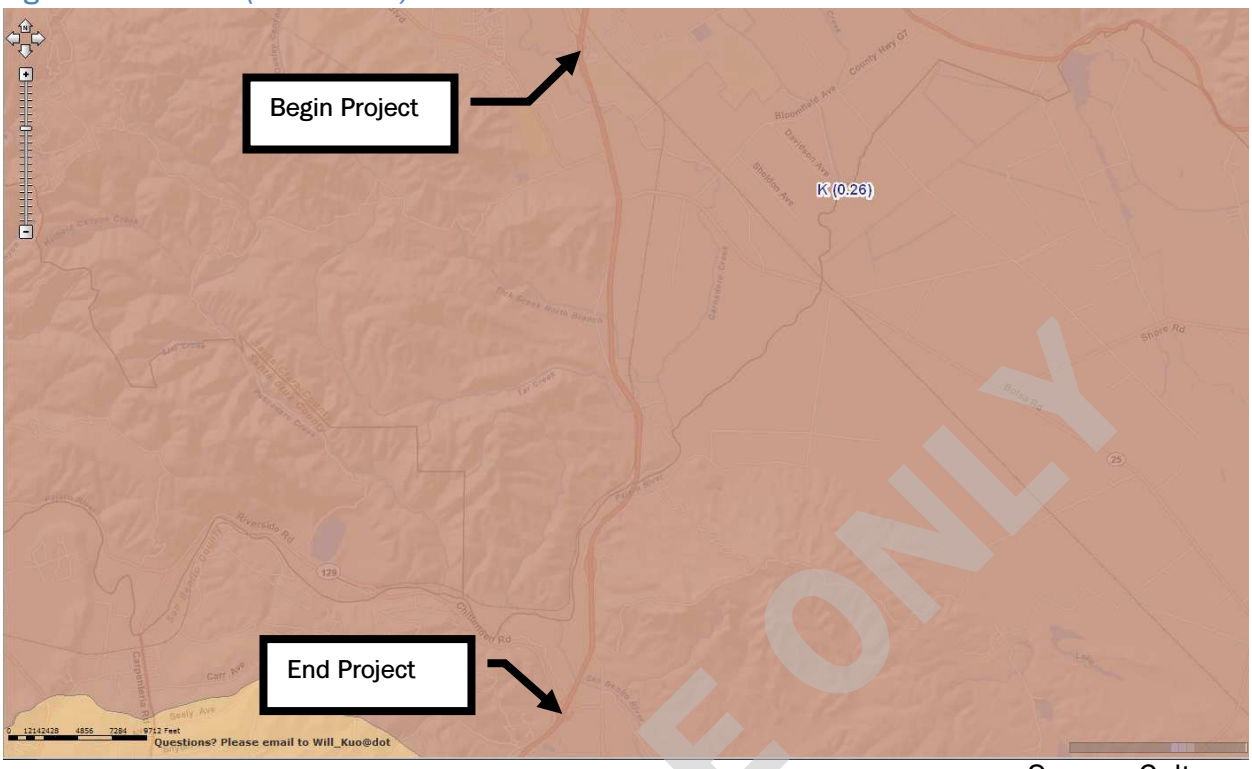
AN EROSIVITY INDEX VALUE OF **51.92** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **01/31/2013 - 12/03/2014**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction.
You do not qualify for a waiver from NPDES permitting requirements.

Source: US EPA < http://cfpub.epa.gov/npdes/stormwater/lew/lewcalculator.cfm>

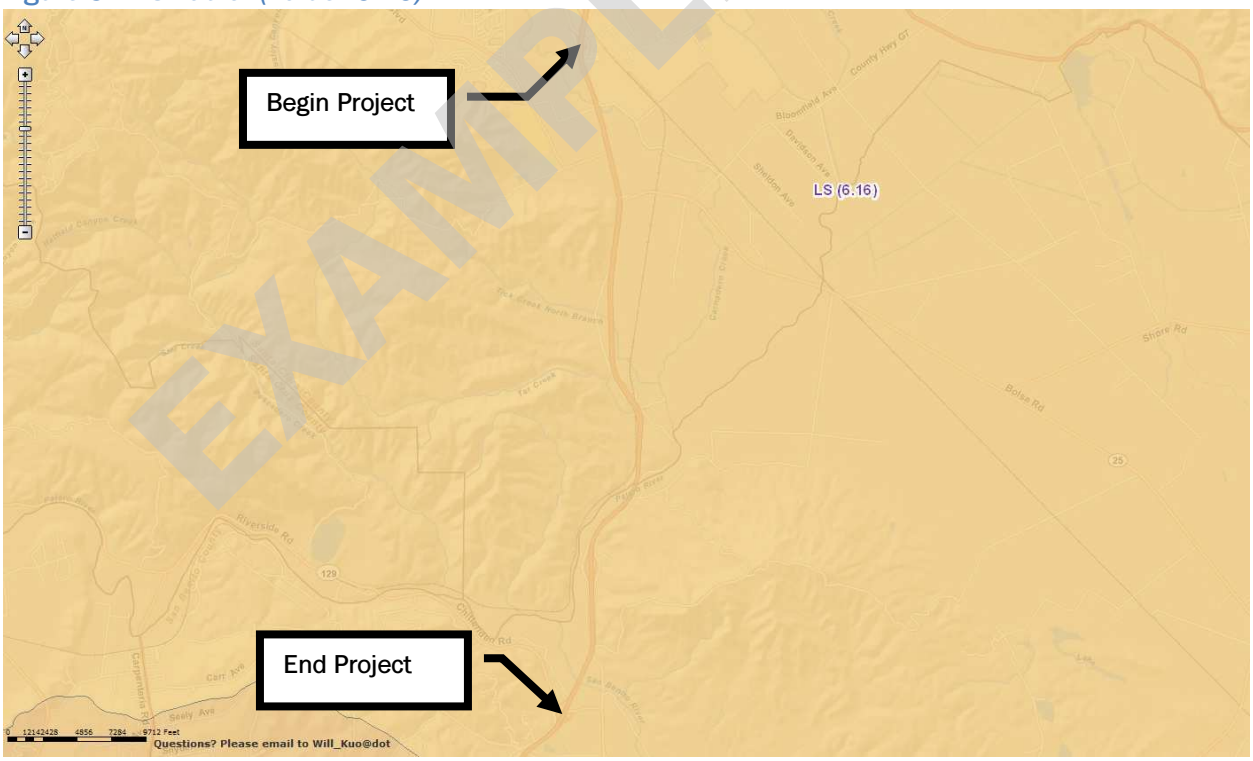
EXAMPLE ONLY

Figure 4 . K Factor (Value=0.26)



Source: Caltrans

Figure 5 . LS Factor (Value=6.16)



Source: Caltrans

EXAMPLE ONLY

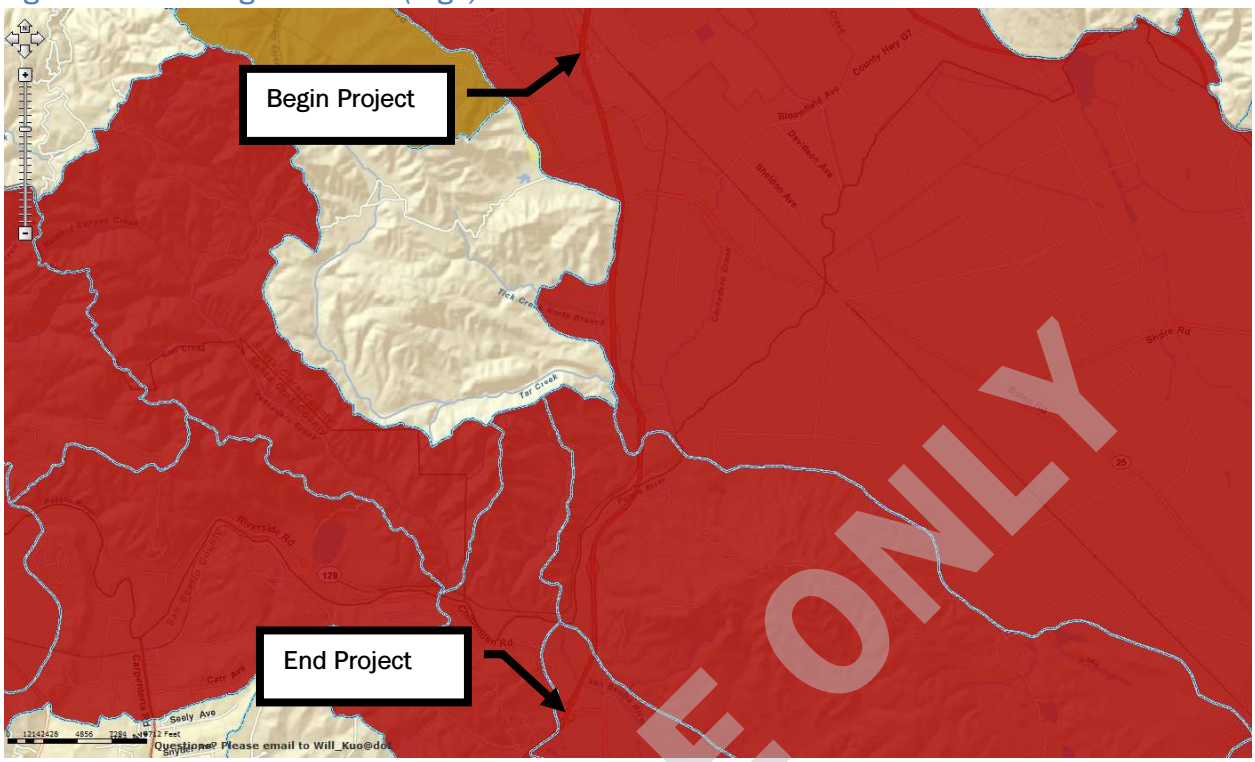
Figure 6 . Sediment Risk (High)

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	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.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		51.92
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	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.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.26
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	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.		
12	LS Table		
13	**LS Factor Value**		6.16
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	83	
16	**Site Sediment Risk Factor**	**High**	
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Source: State Water Resources Control Board

EXAMPLE ONLY

Figure 7 . Receiving Water Risk (High)



Source: Caltrans

Figure 8 . Risk Level Determination (Value=Risk Level 3)

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk: High
Project RW Risk: High
Project Combined Risk: Level 3

Source: State Water Resources Control Board

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Report_Date	Dist_EA	District	EA	County	Route	Beg_PM	End_PM	Descrip	Phase	LongSWDR	PhaseRptDate	Exempt	TBMP	Pollution_Program	Land Disturbance Acreage	AddImpArea	PercentTreated	MS4Area	MS4CiCo	Water Bodies Affected	Criteria	BioStrip	BioSwale	Detention	Infiltration	InfilTrench	GSRD	TST	DryWeath	MedFilter	MCTT	WetBasin	Const_Start	Const_Comp	SWComment
8/26/2010	04-XXXX	4	XXXXXX	4	101	0	5	Highway	PID	TRUE	8/26/2010	FALSE	TRUE	SWPPP	325.6	62.5	100	TRUE	Gilroy, Mo	Uvas-Carnadero Creek,	401	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014	
8/26/2010	04-XXXX	4	XXXXXX	4	25	1.6	2.5	Highway	PID	TRUE	8/26/2010	FALSE	TRUE	SWPPP	325.6	62.5	100	TRUE	Gilroy, Mo	Uvas-Carnadero Creek,	401	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014	
8/26/2010	05-XXXX	5	XXXXXX	5	101	4.9	7.5	Highway	PID	TRUE	8/26/2010	FALSE	TRUE	SWPPP	106.2	13	100	TRUE	Gilroy, Mo	Uvas-Carnadero Creek,	401	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014	

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Storm Water BMP Cost Summary - PID Phase Only

THIS INFORMATION IS FOR CALTRANS INTERNAL USE ONLY

Project Name:	**Highway Widening**
District:	**04 & 05**
County:	**SCl & SBt**
Route:	**101 & 25**
Postmile Limits:	**0.0/5.0, 4.9/7.5, 1.6/2.5**
Project ID (or EA):	**XX-XXXXXX**

1.0 DPP BMPs

BMP Quantity	Unit Cost			
1	$2,140,000	**SUBTOTAL**	$	2,140,000

2.0 Treatment BMPs

Miles of Pavement	$xxx,xxx per Mile			
8.4	$30,000	**SUBTOTAL**	$	252,000

3.0 Prepare SWPPP (or WCPC)

Total Construction Cost	Cost per Table F-6			
$214,000,000	$398,400	**SUBTOTAL**	$	398,400

RQM Value (if SWPPP is required): **$392,400**

4.0 Construction Site BMPs

Total Construction Cost	x.x% per Table F-3			
$214,000,000	1.25%	**SUBTOTAL**	$	2,675,000

5.0 Stormwater Monitoring

Project Risk Level	SWM Cost (PPDG Appen F)			
3	$166,200	**SUBTOTAL**	$	166,200

TOTAL COST FOR STORM WATER BMPs	$ 5,631,600

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Checklist SW-1, Site Data Sources

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect 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 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• United States Geological Survey. (2001). California: Seamless U.S.G.S. Topographic Maps (CDROM, Version 2.6.8, Part Number: 113-100-004). National Geographic Holdings, Inc	
• Caltrans. Draft Location Hydraulic Study Report.	August 2010
Hydraulic	
• CA Department of Water Resources, Planning and Local Assistance, Available on website at : www.landwateruse.water.ca.gov	Access Date: August 2010
• San Benito County Water District. Available on website at: www.sbcwd.com	Access Date: August 2010
• Santa Clara Valley Water District. Available on website at: http://www.valleywater.org/	Access Date: August 2010
Soils	
• Santa Clara County Flood Insurance Studies. Unincorporated Areas. Community Number 060337	Revised August 17, 1998
• San Benito County Flood Insurance Studies. Incorporated Areas.	September 27, 1991
• Michigan State University, RUSLE On-Line Soil Erosion Assessment Tool. Available on website at: http://www.iwr.msu.edu/rusle/	Access Date: August 2010
• Caltrans Geotechnical Report.	January 28, 2008
• United States Department of Agriculture-Natural Resources Conservation Service Web Soil Survey. Available on website at: NRCS WSS <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>	Access Date: August 2010
Climatic	
• SCAS PRISM mapping data (Spatial Climate Analysis [SCAS] Oregon State University, 2003).	Access Date: August 2010
• Ecological Subregions of California Watsonville Plain-Salinas Valley. Subsection 261Ah. Available on website at: www.fs.fed.us/r5/projects/ecoregions/261ah.htm	Access Date: August 2010

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Water Quality	
• California State University Sacramento, Office of Water Programs, Water Quality Planning Tool. Available on website at: http://www.water-programs.com/wqpt.htm	Access Date: August 2010
• State Water Resources Control Board, CWA Section 303(d) List. Available on website at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml	Access Date: August 2010
• Central Coast RWQCB. Basin Plan. Beneficial Uses. Table 2-1. Identified Uses of Inland Surface Waters. Available on website at: http://www.swrcb.ca.gov/rwqcb3/publications_forms/publications/basin_plan/chapter_2/figs/table_2_1.doc	Access Date: August 2010
• Central Coast Regional Water Quality Control Board, 303(d) & TMDL Projects Pajaro River Total Maximum Daily Loads for Sediment (including Llagas Creek, Rider Creek, and San Benito River). Available on website at: http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/303d_and_tmdl_projects.shtml	Access Date: August 2010
• California State Water Resources Control Board. Storm Water Panel Recommendations to the California SWRCB, the Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities.	June 19, 2006
Other Data Categories	
• Environmental Buried Site Sensitivity from Far Western Plans	Last Revision Date: March 1, 2007
• State Water Resources Control Board. Available on website at: http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_areas.shtml	Access Date: August 2010
• California Department of Transportation, Division of Environmental Analysis. Statewide Stormwater Management Plan (SWMP) CTSW-RT-07-182-1.1	June 2007
• Caltrans. Geotechnical Report	January 28, 2008

EXAMPLE ONLY

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Storm Water Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR.

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

EXAMPLE ONLY

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

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

The PE must 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.

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 right-of-way 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 storm water 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 storm water impacts?	☒ Yes	☐ No	☐ NA

EXAMPLE ONLY

Design Pollution Prevention BMPs

Checklist DPP-1, Part 1

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Consideration of Design Pollution Prevention BMPs

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

Will project increase velocity or volume of downstream flow?	☒ Yes	☐ No	☐ NA
Will the project discharge to unlined channels?	☒ Yes	☐ No	☐ NA
Will project increase potential sediment load of downstream flow?	☒ Yes	☐ No	☐ NA
Will 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 DPP-1, Part 2 checklist.

Slope/Surface Protection Systems

Will 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 DPP-1, Part 3 checklist.

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 DPP-1, Part 4 checklist.

Preservation of Existing Vegetation

It is the goal of the Storm Water Program to maximize the protection of desirable existing vegetation to provide erosion and sediment control benefits on all projects. ☒ Complete

Consider ***Preservation of Existing Vegetation***, complete the DPP-1, Part 5 checklist.

EXAMPLE ONLY

Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Downstream Effects Related to Potentially Increased Flow

Note: Checklist to be completed during later phases.

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 project limits as well as downstream. Consider scour velocity. ☐ 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

EXAMPLE ONLY

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Slope / Surface Protection Systems

Note: Checklist to be completed during later phases.

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 reduce concentration of flows? ☐ Yes ☐ No
3. Were slopes rounded and/or shaped to reduce concentrated flow? ☐ Yes ☐ No
4. Were concentrated flows collected in stabilized drains or channels? ☐ Yes ☐ No
5. Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)? ☒ Yes ☐ No

   If Yes, District Landscape Architect must prepare or approve an erosion control plan, at the District's discretion.
6. Are new or disturbed slopes > 2:1 (h:v)? ☒ Yes ☐ No

   If Yes, Geotechnical Services 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 Storm Water Coordinator for slopes steeper than 2:1 (h:v).

Estimate the net new impervious area that will result from this project. Option A: 62.5 acres (SCl), 13.0 acres (SBt), Option B: 60.6 acres (SCl), 13.0 acres (SBt) ☒ Complete

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. Minimize overland and concentrated flow depths and velocities. ☐ Complete

HARD SURFACES

1. Are hard surfaces required? ☒ Yes ☐ No

   If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations. ☐ Complete

Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems. ☐ Complete

EXAMPLE ONLY

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Concentrated Flow Conveyance Systems

Note: Checklist to be completed during later phases.

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, and 835, and Chapter 860 of the HDM. ☐ Complete
2. Evaluate risks due to erosion, overtopping, flow backups or washout. ☐ Complete
3. Consider outlet protection where localized scour is anticipated. ☐ Complete
4. Examine the site for run-on from off-site sources. ☐ Complete
5. Consider channel lining when velocities exceed scour velocity for soil. ☐ 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

EXAMPLE ONLY

Design Pollution Prevention BMPs

Checklist DPP-1, Part 5

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Preservation of Existing Vegetation

Note: Checklist to be completed during later phases.

1. Review Preservation of Property, Standard Specifications 16.1.01 and 16-1.02 (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation. ☒ Complete
2. Has all vegetation 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 been considered while work is occurring in disturbed areas? ☒ Yes ☐ No
5. Are all areas to be preserved delineated on the plans? ☐ Yes ☐ No

EXAMPLE ONLY

Treatment BMPs

Checklist T-1, Part 1

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Consideration of Treatment BMPs

Note: For areas not within City of Gilroy, City of Morgan Hill and County of Santa Clara MS4.

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watershed 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, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan? ☒ Yes ☐ No

   If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

   (a) Are dry weather flows generated by Caltrans anticipated to be persistent? ☐ Yes ☒ No

   (b) Is a sanitary sewer located on or near the site? ☒ Yes ☐ No

   If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

   (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices? ☐ Yes ☐ No

   (d) Is the domestic wastewater treatment authority willing to accept flow? ☐ Yes ☐ No

   If Yes was answered to all of these questions consider ***Dry Weather Flow Diversion***, complete and attach **Part 3** of this checklist

EXAMPLE ONLY

3. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash? ☐Yes ☒No

   If Yes, consider ***Gross Solids Removal Devices (GSRDs)***, complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? ☐Yes ☒No

   If Yes, consider ***Traction Sand Traps***, complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales ☒Yes ☐No

   Objectives:

   1) Quantify infiltration from biofiltration alone

   2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.

   3) Identify whether amendments can substantially improve infiltration.

   (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR. ☐Yes ☒No

   (b) Based on site conditions, estimate what percentage of the WQV can be infiltrated. Use the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils, and the 48-hour WQV for Type D soil.

   _X_ < 20% (Note: Assumed based on available soil information; to be refined during later phases) ☒Complete

   ___ 20 % - 50%

   ___ 50% - 90%

   ___ > 90%

   (c) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☒No

EXAMPLE ONLY

(d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments? Use the 'drain time' associated with the amended soil (the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils[1]). ☐Yes ☐No

If Yes, consider including soil amendments; increasing the infiltration ranking allows more flexibility in the selection of BMPs (strips and swales will show performance comparable to other BMPs). Record the new infiltration estimate below:

Note: Investigation into soil amendments to be completed at later phases; question 5(d) and (e) is skipped for this phase.

___ < 20% (skip to 6) ☐Complete
___ 20 % - 50% (skip to 6)
___ 50% - 90% (skip to 6)
___ >90%

(e) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☐No

6. Biofiltration in Rural Areas

Is the project in a rural area (outside of urban areas that is covered under an NDPES Municipal Stormwater Permit[2]). If Yes proceed to question 13. ☒Yes ☐No

EXAMPLE ONLY

[1] Type D soils are not expected where amendments are incorporated

[2] See pages 39 and 40 of the Fact Sheets for the CGP.
http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf

13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project) ☒Complete

    __X_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
    ____ Dry Weather Diversion: Checklist T-1, Part 3
    ____ Infiltration Devices: Checklist T-1, Part 4
    ____ Detention Devices: Checklist T-1, Part 5
    ____ GSRDs: Checklist T-1, Part 6
    ____ Traction Sand Traps: Checklist T-1, Part 7
    ____ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
    ____ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    ____ Wet Basins: Checklist T-1, Part 10

14. Estimate what percentage of WQV (or WQF, depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s): _____100_____% ☒Complete

    (a) Have Treatment BMPs been considered for use in parallel or series to increase this percentage? ☒Yes ☐No

15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be treated by the preferred treatment BMP(s): _____100_____% ☒Complete

16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval. ☐Complete

EXAMPLE ONLY

Treatment BMPs

Checklist T-1, Part 1

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Consideration of Treatment BMPs

Note: For areas with City of Gilroy, City of Morgan Hill and County of Santa Clara MS4.

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watershed 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, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan? ☒ Yes ☐ No

   If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

   (a) Are dry weather flows generated by Caltrans anticipated to be persistent? ☐ Yes ☒ No

   (b) Is a sanitary sewer located on or near the site? ☒ Yes ☐ No

   If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

   (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices? ☐ Yes ☐ No

   (d) Is the domestic wastewater treatment authority willing to accept flow? ☐ Yes ☐ No

   If Yes was answered to all of these questions consider ***Dry Weather Flow Diversion***, complete and attach **Part 3** of this checklist

EXAMPLE ONLY

3. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash? ☐Yes ☒No

   If Yes, consider ***Gross Solids Removal Devices (GSRDs)***, complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? ☐Yes ☒No

   If Yes, consider ***Traction Sand Traps***, complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales ☒Yes ☐No

   Objectives:

   1) Quantify infiltration from biofiltration alone

   2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.

   3) Identify whether amendments can substantially improve infiltration.

   (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR. ☐Yes ☒No

   (b) Based on site conditions, estimate what percentage of the WQV can be infiltrated. Use the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils, and the 48-hour WQV for Type D soil.

   _X_ < 20% (Note: Assumed based on available soil information; to be refined during later phases) ☒Complete

   ___ 20 % - 50%

   ___ 50% - 90%

   ___ > 90%

   (c) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☒No

EXAMPLE ONLY

(d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments? Use the 'drain time' associated with the amended soil (the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils[1]). ☐Yes ☐No

If Yes, consider including soil amendments; increasing the infiltration ranking allows more flexibility in the selection of BMPs (strips and swales will show performance comparable to other BMPs). Record the new infiltration estimate below:

Note: Investigation into soil amendments to be completed at later phases; question 5(d) and (e) is skipped for this phase.

___ < 20% (skip to 6) ☐Complete
___ 20 % - 50% (skip to 6)
___ 50% - 90% (skip to 6)
___ >90%

(e) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☐No

6. Biofiltration in Rural Areas

Is the project in a rural area (outside of urban areas that is covered under an NDPES Municipal Stormwater Permit[2]). If Yes proceed to question 13. ☐Yes ☒No

7. Estimating Infiltration for BMP Combinations

Objectives:

1) Identify high-infiltration biofiltration or biofiltration and infiltration BMP combinations and skip further BMP consideration.

2) If high infiltration is infeasible, then identify the infiltration level of all feasible BMP combinations for use in the subsequent BMP selection matrices

(a) Has concentrated infiltration (i.e., via earthen basins or earthen filters) been prohibited? Consult your District/Regional Storm Water Coordinator and/or environmental documents. ☐Yes ☒No

EXAMPLE ONLY

[1] Type D soils are not expected where amendments are incorporated

[2] See pages 39 and 40 of the Fact Sheets for the CGP.
http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf

If No proceed to 7 (b); if Yes skip to question 8 and do not consider earthen basin-type BMPs

(b) Assess infiltration of an infiltration BMP that is used in conjunction with biofiltration. Include infiltration losses from biofiltration, if biofiltration is feasible. Note: Infiltration devices are prohibited. ☐Complete

(use 24 hr WQV)

___ < 20% (do not consider this BMP combination, skip to 7d)

___ 20% - 50% (skip to 7d)

___ 50% - 90% (skip to 7d)

___ >90%

Is at least 90 percent infiltration estimated? If Yes proceed to 13. If No proceed to 7(c). ☐Yes ☒No

(c) Assess infiltration of biofiltration with combinations with remaining approved earthen BMPs using water quality volumes based on the drain time of those BMPs. This assessment will be used in subsequent BMP selection matrices.

Earthen Detention Basin (use 48 hr WQV)	Earthen Austin SF (use 48 hr WQV)
___ < 20%	_X_ < 20%
___ 20% - 50%	___ 20% - 50%
___ > 50%	___ > 50%

☒Complete

Note: Detention devices are not feasible. Infiltration of Earthen Austin SF based on available soil information; to be refined during later phases

Continue to Question 8

8. Identifying BMPs based on the Target Design Constituents

(a) Does the project discharge to a water body that has been placed on the 303-d list or has had a TMDL adopted? If "No," use Matrix A to select BMPs, consider designing to treat 100% of the WQV, then skip to question 12. ☒Yes ☐No

If Yes, is the identified pollutant(s) considered a Targeted Design Constituent (TDC) (check all that apply below)?

☒ sediments	☐ copper (dissolved or total)
☐ phosphorus	☐ lead (dissolved or total)
☒ nitrogen	☐ zinc (dissolved or total)
	☐ general metals (dissolved or total)[3]

(b) Treating Sediment. Is sediment the only TDC? If Yes, use Matrix A to select BMPs, then skip to question 12. Otherwise, proceed to question 9. ☐Yes ☒No

[3] General metals include cadmium, nickel, chromium, and other trace metals. Note that selenium and arsenic are not metals. Mercury is a metal, but is considered later during BMP selection, under Question 12 below.

EXAMPLE ONLY

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other 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 MCTT Wet basin	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 MCTT Wet basin	Austin filter (concrete) Delaware filter MCTT Wet basin
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

EXAMPLE ONLY

9. Treating both Metals and Nutrients.

   Is copper, lead, zinc, or general metals *AND* nitrogen or phosphorous a TDC? If Yes use Matrix D to select BMPs, then skip to question 12. Otherwise, proceed to question 10. ☐Yes ☒No

10. Treating Only Metals.

    Are copper, lead, zinc, or general metals listed TDCs? If Yes use Matrix B below to select BMPs, and skip to question 12. Otherwise, proceed to question 11. ☐Yes ☒No

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	MCTT Wet basin Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Biofiltration Strip Biofiltration Swale Wet basin
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) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

EXAMPLE ONLY

11. Treating Only Nutrients.
    Are nitrogen and/or phosphorus listed TDCs? If "Yes," use Matrix C to select BMPs. If "No", please check your answer to 8(a). At this point one of the matrices should have been used for BMP selection for the TDC in question, unless no BMPs are feasible. ☒Yes ☐No

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other 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	Wet basin Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale Wet basin	Austin filter (concrete) Delaware filter Wet basin
* Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			
** Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

EXAMPLE ONLY

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Wet basin* Austin filter (earthen) Austin filter (concrete) Delaware filter**	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches***	Wet basin* 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
* The wet basin should only be considered for phosphorus			
** In cases where earthen BMPs can 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.			
*** Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

EXAMPLE ONLY

12. Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for mercury or low dissolved oxygen? ☐Yes ☒No

    If Yes contact the District/Regional NPDES Storm Water Coordinator to determine if standing water in a Delaware filter, wet basin, or MCTT would be a risk to downstream water quality.

13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project) ☒Complete

    __X_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
    ____ Dry Weather Diversion: Checklist T-1, Part 3
    ____ Infiltration Devices: Checklist T-1, Part 4
    ____ Detention Devices: Checklist T-1, Part 5
    ____ GSRDs: Checklist T-1, Part 6
    ____ Traction Sand Traps: Checklist T-1, Part 7
    __X_ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
    ____ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    ____ Wet Basins: Checklist T-1, Part 10

14. Estimate what percentage of WQV (or WQF, depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s): _____100_____% ☒Complete

    (b) Have Treatment BMPs been considered for use in parallel or series to increase this percentage? ☒Yes ☐No

15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be treated by the preferred treatment BMP(s): _____100_____% ☒Complete

16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval. ☐Complete

EXAMPLE ONLY

Treatment BMPs

Checklist T-1, Part 2

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒ Yes ☐ No
2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☒ Yes ☐ No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

   3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐ Yes ☒ No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒ Yes ☐ No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.
5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres ☐ Yes ☐ No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. ☐ Complete

Design Elements

Note: To be completed during the design phase.

* **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 5 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

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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, etc.) ☐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.2.3.1)* ☐Yes ☐No
4. Is the maximum length of a biofiltration strip ≤ 300 ft? * ☐Yes ☐No
5. Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of 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. Is the biofiltration strip sized as long as possible in the direction of flow? ** ☐Yes ☐No
8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? ** ☐Yes ☐No

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Treatment BMPs

Checklist T-1, Part 8

Prepared by: B. Ross Date: 08/26/10 District-Co-Route: 04-SCl-101, 05-SBt-101, 04-SCl-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): 04-XXXXXX RWQCB: Central Coast

Media Filters

Caltrans has approved two types of Media Filter: Austin Sand Filters and Delaware Filters. Austin Sand filters are typically designed for larger drainage areas, while Delaware Filters are typically designed for smaller drainage areas. The Austin Sand Filter is constructed with an open top and may have a concrete or earthen invert, while the Delaware is always constructed as a vault. See Appendix B, Media Filters, for a further description of Media Filters.

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No
2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☒Yes ☐No
3. If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater? ☒Yes ☐No
4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No

   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? Note: To be confirmed at later phases. ☒Yes ☐No

   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section.

   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

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Design Elements – Austin Sand Filter

Note: To be completed during the design phase.

* **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 5 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. Is the drawdown time of the 2nd chamber 24 hours? * ☐Yes ☐No
2. Is access for Maintenance vehicles provided to the Austin Sand Filter? * ☐Yes ☐No
3. Is a bypass/overflow provided for storms > WQV? * ☐Yes ☐No
4. Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? ** ☐Yes ☐No
5. Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** ☐Yes ☐No
6. Can the Austin Sand Filter be placed using an earthen configuration? ** ☐Yes ☐No
   If No, go to Question 9.
7. Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * ☐Yes ☐No
   If No, design with an impermeable liner.
8. Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * ☐Yes ☐No
9. Is maximum depth ≤ 13 ft below ground surface? * ☐Yes ☐No
10. Can the Austin Sand Filter be placed in an offline configuration? ** ☐Yes ☐No

EXAMPLE ONLY

EXAMPLE ONLY