Dist-County-Route: 07-VEN-101

Post Mile (Kilometer Post) Limits:
14.05/21.06 (22.48/33.69)

Project Type: Trash TMDL Implementation Project

EA: 27600K

RU: 07-186

Program Identification: 201.335

Phase: ☒PID ☐PA/ED ☐PS&E

Regional Water Quality Control Board(s): Los Angeles, Region 4

Is the project required to consider incorporating 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 60 days prior to PS&E Submittal. List submittal date: _____

Total Disturbed Soil Area: 1.27 acres (0.51 hectares)

Estimated Construction Start Date: July 1, 2009 Construction Completion Date: Sept. 30, 2011

Notification of Construction (NOC) Date to be submitted: June 30, 2009

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

Separate Dewatering Permit (if Yes, permit number) ☐Yes Permit #: _____ ☒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 data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

3/05/09

ABDOL HAJIPUOR, *Registered Project Engineer/Landscape Architect* Date

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

3/12/09

OJAS SHETH, *Project Manager* Date

3/12/09

for ROGER CASTILLO, *Designated Maintenance Representative* Date

03·12·09

RON RUSSAK, *Designated Landscape Architect Representative* Date

STAMP
[Required for PS&E only]

3/12/2009

SHIRLEY PAK, *District/Regional SW Coordinator or Designee* Date

STORM WATER DATA INFORMATION

1. Project Description

This Trash TMDL Implementation Project is located on VEN-101 between Arneil Road (PM 14.05) to Rose Avenue (PM 21.06) in the Cities of Camarillo and Oxnard in Ventura County. This project lies within the limits of the Ventura County Municipal Separate Storm Sewer System (MS4s) area in the cities of Camarillo and Oxnard.

The purpose of this TMDL is to attain water quality standards for trash in the Calleguas Creek and its tributary watershed, as required by the program adopted in 2001 by the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). The LARWQCB has set a numeric standard of zero (0) for trash discharge from storm water runoff into the water bodies, and requires a ten-year implementation program by reducing 10% of trash discharge each year until the zero discharge is achieved. The District has initiated projects to complete the above TMDL program, and the proposed project is the next stage of the implementation plan. All of the outfalls within the project limits are located in the Calleguas Creek watershed. No Maintenance access roads are proposed for this project because all devices can be accessed from the shoulder areas.

The scope of this project includes design and construction of 15 Gross Solid Removal Devices (GSRDs), 1 Infiltration Devices and 3 Media Filters, at the storm drain outfall/discharge point locations within Caltrans Right-of-Way. The total cumulative disturbed soils area is approximately 1.27 acres (0.51 ha), which is taken as the sum of the individual disturbed soil areas of all GSRDs and other proposed devices for this project. For each device, the disturbed soil area is assumed to be the device's footprint plus 6 feet of the unpaved area being disturbed by construction activities.

15 GSRD devices disturbing 0.21 acres

3 Media Filter devices disturbing 0.95 acres

1 Infiltration Basin disturbing 0.12 acres

Total Disturbed Area = 1.27 acres

All devices will be constructed on pervious original ground soils, increasing the impervious ground by 0.42 acres (0.17 ha).

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

The project limits are within the Revelon Slough sub watershed and Calleguas Creek watershed in Ventura County and is under the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). The receiving waterbody is Calleguas Creek Reach 4. The Hydrological Sub-Areas are 408.10, 408.11 and 408.12.

Within the project limits, the Calleguas Creek Reach 4 are listed in the 2006 California 303(d) list as an impaired receiving waterbody. Reach 4 has listed: Boron, ChemA (tissue), Endosulfan (tissue and sediment), Fecal Coliform, Sedimentation/Siltation, Sulfates, Total Dissolved Solids as pollutants of concern for 303(d) list. Nitrate as Nitrate (NO3), Nitrogen, PCB (Polychlorinated biphenyls), Tissue, Selenium, Toxaphene (tissue & sediment), Toxicity and Trash are listed as pollutants of concern for TMDLs.

Beardsley Wash and Revolon slough (Calleguas Creek) Established TMDL

The Beardsley Wash and Revolon Slough Trash became effective on March 6, 2008. The TMDL requires the Responsible Agencies, including Caltrans to reduce amount of trash deposited in the waterbody and in the storm water discharges to "zero" in eight (8) years. Responsible agencies may implement a Minimum Frequency of Assessment and Collection Program in or adjacent to the waterbody or place full capture devices at the drainage outfalls. Project Engineer shall consider the treatment controls for the project and consult with the District NPDES Storm Water Coordinator.

Calleguas Creek - Established TMDLs

Calleguas Creek Chloride TMDL

The US Environmental Protection Agency (USEPA) issued the Calleguas Creek Chloride TMDL on March 22, 2002 in absence of the State version of the TMDL. The TMDL does not consider storm water runoff being a contribution to the chloride impairment.

Calleguas Creek Nitrogen Compounds and Related Effects TMDL

The Calleguas Creek Nitrogen Compounds and Related Effects TMDL became effective July 16, 2003. The TMDL requires the Calleguas Creek Watershed Management Plan Subcommittees to submit a Monitoring Work Plan and complete several special studies including planning and preparation of construction for TMDL remedies to reduce Nitrogen loads. Caltrans is actively participating in the Subcommittee and working toward compliance of the TMDL. Targeted Pollutants are Ammonia, NO3-N, NO2-N, and NO3-N+NO2-N.

The Department's monitoring data depicts Caltrans discharges to be below the TMDL limits, thus no additional measures are needed to be considered for meeting the conditions of the Nitrogen TMDL.

Calleguas Creek Watershed OC Pesticides and PCBs TMDL and the Calleguas Creek Watershed Toxicity, Chlorpyrifos and Diazinon TMDL

The Calleguas Creek Watershed OC Pesticides and PCBs TMDL and the Calleguas Creek Watershed Toxicity, Chlorpyrifos and Diazinon TMDL have become effective March 24, 2006. Targeted Pollutants are Chlordane, 4,4-DDD, 4,4- DDE, 4,4-DDT, Dieldrin, PCBs, and Toxaphene for Pesticides, and Chlorpyrifos and Diazinon for Toxicity. Caltrans is working cooperatively with other Responsible Agencies to jointly comply with the TMDL requirements.

Project Engineers shall consider treatment controls for the project and consult with the District Storm Water Coordinator.

Calleguas Creek Watershed Metals and Selenium TMDL

The Calleguas Creek Watershed Metals and Selenium TMDL proposes to assign waste load allocations to the Permitted Stormwater Dischargers (PSD) that includes the Municipal Storm Water (MS4) Permittees, Caltrans and others. The PSD are required to achieve the final dry and wet weather waste load allocations in 15 years. It is anticipated that Caltrans will be working with a group of Responsible Agencies to jointly comply with the TMDL requirements. Targeted pollutants are Copper (Cu), Mercury (Hg), Nickel (Ni), Zinc (Zn) and Selenium (Se).

Project Engineers shall consider treatment controls for the project and consult with the District Storm Water Coordinator.

No 401 Certification is required for this project per CE dated December 11, 2008.

There are no known drinking water reservoirs or recharge facilities within project limits.

Any LARWQCB special requirements and concerns as well as the local agency's will be finalized at the PS&E stage of the project development process.

The average climate in the project vicinity is within 65-75 °F.

Based on County of Ventura Watershed Study, groundwater elevation varies from 2 to 20 ft on throughout the watershed basin. The current seasonal rainfall normal is 13-14 in.

The hydrologic soil groups in the area are class B (PM 14.05-17.0), class D (PM 17.0-18.0) and class C (18.0-21.06) per NCRS STATSGO Soils Classification. A high degree of tectonic activity exists in the area. The Calleguas Creek topography is typified by rugged, mountainous terrain in the northern and eastern portions. In the south and west, the landforms consist of rolling hills, alluvial valleys, and coastal floodplains. Approximately 42 percent of the watershed has slopes greater than 20 percent, with another 46 percent of the watershed having slopes of less than 10 percent. The watershed is part of the Transverse Range geomorphic province of California. The current land use for this project area is lightly urbanized and agricultural usage adjacent to most of the State's Right of Way.

The proposed project will be within Caltrans existing Right-of-Way. No additional Right-of-Way acquisitions and easements are required for this project. Maintenance access to GSRDs will be from the local streets and in some cases from the freeway or ramp shoulders.

Slopes will be protected with well-established landscaping, and there are no known soil stabilization concerns.

The project is anticipated to have no seasonal construction restrictions. Rainy season is from October 1 to May 1. Mean annual precipitation varies from about 13 inches on the Oxnard Plain to 14 inches in the inland valleys, with a maximum of 20 inches in the higher elevations. The wettest rainfall year with recorded data occurred in 1941, when 38 inches of rain fell. The driest rainfall year was 1894, when only 3.3 inches of rain were measured. Summers in the Calleguas Creek watershed are relatively warm and dry and winters are mild and wet.

Potential reuse of Aerially Deposited Lead (ADL) containing material is viable if ADL levels are safe. An investigation for presence of contaminated or hazardous soils at potential locations will be conducted at the next phase.

There are no existing Treatment BMPs within the project limits.

This project does not have any potential negative storm water impacts. The scope of work does not include any horizontal or vertical realignments or relocations of existing highway and bridge structures. Disturbance to existing slopes consists of minor excavations and will be minimal as necessary. No other grading, providing cuts and fills, changing contours of existing slopes, construction of retaining walls will be performed. No Right-of-Way easements to reduce the steepness of slopes will be acquired. All flow is currently concentrated and collected in existing stabilized freeway drainage system. Concrete and stainless steel materials will be used in construction of GSRDs to reduce maintenance impacts on water quality. Design of GSRDs and selection of location of its placement allow for ease of cleaning and maintenance. Construction at any given location may be scheduled to minimize soil-disturbing work during the rainy season.

Following are this project's measures for avoiding or reducing potential storm water impacts:

1. Minimize cut and fill areas.
2. Disturb existing slopes only when necessary.
3. Protect and retain existing vegetation as much as possible.
4. Use flat slopes whenever feasible.
5. Construction Site BMPs are to be implemented during construction.

3. Regional Water Quality Control Board Agreements

The purpose of these TMDLs is to attain water quality standards for trash in the Calleguas Creek and to enhance water quality of the watershed. Construction of this project is a legal requirement, and failure to implement this project would be considered non-compliant by LARWQCB and may invoke enforcement action.

The project will be subject to requirements of the Construction General Permit (CAS000002) and Caltrans Permit (CAS 000003) issued by the California State Water Resources Control Board.

4. Describe 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

This project will not increase the volume and velocity of downstream flow nor increase the sediment load of downstream flow or affect the downstream channel stability.

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

The proposed construction of GSRDs will not create new slopes or modify existing slopes. Proposed earthwork will consist only of local excavations to construct GSRDs and other treatment BMPs.

The existing slopes are stable and covered with vegetation. All existing landscape will be preserved, minimally disturbed and restored following Caltrans replacement planting policy and procedure. Mulching for erosion control will be implemented at all disturbed areas (e.g. areas disturbed for trenching) and landscape will be provided around the perimeter of each GSRD and other proposed treatment BMPs.

Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4
All existing runoff is directed to the existing freeway drainage system and no scour and gullying will be caused. No overside drains will be constructed. Existing flow is already concentrated and conveyed in the freeway drainage system and eventually discharged to the Revolon channel and Calleguas Creek.

Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5
This project will involve clearing, grubbing and excavation in specific locations that will be clearly defined on the contract plans during the PS&E phase of the project to maximize the preservation of existing vegetation.
The preliminary estimated cost for Design Pollution Prevention BMPs is as follows:

Highway Planting & Misc.	$125,000
Plant Establishment Work	$100,000
Irrigation System	$275,000
Estimated Total	$445,000

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

The scope of the project includes construction of GSRDs, Media Filters, and Infiltration Basins and at selected drainage outfall locations. Design Pollution Prevention BMPs are limited to the work proposed in areas adjacent to the recommended Treatment BMP locations.

Treatment BMP Strategy, Checklist T-1
The targeted design constituents of this project are trash, total and dissolved copper, total and dissolved lead, total and dissolved zinc, unspecified metals, phosphorus and sediments as identified by LARWQCB.
In accordance with the Deputy District Directive DD-92 dated March 17, 2008 this project may be required to implement all treatment BMPs recommended in the Corridor Stormwater Management Studies (Corridor Studies) once the studies become available.
All nine permanent stormwater treatment BMPs have been analyzed. Narratives describing the applicability of particular devices are outlined below.
The proposed permanent Treatment BMPs to be placed with this project are Gross Solid Removal Devices (GSRDs), Infiltration Devices, and Media Filters. The WQV and / or WQF associated with the work will be treated by the proposed treatment BMPs to be used in this project. A 100% WQV from the tributary area serving the outfalls where the devices are proposed to be placed is estimated to be treated by the proposed BMPs.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2
Due to high flow velocities Biostrips/Bioswales are not considered to be feasible for this project. Locations along side the freeway adequate right-of-way does not exist for biostrips/Bioswales to be effective and more than 5 acres of acquisition would be required bringing this project outside of its original scope of work.

Dry Weather Diversion, Checklist T-1, Parts 1 and 3
There is no persistent dry weather flow in storm drains present at any of the project locations. Dry weather flow diversion is not feasible and it is not planned to be incorporated on this project.

Infiltration Devices – Checklist T-1, Parts 1 and 4
There is 1 site found suitable for implementing Infiltration Basins on this project: Outfalls #101-148, 101-149. Soil permeability and groundwater levels exclude infiltration basins from being used at all other locations.

No	Outfall I.D	Route	PM (Direction)	Tributary Area (Hectares)	WQV* (ft^3)	Design* Volume (m^3)	Peak* Flow (m^3/sec)
1	101-148	101	21.010	0.65	5,683	TBD*	TBD*
	101-149	101	20.997	0.65	5,683		

* Notes: Calculated WQVs have been provided by Hydraulics. Other information are taken from the Los Angeles Outfall Inventory. TBD: Information to be determined during PS&E phase.

Design details will be finalized during the PS&E phase. A total lump sum of $550,000 has been allocated to allow for these devices to be incorporated into the project.

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

Based on field reviews and design criteria (hydraulic head, volume, etc), there is too much volume of water to be treated and adequate detention times cannot be attained. A Lack of right of way space and high costs to acquire also makes detention basins infeasible due to these reasons, no sites found suitable for the implementation of Detention Basins within the project limits. Therefore, no Detention Devices are recommended and will not be incorporated in this project. Detention Devices are not feasible due to limitations of right-of-way and elevated groundwater levels and no sufficient head to prevent objectionable backwater conditions.

Gross Solids Removal Devices (GSRDs), Checklist T-1, Parts 1 and 6

This type of Permanent Treatment BMP is considered in this project to function as trash removal devices. They are Linear Radial and Inclined Screen Gross Solid Removal Devices (GSRDs). The hydraulics unit provided preliminary WQVs and WQFs. There are three (3) projects in the vicinity (EA: 191601, 249800, 003431) that will remove some of the previously proposed outfall locations. Their effects have been taken into consideration.

A total of 15 potential locations for GSRDs are considered feasible at this stage of the project:

No.	Outfall I.D.	PM	Direction	GSRD Type	Tributary* Area (Hectares)	Design* Volume (ft^3)	Peak* Flow (ft^3/sec)
1	101-111	14.426	S	Linear	2.34	TBD*	TBD*
2	101-116	14.799	S	Inclined	2.05	TBD*	TBD*
3	101-901*	14.901	S	Linear	0.56	TBD*	TBD*
4	101-112	15.049	S	Linear	0.81	TBD*	TBD*
5	101-113	15.076	S	Linear	8.67	TBD*	TBD*
6	101-121	15.395	S	Linear	1.90	TBD*	TBD*
7	101-118	16.405	S	Linear	1.09	TBD*	TBD*
8	101-124	17.159	S	Linear	1.14	TBD*	TBD*
9	101-124	17.159	N	Linear	1.14	TBD*	TBD*
10	101-130	18.881	S	Linear	0.49	TBD*	TBD*
11	101-128	18.963	S	Linear	1.19	TBD*	TBD*
12	101-134	19.540	N	Linear	6.80	TBD*	TBD*
13	101-146	20.581	S	Linear	1.42	TBD*	TBD*
14	101-145	20.685	S	Linear	0.65	TBD*	TBD*
15	101-144	20.804	N	Linear	0.76	TBD*	TBD*

* Notes: Information are taken from the Los Angeles Outfall Inventory. TBD: Information to be determined during PS&E phase.

Adequate access for maintenance was considered for all recommended GSRD locations.

An estimated amount of $2.4 million has been allocated for the construction of the above 15 GSRDs for this project.

Traction Sand Traps, Checklist T-1, Parts 1 and 7

The project is not located in an area where traction sand or abrasives are applied more than twice a year. Traction sand traps are not recommended and are not proposed to be implemented on this project.

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

Based on field reviews and in compliance with the Project Planning and Design Guide (PPDG) design criteria, it is proposed to install 3 Media Filters at the following sites:

No.	Outfall I.D.	PM	Direction	Media Filter Type	Tributary* Area (Hectares)	WQV* (ft^3)	WQF* (ft^3/sec)	Design* Volume (m^3)	Peak* Flow (m^3/sec)
1	101-125	17.792	S	Delaware	1.18	10,219	7.87	TBD*	TBD*
2	101-126	17.794	S	Delaware	1.18	10,267	7.90	TBD*	TBD*
3	101-143	20.942	S	Delaware	0.38	3,295	2.54	TBD*	TBD*

* Notes: Calculated WQVs and WQFs have been provided by Hydraulics. Other information are taken from the Los Angeles Outfall Inventory. TBD: Information to be determined during PS&E phase.

For these media filters, preliminary WQVs and WQFs were provided by the Hydraulics Unit. Design details will be completed at the PS&E phase. Due to right-of-way limitation and no hydraulic head these devices were not feasible at other locations. $3,000,000 has been allocated for the construction of 3 Media Filters.

Multi-Chambered Treatment Trains (MCTTs), Checklist T-1, Parts 1 and 9

The existing outfall locations do not serve a "critical source area". Therefore, MCTTs are not feasible, and are not recommended to be implemented on this project.

Wet Basins, Checklist T-1, Parts 1 and 10

There is no permanent source of water that may support a permanent pool throughout the project. Wet basins are not feasible and will not be recommended for implementation on this project.

Estimated construction costs allocated to implement permanent treatment BMPs on this project are as follows:

GSRDs:	(15 devices at $150,000/ea)	$2,400,000
Infiltration Devices:	(1 devices totaling $550,000/ea)	$ 550,000
Media Filters:	(3 devices at $1,000,000/ea)	$3,000,000
Total Estimated Cost		$5,950,000

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

The following construction site BMPs will be considered to be included in the project Special Provisions and will be incorporated in applicable bid items for Water Pollution Control and related bid items:

- Silt Fence (SC-1)
- Storm Drain Inlet Protection (SC-10)
- Wind Erosion Control (WE-1)
- Stabilized Construction Entrance/Exit (TC-1)
- Temporary Concrete Washout and/or Temporary Concrete Washout Portable (TC-3)
- Pile Driving Operations (NS-11)
- Concrete Curing (NS-12)
- Concrete Finishing (NS-14)
- Material Delivery and Storage (WM-1)
- Stockpile Management (WM-3)
- Solid Waste Management (WM-5)
- Hazardous Waste Management (WM-6)
- Contaminated Soil Management (WM-7)
- Concrete Waste Management (WM-8)
- Sanitary / Septic Waste Management (WM-9)

No dewatering is anticipated during construction of the project

A total lump amount of $260,000 for Temporary Construction Site BMPs has been allocated in the project cost estimate.

7. Maintenance BMPs (Drain Inlet Stenciling)

No drain inlet stenciling will be performed on this project.

REQUIRED ATTACHMENTS

⇒ **Vicinity Map**
⇒ **Evaluation Documentation Form (EDF)**

SUPPLEMENTAL ATTACHMENTS

⇒ Project Cost Estimate
⇒ 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 1–10 (Treatment BMPs)

07-VEN-101 PM14.05/21.06
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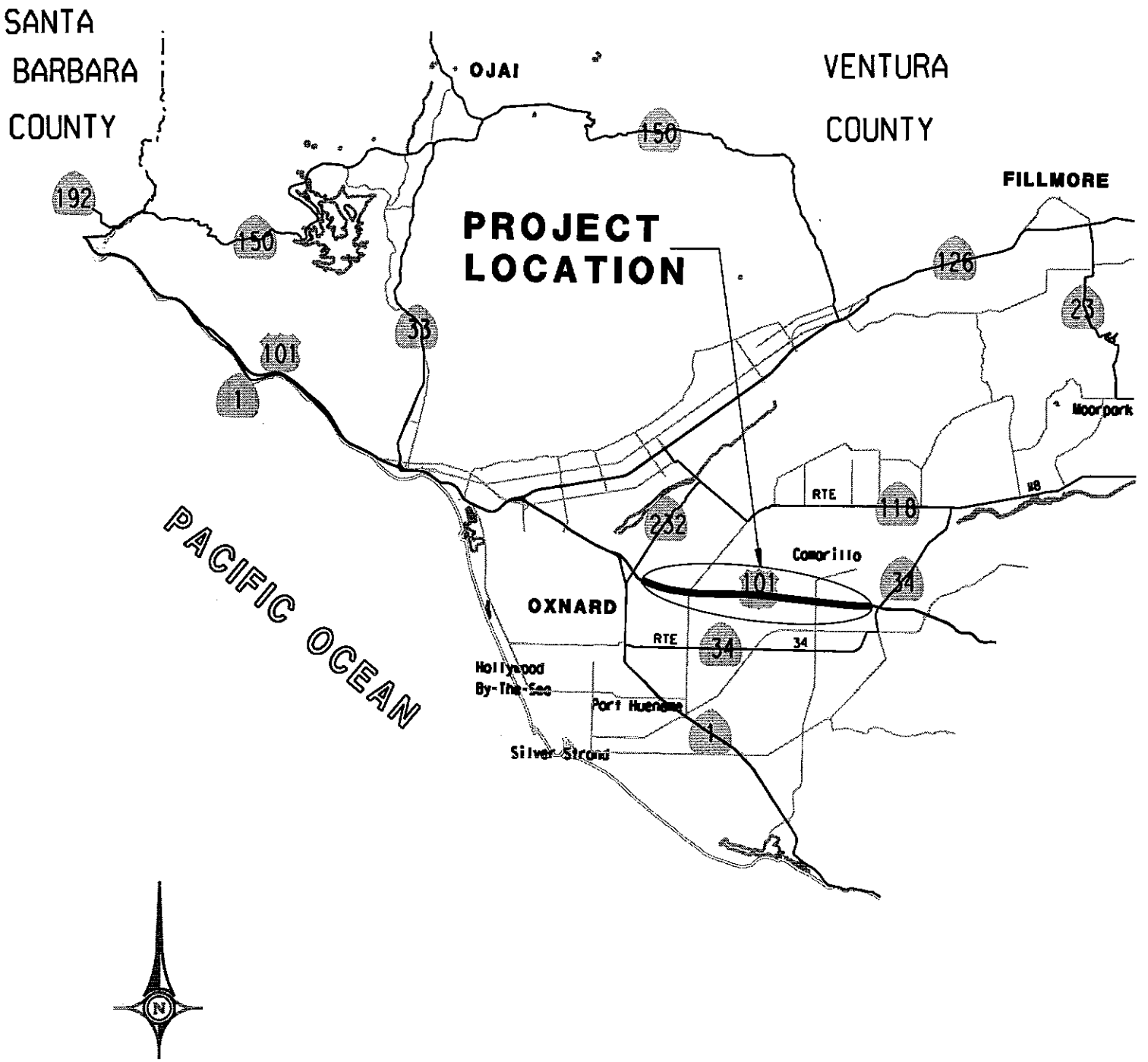

LOCATION MAP

NO SCALE

Strip-Map.dgn 2/18/2009 10:20:45 AM

DATE: Jan 22, 2009

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPS EA: 27600K

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	☒		Go to 2
2.	Is this an emergency project?	☐	☒	If **Yes**, go to 11. 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 10 or 4. 2/12/09 S.P. *(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**. (*Ventura 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 11.
6.	Is this 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 11.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	☐	☐	If **Yes**, continue to 10. If **No**, go to 9. *1.27 acres (Total DSA)*
9.	Is the project part of a Common Plan of Development?	☐	☐	If **Yes**, continue to 10. If **No**, go to 11.
10.	Project is required to consider approved Treatment BMPs.	☒	See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
11.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. 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

Checklist SW-1, Site Data Sources

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101

PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K

RWQCB: Los Angeles, Region 4

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	
As-Builts http://10.56.3.79/asbuilt/frMenu.htm	Varies
Aerial Photos http://svhqdhipp:8080/dhipp/jspform.jsp	2003
Hydraulic	
Drainage Areas – Los Angeles Outfall Inventory	2005
Ground Water Data – County of Ventura Groundwater	2001
Plans and Profiles – Caltrans As-Builts	Varies
Soils	
NRCS STATSGO Soils http://10.56.3.79/home/maps/pdfPub/soil/200kTile7.pdf by D7 Design Storm Water and OAP GIS	April 2006
Climatic	
National Climatic Data Center (NCDC) http://ncdc.noaa.gov	2005
Water Quality	
Final 2002 Clean Water Act Section 303(d) List of Water Quality Limited Segments www.swrcb.ca.gov, Region 4, Los Angeles	2002
District 7 Established TMDLs: http://10.56.3.79/home/maps/pdfpub/watershed/TMDL.htm	2006
Water Quality Planning Tool http://stormwater.water-programs.com/	2009
Other Data Categories	
Caltrans Storm Water Quality Handbook-Project Planning and Design Guide	July 2005
Ventura Countywide Storm Water Monitoring Program 2007/08 Water Quality Monitoring Report	July 2008
Ventura County Watershed Protection District Website	2008

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101
PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K
RWQCB: Los Angeles, Region 4

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 or hazardous 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

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

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101
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RWQCB: Los Angeles, Region 4

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

Design Pollution Prevention BMPs
Checklist DPP-1, Part 1

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101

PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K

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Consideration of Design Pollution Prevention BMPs

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

(a) Will project increase velocity or volume of downstream flow?	☐Yes	☒No	☐NA
(b) Will the project discharge to unlined channels?	☐Yes	☒No	☐NA
(c) Will project increase potential sediment load of downstream flow?	☐Yes	☒No	☐NA
(d) 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.

2. Slope/Surface Protection Systems

(a) 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.

3. Concentrated Flow Conveyance Systems

(a) Will the project create or modify ditches, dikes, berms, or swales?	☐Yes	☐No	☒NA
(b) Will project create new slopes or modify existing slopes?	☐Yes	☒No	☐NA
(c) Will it be necessary to direct or intercept surface runoff?	☒Yes	☐No	☐NA
(d) 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.

4. Preservation of Existing Vegetation

a) 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.

Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

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Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Chapters 813, 836, and 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 1:4 V:H. ☒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

Design Pollution Prevention BMPs
Checklist DPP-1, Part 5

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Preservation of Existing Vegetation

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

Treatment BMPs

Checklist T-1, Part 1

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101

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Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (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-watersheds 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.

1. 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

   (c) Is the 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 <u>all</u> of these questions consider Dry Weather Flow Diversion, complete and attach Part 3 of this checklist

2. 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: Biofiltration Systems, Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter – consult with District/Regional NPDES if these devices should be considered to meet litter/trash TMDL.

3. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year?
   If Yes, consider ***Traction Sand Traps***, complete and attach **Part 7** of this checklist. ☐Yes ☒No

4. (a) Are there local influent limits for infiltration or Basin Plan restrictions or other local agency prohibitions that would restrict the use of the infiltration devices? ☐Yes ☒No

(b) Would infiltration pose a threat to local groundwater quality as determined by the District/Regional Storm Water Coordinator? ☐Yes ☒No

If the answer to either part of Question 4 is Yes, then Infiltration Devices are infeasible and the consideration of Infiltration Devices should not be made when completing Questions 5 through 17.

5. (a) Does the project discharge to any 303(d) listed water body? ☒Yes ☐No
If No, go to Question 17, General Purpose Pollutant Removal

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

___phosphorus, __X__ nitrogen, __X__ total copper, ___dissolved copper,
___total lead ___dissolved lead, __X__ total zinc, ___dissolved zinc,
___sediments, ___general metals [unspecified metals].

(c) If no TDC's are checked above, go to Question 17

(d) If only one TDC is checked above, continue to Question 6. ☒Complete

(e) If more than one TDC is checked, contact your District/Regional NPDES Coordinator to determine priority before continuing with this checklist. ☐Complete

6. Consult with the District/Regional Storm Water Coordinator to determine whether Treatment BMP selection will be affected by any existing or future TMDL requirements. ☐Complete

The following questions show the approved Treatment BMPs in order of preference based on load reduction (performance) for the listed constituent and lifetime costs for the device, excluding right-of-way. Note that a line separates Treatment BMPs into groups of approximately equal effectiveness and within each grouping, any of the Treatment BMPs may be selected for placement if meeting site conditions. In the space provided next to the BMP, use Yes or a check mark to indicate a positive response.

If none of the listed Treatment BMPs for a specific constituent of concern (TDC) can be sited, go to Step #17 (General Purpose Pollutant Removal) to determine whether another Treatment BMP can be incorporated into the project.

For the SWDRs developed for the PID and PA/ED phases of a project: **Consider all approved Treatment BMPs listed that can be reasonably incorporated into the project for each TDC.**

For the SWDR developed for the PS&E phase: **Indicate (Yes or check mark) only those BMPs that will be incorporated into the project.**

7. Is phosphorus the TDC? [Use this constituent if "eutrophic" or "nutrients" is the TDC for the water body.] If Yes, consider: ☐Yes ☒No

_____Infiltration Devices
_____Austin Sand Filters

8. Is nitrogen the TDC? If Yes, consider: ☒Yes ☐No

- X Infiltration Devices
- X Austin Sand Filters
- X Delaware Filter
- X Detention Device
- X MCTT

9. Is copper (total) the TDC? If Yes for total Copper, consider: ☒Yes ☐No

- X Infiltration Devices
- X Wet Basins
- X Biofiltration Strips
- X Detention Device
- X Biofiltration Swales
- X Austin Sand Filter
- X Delaware Filter
- X MCTT

10. Is copper (dissolved) the TDC? If Yes for dissolved Copper, consider: ☐Yes ☒No

- Infiltration Devices
- Biofiltration Strips
- Wet Basin
- Biofiltration Swale

11. Is lead (total) the TDC? If Yes for total Lead, consider: ☐Yes ☒No

- Infiltration Devices
- Wet Basin
- Biofiltration Strips
- Austin Sand Filter
- **Delaware Filter**
- Detention Device
- Biofiltration Swales
- MCTT

12. Is lead (dissolved) the TDC? If Yes for dissolved Lead, consider: ☐Yes ☒No

- Infiltration Devices
- Biofiltration Strips
- Wet Basin
- Detention Device
- Biofiltration Swales
- Austin Sand Filter

13. Is zinc (total) the TDC? If Yes for total Zinc, consider: ☒Yes ☐No

- X Infiltration Devices
- X Delaware Filter
- X Wet Basin
- X Biofiltration Strips
- X Biofiltration Swales
- X Austin Sand Filter
- X MCTT
- X Detention Devices

14. Is zinc (dissolved) the TDC? If Yes for dissolved Zinc, consider: ☐Yes ☒No

_____Infiltration Devices
_____Delaware Filter
_____Biofiltration Strip
_____Biofiltration Swale
_____Austin Sand Filter
_____MCTT

15. Is sediment (total suspended solids [TSS]) the TDC? If Yes for TSS, consider: ☐Yes ☒No

_____Infiltration Devices
_____Austin Sand Filter
_____Delaware Filter
_____Wet Basin
_____Detention Device
_____Biofiltration Strip
_____MCTT
_____Biofiltration Swale

16. Are "General Metals" or (unspecified) "Metals" the TDC? If Yes for General Metals, consider: ☐Yes ☒No

_____Infiltration Devices
_____Biofiltration Strips
_____Wet Basin
_____Biofiltration Swale
_____Austin Sand Filter
_____Delaware Filter
_____MCTT

17. General Purpose Pollutant Removal.: When it is determined that there are no TDCs, consider the Treatment BMPs in the order listed below. ☐Yes ☒No

_____Infiltration Devices
_____Biofiltration Strips
_____Wet Basin
_____Biofiltration Swale
_____Austin Sand Filter
_____Detention Device
_____Delaware Filter
_____MCTT

18. Biofiltration
(a) Are site conditions and climate favorable to allow suitable vegetation to be established? ☒Yes ☐No

(b) Have Biofiltration strips and swales been considered to the extent practicable? Note: Biofiltration BMPs should be considered for all projects, even if other Treatment BMPs are placed. ☒Yes ☐No

If No to (a) or (b), document justification in Section 5 of the SWDR.

19. After completing the above, complete and attach the checklists shown below for every Treatment BMP under consideration ☒Complete

- X Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
- ___ Dry Weather Diversion: Checklist T-1, Part 3
- X Infiltration Devices: Checklist T-1, Part 4
- X Detention Devices: Checklist T-1, Part 5
- X 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
- X Multi-Chambered Treatment Train: Checklist T-1, Part 9
- X Wet Basins: Checklist T-1, Part 10

20. (a) Estimate what percentage of WQV/WQF will be treated by the preferred Treatment BMP(s): 80% ☒Complete

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

21. Prepare cost estimate, including right-of-way, for selected Treatment BMPs and include as supplemental information for SWDR approval. ☒Complete

Treatment BMPs

Checklist T-1, Part 2

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Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No

2. Are flow velocities < 4 fps (i.e. low enough to prevent scour of the vegetated bioswale 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 hazardous soils or contaminated 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 the 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

* **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

2. Can the bioswale 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 bioswale 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 biostrip ≤ 300 ft? * ☐Yes ☐No

5. Has the minimum width (in the direction of flow) of the invert of the bioswale received the concurrence of Maintenance? * ☐Yes ☐No

6. Can bioswales 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 biostrip 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

Treatment BMPs
Checklist T-1, Part 4

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Infiltration Devices

Feasibility

1.	Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality as determined by the District/Regional NPDES Storm Water Coordinator?	☐Yes	☒No
2.	Does infiltration at the site compromise the integrity of any slopes in the area?	☐Yes	☒No
3.	Per survey data or U.S. Geological Survey (USGS) Quad Map, are existing slopes at the proposed device site >15%?	☐Yes	☒No
4.	At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 0.5 inches/hr?	☐Yes	☒No
5.	Is site located over a previously identified contaminated groundwater plume?	☐Yes	☒No
	If Yes to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.		
6.	(a) Does site have groundwater within 10 ft of basin invert?	☒Yes	☐No
	(b) Does site investigation indicate that the infiltration rate is significantly greater than 2.5 inches/hr?	☐Yes	☒No
	If Yes to either part of Question 6, the RWQCB must be consulted, and the RWQCB must conclude that the groundwater quality will not be compromised, before approving the site for infiltration.	☒Yes	☐No
7.	Does adequate area exist within the right-of-way to place Infiltration Device(s)? If Yes, continue to Design Elements sections. If No, continue to Question 8.	☒Yes	☐No
8.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Infiltration Devices and how much right-of way would be needed to treat WQV? _____ acres If Yes, continue to Design Elements section. If No, continue to Question 9.	☐Yes	☐No
9.	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	

Design Elements – Infiltration Basin

* **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 a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☒Yes	☐No
2.	Has an overflow spillway with scour protection been provided? *	☒Yes	☐No
3.	Is the Infiltration Basin size sufficient to capture the WQV while maintaining a 40-48 hour drawdown time? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) *	☒Yes	☐No
4.	Can access be placed to the invert of the Infiltration Basin? *	☒Yes	☐No
5.	Can the Infiltration Basin accommodate the Water Quality freeboard above the WQV elevation (reference Appendix B.1.3.1)? *	☒Yes	☐No
6.	Can the Infiltration Basin be designed with interior side slopes no steeper than 1:4(V:H) (may be 1:3 [V:H] with approval by District Maintenance)? *	☒Yes	☐No
7.	Can vegetation be established in the Infiltration Basin? **	☒Yes	☐No
8.	Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? **	☒Yes	☐No
9.	Can a gravity-fed Maintenance/Emergency Drain be placed? **	☒Yes	☐No

Design Elements – Infiltration Trench

* **Required** Design Element – (see definition above)
** **Recommended** Design Element – (see definition above)

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☐Yes	☐No
2.	Is the surrounding soil within Hydrologic Soil Groups (HSG) Types A or B? *	☐Yes	☐No
3.	Is the volume of the Infiltration Trench equal to at least the 2.85x the WQV, while maintaining a drawdown time of ≤ 72 hours? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet], unless the District/Regional NPDES Coordinator will allow a volume between 2,830 ft^3 and 4,356 ft^3 to be considered.) *	☐Yes	☐No
4.	Is the depth of the Infiltration Trench ≤ 13 ft, and is the depth < the width? *	☐Yes	☐No
5.	Can an observation well be placed in the trench? *	☐Yes	☐No
6.	Can access be provided to the Infiltration Trench? *	☐Yes	☐No
7.	Can pretreatment be provided to capture sediment in the runoff (such as using Biofiltration)? *	☐Yes	☐No
8.	Can flow diversion be designed, constructed, and maintained to bypass flows exceeding the Water Quality Event? **	☐Yes	☐No
9.	Can a perimeter curb or similar device be provided (to limit wheel loads upon the trench)? **	☐Yes	☐No

Treatment BMPs
Checklist T-1, Part 5

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Detention Devices

Feasibility

1. Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems? ☒Yes ☐No

2. 2a) Is the volume of the Detention Device equal to at least the WQV? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No

   Only answer (b) if the Detention Device is being used also to capture traction sand.

   2b) Is the total volume of the Detention Device at least equal to the WQV and the anticipated volume of traction sand, while maintaining a minimum 12 inch freeboard (1 ft)? ☒Yes ☐No

3. Is basin invert ≥ 10 ft above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.) ☐Yes ☒No

If No to any question above, then Detention Devices are not feasible.

4. Does adequate area exist within the right-of-way to place Detention Device(s)?

   If Yes, continue to the Design Elements section. If No, continue to Question 5. ☒Yes ☐No

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

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 this Treatment BMP into the project. ☒Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 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 geotechnical integrity of the site been evaluated to determine potential impacts to surrounding slopes due to incidental infiltration? If incidental infiltration through the invert of an unlined detention device is a concern, consider using an impermeable liner. *	☐Yes ☐No
2.	Has the location of the Detention Device been evaluated for any effects to the adjacent roadway and subgrade? *	☐Yes ☐No
3.	Can a minimum freeboard of 12 inches be provided above the WQV? *	☐Yes ☐No
4.	Is an overflow outlet provided? *	☐Yes ☐No
5.	Is the drawdown time of the Detention Device within 24 to 72 hours? *	☐Yes ☐No
6.	Is the Detention Device outlet designed to minimize clogging (minimum outlet orifice diameter of 0.5 inches)? *	☐Yes ☐No
7.	Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? *	☐Yes ☐No
8.	Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? Note: Detention Basins may be lined, in which case no vegetation would be required for lined areas. *	☐Yes ☐No
9.	Has sufficient access for Maintenance been provided? *	☐Yes ☐No
10.	Is the side slope 1:4 (V:H) or flatter for interior slopes? ** (Note: Side slopes up to 1:3 (V:H) allowed with approval by District Maintenance.)	☐Yes ☐No
11.	If significant sediment is expected from nearby slopes, can the Detention Device be designed with additional volume equal to the expected annual loading? **	☐Yes ☐No
12.	Is flow path as long as possible ($\geq$ 2:1 length to width ratio at WQV elevation is recommended)? **	☐Yes ☐No

Treatment BMPs
Checklist T-1, Part 6

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Gross Solids Removal Devices (GSRDs)

Feasibility

1. Is the receiving water body downstream of the tributary area to the proposed GSRD on a 303(d) list or has a TMDL for litter been established? ☒Yes ☐No

2. Are the devices sized for flows generated by the peak drainage facility design event or can peak flow be diverted? ☒Yes ☐No

3. Are the devices sized to contain gross solids (litter and vegetation) for a period of one year? ☒Yes ☐No

4. Is there sufficient access for maintenance and large equipment (vacuum truck)? ☒Yes ☐No

   If No to any question above, then Gross Solids Removal Devices are not feasible. Note that Biofiltration Systems, Infiltration Devices, Detention Devices, Dry Weather Flow Diversion, MCTT, Media Filters, and Wet Basins may be considered for litter capture, but consult with District/Regional NPDES if proposed to meet a TMDL for litter.

5. Does adequate area exist within the right-of-way to place Gross Solids Removal Devices? ☒Yes ☐No
   If Yes, continue to Design Elements section. If No, continue to Question 6.

6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Gross Solids Removal Devices and how much right-of way would be needed? _____ 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

Design Elements – Linear Radial Device

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 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. Does sufficient hydraulic head exist to place the Linear Radial GSRD? *	☒Yes	☐No
2. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by Maintenance) used to size the device? *	☒Yes	☐No
3. Were the standard detail sheets used for the layout of the devices? ** If No, consult with Headquarters Office of Storm Water Management and District/Regional NPDES.	☒Yes	☐No
4. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? *	☐Yes	☒No

Design Elements – Inclined Screen

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 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. Does sufficient hydraulic head exist to place the Inclined Screen GSRD? *	☒Yes	☐No
2. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by Maintenance) used to size the device? *	☒Yes	☐No
3. Were the standard details sheets used for the layout of the devices? ** If No, consult with Headquarters Office of Storm Water Management and District NPDES.	☒Yes	☐No
4. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? *	☐Yes	☒No

Treatment BMPs
Checklist T-1, Part 8

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101
PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K
RWQCB: Los Angeles, Region 4

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 40 to 48 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)? ☐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.

Feasibility- Delaware Filter

1. Is the volume of the Delaware Filter equal to at least the WQV using a 40 to 48 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet], consult with District/Regional NPDES if a lesser volume is under consideration.) ☒Yes ☐No

2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☐Yes ☒No

3. Would a permanent pool of water be allowed by the local vector control agency? ☐Yes ☒No

If No to any question, then a Delaware Filter is not feasible

4. Does adequate area exist within the right-of-way to place a Delaware Filter (s)? If Yes, continue to Design Elements sections. If No, continue to Question 5. ☒Yes ☐No

5. 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 If Yes, continue to the Design Elements section. If No, continue to Question 6. ☐Yes ☐No

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 this Treatment BMP into the project. ☒ Complete

   If a Delaware Filter is still under consideration, continue to the Design Elements – Delaware Filter section.

Design Elements – Austin Sand Filter

* **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 biofiltration)? ** ☐Yes ☒No

6. Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 9. ☒Yes ☐No

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 1:3 (V:H) 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

Design Elements – Delaware Filter

* **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. Can the first chamber be sized for the WQV? * ☐Yes ☒No
2. Is the drawdown time of the 2nd chamber between 40 and 48 hours? * ☒Yes ☐No
3. Is access for Maintenance vehicles provided to the Delaware Filter? * ☒Yes ☐No
4. Is a bypass/overflow provided for storms > WQV? ** ☒Yes ☐No
5. Can pretreatment be provided to capture sediment and litter in the runoff (such as using biofiltration)? ** ☒Yes ☐No
6. Can the Delaware Filter be placed in an offline configuration? ** ☒Yes ☐No
7. Is maximum depth ≤ 13 ft below ground surface? *

Treatment BMPs
Checklist T-1, Part 9

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101
PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K
RWQCB: Los Angeles, Region 4

MCTT (Multi-chambered Treatment Train)

Feasibility

1. Is the proposed location for the MCTT located to serve a "critical source area" (i.e. vehicle service facility, parking area, paved storage area, or fueling station)? ☐Yes ☒No
2. Is the WQV ≥ 4,356 ft³ (0.1 acre-foot)? ☐Yes ☒No
3. Is there sufficient hydraulic head (typically ≥ 6 feet) to operate the device? ☐Yes ☒No
4. Would a permanent pool of water be allowed by the local vector control agency? ☐Yes ☒No
   If No to any question above, then an MCTT is not feasible.
5. Does adequate area exist within the right-of-way to place an MCTT(s)? ☒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 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

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 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 maximum depth of the 3rd chamber ≤ 13 ft below ground surface and has Maintenance accepted this depth? * ☐Yes ☐No
2. Is the drawdown time in the 3rd chamber between 24 and 48 hours? * ☐Yes ☐No
3. Is access for Maintenance vehicles provided to all chambers of the MCTT? * ☐Yes ☐No
4. Is there sufficient hydraulic head to operate the device? * ☐Yes ☐No
5. Has a bypass/overflow been provided for storms > WQV? * ☐Yes ☐No
6. Can pretreatment be provided to capture sediment and litter in the runoff (such as using biofiltration)? ** ☐Yes ☐No

Treatment BMPs
Checklist T-1, Part 10

Prepared by: Abdol Hajipour Date: 1/22/2009 District-Co-Route: 07-VEN-101

PM (KP): 14.05/21.06 (22.48/33.69) EA: 27600K

RWQCB: Los Angeles, Region 4

Wet Basin

Feasibility

1.	Is the volume of the Wet Basin above the permanent pool equal to at least the WQV using a 24 to 72 hour drawdown (40 to 48 hour drawdown preferred)? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet] and the permanent pool must be at least 3x the WQV.)	☐Yes	☒No
2.	Is a permanent source of water available in sufficient quantities to maintain the permanent pool for the Wet Basin?	☐Yes	☒No
3.	Is proposed site in a location where naturally occurring wetlands do not exist?	☐Yes	☒No
	Answer either question 4 or question 5:		
4.	For Wet Basins with a proposed invert above the seasonally high groundwater, are NRCS Hydrologic Soil Groups [HSG] C and D at the proposed invert elevation, or can an impermeable liner be used? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.)	☐Yes	☒No
5.	For Wet Basins with a proposed invert below the groundwater table: Can written approval from the local Regional Water Quality Control Board be obtained to place the Wet Basin in direct hydraulic connectivity to the groundwater?	☐Yes	☐No
6.	Is Water Quality freeboard provided ≥ 1 foot?	☐Yes	☒No
7.	Is the maximum impoundment volume < 14.75 acre-feet?	☐Yes	☒No
8.	Would a permanent pool of water be allowed by the local vector control agency? If No to any question above, then a Wet Basin is not feasible.	☐Yes	☒No
9.	Is the maximum basin width ≤ 49 ft as suggested in Section B.10.2? If No, consult with the local vector control agency and District Maintenance.	☐Yes	☐No
10.	Does adequate area exist within the right-of-way to place a Wet Basin? If Yes, continue to Design Elements sections. If No, continue to Question 10.	☐Yes	☐No

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	218,253	CF	$3.40	$742,060	
Structure Backfill	26,190	CF	$10.40	$272,376	
Sand Backfill	18,231	CF	$6.25	$113,944	
Imported Borrow					
Clearing & Grubbing	1	LS	$50,000	$50,000	
			Subtotal of Earthwork Items		$1,178,380

Section 2 Pavement Structure	Quantity	Unit	Unit Price	Item Cost	Section Cost
JPCP Pavement (					
Lean Concrete Base					
Asphalt Concrete					
Cement-Treated Base					
Aggregate Base, Class 3					
Aggregate Subbase					
Edge Drains					
Maintenance Access					
			Subtotal Pavement Structural Section		

Section 3 Drainage Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Infiltration Device	1	EA.	$550,000	$550,000	
Media Filter Device	3	EA.	$1,000,000	$3,000,000	
Gross Solid Removal Devices (GSRDs):	15	EA.	$160,000	$2,400,000	
Bio Swales & Bio Strips					
Drainage Modification	19	EA.	$80,000	$1,520,000	
			Subtotal Drainage Section		$7,470,000

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls					
Noise Barriers					
Metal Beam Guardrail	720	ft	$55.00	$39,600	
Equipment/Animal Passes					
Highway Planting	1	LS		$100,000	
Plant Establishment Work				$25,000	
Irrigation System Repair & Mo	1	LS		$245,000	
Relocate Private Irrigation Facilities					
Erosion Control	1	LS		$75,000	
Slope Protection	1	LS		$70,000	
Design Polution Prevention Pla	1	LS		$47,000	
Hazardous Waste Mitigation W	9461	cu.ft	$37.80	$357,626	
Environmental Mitigation	1	LS		$50,000	
SWPPP Plan Preparation and V	1	LS		$260,000	
Resident Engineer Office Fund	1	LS		$144,000	
				Subtotal Specialty Items	$1,413,226

Section 5 Traffic Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
ITS (Install communication conduits)					
Traffic Delineation Items					
Traffic Signals					
Overhead Sign (Retro-Relective)					
Ground Mounted Signs					
Traffic Control System	1	LS	$100,000	$100,000	
Traffic Management Plan	1	LS	$34,000	$34,000	
COZEEP					
Construction Area Signs					
Temporary Crash Cushion	15	EA.	$350.00	$5,250	
Temporary Railing Type K	10,000	FT	$10.00	$100,000	
				Subtotal Traffic Items	$239,250

SUBTOTAL SECTIONS 1-5 $10,300,856

DIST-CO-RTE 07-VEN-101
PM 14.05/21.06

EA 27600K

Section 6 Minor Items

$10,300,856 Subtotal Sections 1-5	X	5.00% (x%)	$515,043	
			TOTAL MINOR ITEMS	$515,043
			SUBTOTAL SECTIONS 1-6	$10,815,899

Section 7 Roadway Mobilization

$10,815,899 Subtotal Sections 1-6	X	10.00% (x%)	$1,081,590	
			TOTAL ROADWAY MOBILIZATION	$1,081,590
			SUBTOTAL SECTIONS 1-7	$11,897,488

Section 8 Roadway Additions

Supplemental				
$11,897,488 Subtotal Sections 1-7	X	5.00% (x%)	$594,874	
Contingencies				
$11,897,488 Subtotal Sections 1-7	X	20.00% (x%)	$2,379,498	
			TOTAL ROADWAY ADDITIONS	$2,974,372

TOTAL ROADWAY ITEMS $14,871,860
(Total of sections 1-8)

Estimate Prepared By Tommy Tran (Print Name) Phone # 7-5726 Date: 11/04/2008

Estimate Checked By Abdol M Hajipour (Print Name) Phone # 7-6278 Date: 11/04/2008

II. STRUCTURES ITEMS

	STRUCTURE			
Bridge Name	Washington	Hammond	Mountain	Lincoln
Structure Type	CIP/PS Box	CIP/PS Box	CIP/PS Box	CIP/PS Box
Width (Replacement) - (ft)				
Widening Width - (ft)				
Span Lengths - (ft)				
Total Area - (ft²)				
Footing Type (Pile/Spread)				
Cost Per ft²				
(include 10% mobilization and 20% contingency)				
Total Cost for Structure				
Removal Cost				
Remove Approach/Departure Slabs				
Approach/Departure Slabs				
Joint Seal				

Railroad Related Costs

SUBTOTAL STRUCTURES ITEMS _____

SUBTOTAL RAILROAD ITEMS _____

TOTAL STRUCTURES ITEMS _____

USE _____

III. RIGHT OF WAY

	Current Values	Escalated Values*
A. R/W Acquisition (including contigency, G.w.-condem.-adm.s'tl.) Permits		
B. Utility Relocation (State Share)		
C. RAP (cont rate.)		
D. Clearance/Demolition		
E. Title and Escrow Fees		
TOTAL ESTIMATE COST		

Anticipated Date of Right of Way Certificaiton
(Date to which Values are escalated)

F. Construction Contract Work

Right of Way Branch Cost Estimate for Work
(This dollar amoutn is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Rigth of Way Items.)

COMMENTS: