Dist-County-Route: 07-LA-405
Post Mile Limits: 8.7/11.2
Project Type: Install Concrete Barrier and MBGR
Project ID (or EA): 07-0002-0935
Program Identification: 201.015
Phase: ☒ PID ☐ PA/ED ☐ PS&E

**Regional Water Quality Control Board(s):** Los Angeles

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: 8/1/2014

Total Disturbed Soil Area: 1.8 acres Risk Level: 2
Estimated: Construction Start Date: 4/1/2016 Construction Completion Date: 9/1/2017
Notification of Construction (NOC) Date to be submitted: 5/1/2016

| | | | |
|---|---|---|---|
| Erosivity Waiver | Yes ☐ | Date: | No ☒ |
| 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 date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.***

Trilly Nguyen, Registered Project Engineer — 9/7/11 Date

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

*David Yan, Project Manager* — 9/7/11 *Date*

*Roger E. Castillo, Designated Maintenance Representative* — 09-08-11 *Date*

*Ron Russak, Designated Landscape Architect Representative* — 09-08-11 *Date*

*[Stamp Required for PS&E only)* *Shirley Pak, District/Regional Design SW Coordinator or Designee* — 9/9/2011 *Date*

## STORM WATER DATA INFORMATION

### 1. Project Description

- This Project Study Report-Project Report (PSR-PR) proposes to construct new concrete barrier and Metal Beam Guardrail (MBGR) on both northbound and southbound directions along the I-405, in Los Angeles County, between northbound on-ramp from Alameda St. and Avalon Blvd. Undercrossing. See Attachment A for Vicinity Map.

  Proposed work summary:

| I-405 | Proposed Concrete Barrier Post Mile limit | Proposed MBGR Post Mile limit |
|---|---|---|
| Northbound | - | 9.7/10.5 |
| Southbound | 9.7/10.4 | 8.7/9.3, 10.5/10.9 |

In addition to construct new MBGR and concrete barriers, this project also proposes the following:

  - Reconstruct shoulder on southbound.
  - Remove existing E-curb and AC dike and construct new AC dike along MBGR.
  - Modify drainage system and relocate any electrical and irrigation utilities.

  All work will be performed within Caltrans right-of-way.

- The total disturbed soil area (DSA) for the project is estimated at 1.8 acres. This figure was calculated by accounting for all proposed MBGR, concrete barrier, and the reconstruction shoulder area. Since the proposed project's DSA is 1 acre or larger, a Storm Water Pollution Prevention Plan (SWPPP) will be required by the Contractor for this project.
- Existing impervious surface area for the reconstruction shoulder is estimated at 1.2 acre. The increase in impervious surface area after the project is completed is approximately 0.2 acre.
- This project lies within the limits of the Los Angeles County Municipal Separate Sewer Storm System (MS4) area in the city of Carson.

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

- The project limit lies within Hydrologic Sub-Area (HSA 411.01) Dominquez Channel Watershed. Storm water runoff in the area discharges through the storm drain systems and eventually out into the 303(d) listed Dominguez Channel Estuary. The existing outfall to the Dominguez Channel is approximately 150 feet away from the nearest boundary. Currently, there are no existing Treatment Best Management Practices (BMPs) within the project limits.

- The project limits are in the Dominguez Channel watershed. The TMDL is as follows: Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB) on May 5, 2011, and the TMDL is anticipated to become effective in the near future. Targeted pollutants are copper, lead, zinc, PAH, DDT, PCBs, Benzopyrene and Dieldrin for water column in the channel and harbors, and for sediments in the harbors. Caltrans will participate in a group of agencies to jointly comply with the TMDL. Project engineers shall consider treatment controls for the project and consult with the District NPDES Storm Water Coordinator.
- The Dominguez Channel Estuary has the following pollutants of concern (POCs): Ammonia, Benthic Community Effects, Benzo(a)pyrene (PAHs), Benzo[a]anthracene, Chlordane (tissue), Chrysene (C1-C4), Coliform Bacteria, DDT (tissue & sediment), Dieldrin (tissue), Lead (tissue), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, and Zinc (sediment).
- 401 Certification for this project is not required for this project.
- From the observation of Los Angeles Department of Public Works (DPW) maps, there are no known reservoirs or recharge facilities within the project limits.
- This project limits are in the Dominguez Channel Estuary. It has a semi-desert climate with high temperatures average around 90°F in the summer and 45°F in the winter. Average rainfall is 13.1 inches per year. Rainy season starts from October 1st to May 1st with an approximate 265 sunny days annually. Groundwater in the vicinity of the project area varies from approximately 41 ft below the surface.
- The hydrologic soil group in this area is class B per NCRS STATSGO Soils Classification. The soil consists of holocene age alluvial deposits consisting of poorly consolidated sand, silt, clay, and gravel. Overall, the soil ranges from sand to clay loam soil types.
- Risk Level Determination is 2.
- All proposed work will be done within Caltrans existing right-of-way.
- There will be no reuse of any soil containing Aerially Deposited Lead (ADL).
- Construction Site BMPs are to be implemented during construction.
  - Minimize cut and fill areas.
  - Disturb existing slopes only when necessary.
  - Protect and retain existing vegetation as much as possible.
  - Use flat slopes whenever feasible.
  - Early reseed on impact slopes as soon as possible.
- There is no existing treatment BMPs within the project limits.

3. Regional Water Quality Control Board (RWQCB) Agreements

- Since this project has a CE (Categorical Exemption), there is no additional requirement from other permits.

- The Los Angeles Regional Water Quality Control Board (RWQCB) requires all new/major reconstruction projects that increase impervious area to evaluate the feasibility of post construction Treatment BMP's as a condition of the permit process. It has been determined that the following BMP's will be incorporated into the project: bioswales.

- Notification of Construction (NOC) or equivalent is required for submittal 30 days prior to start of construction.

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

The scope of the project includes construction of biofiltration swales at selected locations.

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

- The proposed improvements will increase the impervious area by 0.2 acre. This increase in impervious area is minimal.
- At some location, existing E-curb and shoulder will be removed and reconstructed with inlets and discharge into storm drain systems that lead to the receiving waters.
- The project will increase the runoff volume slightly due to increase in impervious area. It is not anticipated that the increased flow will affect downstream Dominguez Channel stability.
- The project will not increase potential sediment loading during construction.
- Hydraulic downstream is anticipated no change because the project will not encroach, cross or realign.

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

- Existing slope area to be reconstructed is approximately 0.8 acre. Most of these impact slope area has space vegetation. All of the disturbed slope area will be replanted per Caltrans procedures.
- This segment of the I-405 is mostly on fill with an approximately a 2:1 (H:V) slope on the outside. Slope stabilization areas of concerns are located near the channels where the ground slopes down to the channel at 2:1. Proposed slopes will be fully compacted and sloped at 2:1 in the worse case scenario. Any existing planting that is disturbed due to construction will be replaced following Caltrans Replacement Planting Policy.

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

- Surface runoff on reconstruction shoulders will be conveyed through the existing storm drain system and ultimately drain into the Dominguez Channel.

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

- Clearing and grubbing limits will be clearly identified in the next PS&E phase.

- Total estimated cost for Design Pollution Prevention BMPs is $140,000 (All items under Section 7 in the Cost Estimate; Vegetation Control Protection, Erosion Control/Slope Protection, and Side slope/Embankment Slopes). Replacement Landscape cost has been allocated in the cost estimate.

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

Treatment BMP Strategy, Checklist T-1

- According to the I-405 Corridor Storm Water Management Study dated June 2, 2009, there have been a total of eleven potential Treatment BMPs identified on the I-405 within the project limits. However, due to nature of this safety project, only two Treatment BMPs (bioswales) are recommended to construct in this report. Permanent BMP's have only been analyzed for their applicability adjacent to work areas that are proposed to disturb the soil. Selected Treatment BMPs considered in this report are those that have direct impact on the construction area, with the total estimated construction cost not to exceed 10% of the project cost. 100% of total WQV, and 47% of the net WQV will be treated by the proposed biofiltration Swales.

| Corridor Storm Water Management Treatment BMP | | | | |
|---|---|---|---|---|
| Site No. | BMP Type | Paved Tributary Area (acre) | Treatment Credit (cubic feet) | Status |
| 7 | Biofiltration Swale | 3.20 | 8,712 | Outside construction area |
| 8 | Biofiltration Swale | 2.40 | 6,534 | Outside construction area |
| 9 | Media Filters | 2.70 | 7,351 | Outside construction area |
| 9a | Media Filters | 3.50 | 9,529 | Inside construction area |
| 10 | Media Filters | 1.20 | 3,267 | Outside construction area |
| 11* | Biofiltration Swale | 7.10 | 19,330 | Proposed for project |
| 12* | Biofiltration Swale | 3.10 | 8,440 | Proposed for project |
| 13 | Biofiltration Swale | 1.50 | 4,084 | PS&E (EA 234001) |
| 14 | Biofiltration Swale | 3.70 | 10,073 | PS&E (EA 234001) |
| 15 | Biofiltration Swale | 0.70 | 1,906 | Outside construction area |
| 16 | Media Filters | 16.10 | 35,120 | PS&E (EA 234001) |

*Proposed biofiltration swales to be implemented in this project.

Construction of other devices will not be included in this project, as their cost exceeds 10% of the project cost and would jeopardize this safety project.

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

- Per I-405 Corridor Storm Water Management Study, dated June 2, 2009, the following bioswales are scattered throughout the project limits. Only biofiltration swales at locations 11 and 12 are located within the construction area, and therefore, are being proposed in this project. Bioswales at locations 13 and 14 are proposed on a separate project (EA 234001) which is currently at PS&E stage. The total WQV treated is about 27,770 cubic feet.

| Site ID | PM | BMPs | Paved WQV (cf) | Status |
|---|---|---|---|---|
| 7 | 11.1 | bioswale | 8,712 | outside construction area |
| 8 | 10.8 | bioswale | 6,534 | outside construction area |
| 11* | 10.3 | bioswale | 19,330 | proposed |
| 12* | 10.1 | bioswale | 8,440 | Proposed |
| 13 | 10.0 | bioswale | 4,084 | PS&E (EA 234001) |
| 14 | 9.9 | bioswale | 10,073 | PS&E (EA 234001) |
| 15 | 9.8 | bioswale | 1,906 | outside construction area |

*proposed biofiltration swales to be implemented in this project

Dry Weather Diversion, Checklist T-1, Parts 1 and 3

- There is no persistent dry weather flow in storm drains within project limits. Therefore, diversion BMPs are not feasible and are not proposed to be incorporated into the project.

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

- Infiltration devices are not recommended by the I-405 Corridor Study. Infiltration devices are not feasible and therefore not incorporated in this project.

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

- Detention devices are not recommended by the I-405 Corridor Study. Detention devices are not feasible and therefore not incorporated in this project.

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

- GSRDs are not recommended by the I-405 Corridor Study because the Dominguez Channel Watershed does not have a trash TMDL, nor the receiving water on the 303d List for litter/trash. Therefore they are not proposed for this project.

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

- Traction sand traps devices are not recommended because traction sand is not applied twice a year within the project limits. Therefore, these devices will not be incorporated into this project.

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

- According to the I-405 Corridor Study, dated June 2, 2009, the following media filters are proposed within the project limits:

| Site ID | PM | BMPs | Paved WQV (cf) | Status |
|---|---|---|---|---|
| 9 | 10.5 | media filter | 7,351 | outside construction area |
| 9a | 10.6 | media filter | 9,529 | inside construction area |
| 10 | 10.4 | media filter | 3,267 | outside construction area |
| 16 | 9.6 | media filter | 35,120 | PS&E (EA 234001) |

Construction of these devices will not be included in this project, as their combined cost is approximately $942,000 and would jeopardize this safety project.

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

- MCTTs are not recommended as a Treatment BMP because existing outfall locations do not serve a "critical source area." Therefore, these devices are not feasible and are not recommended on this project.

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

- Wet Basins are not feasible because there is no permanent source of water that may support a permanent pool throughout the project. Therefore, these devices are not incorporated into this project.
- The funding allocated to implement permanent treatment BMPs on this project are calculated with a lump sum of $340,000.

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

During construction, the following temporary site BMPs shall be implemented by the contractors to limit soil erosion and maintain the highest water quality runoff.

- Fiber rolls (SC-5)
- Street Sweeping
- Storm Drain Inlet Protection (SC-10)
- Stabilized Construction Entrance/Exit (TC-1)
- Concrete Curing (NS-12)
- Concrete Finishing (NS-14)
- Material Delivery and Storage (WM-1)
- Stockpile Management (WM-5)
- Hazardous Waste Management (WM-6)
- Contaminated Soil Management (WM-7)
- Concrete Waste Management (WM-8)
- Temporary Concrete Washouts (WM-8)
- Sanitary/Septic Waste Management (WM-9)
- Wind Erosion Control (WE-1)

Construction Site Management (074016) cost is $125,000.
A lump sum total of $50,000 for SWPPP Preparation and all of the following Bid Items has been allocated in the project cost estimate.

Item
Prepare Storm Water Pollution Prevention Plan
Storm Water Annual Report
Rain Event Action Plan
Storm Water Monitoring Cost
Storm Water Sampling and Analysis Day
Water Pollution Control Maintenance Sharing
Additional Water Pollution Control
Storm Water Sampling and Analysis
No dewatering is anticipated during construction.

- Risk Level Determination is 2.
- On July 12, 2011, Aythem Al-Saleh, District Construction Storm Water Coordinator, had agreed to the temp construction site TMP strategy used for the scope of this project.

7. Maintenance BMPs (Drain Inlet Stenciling)

No drain inlet stenciling will be performed on this project.

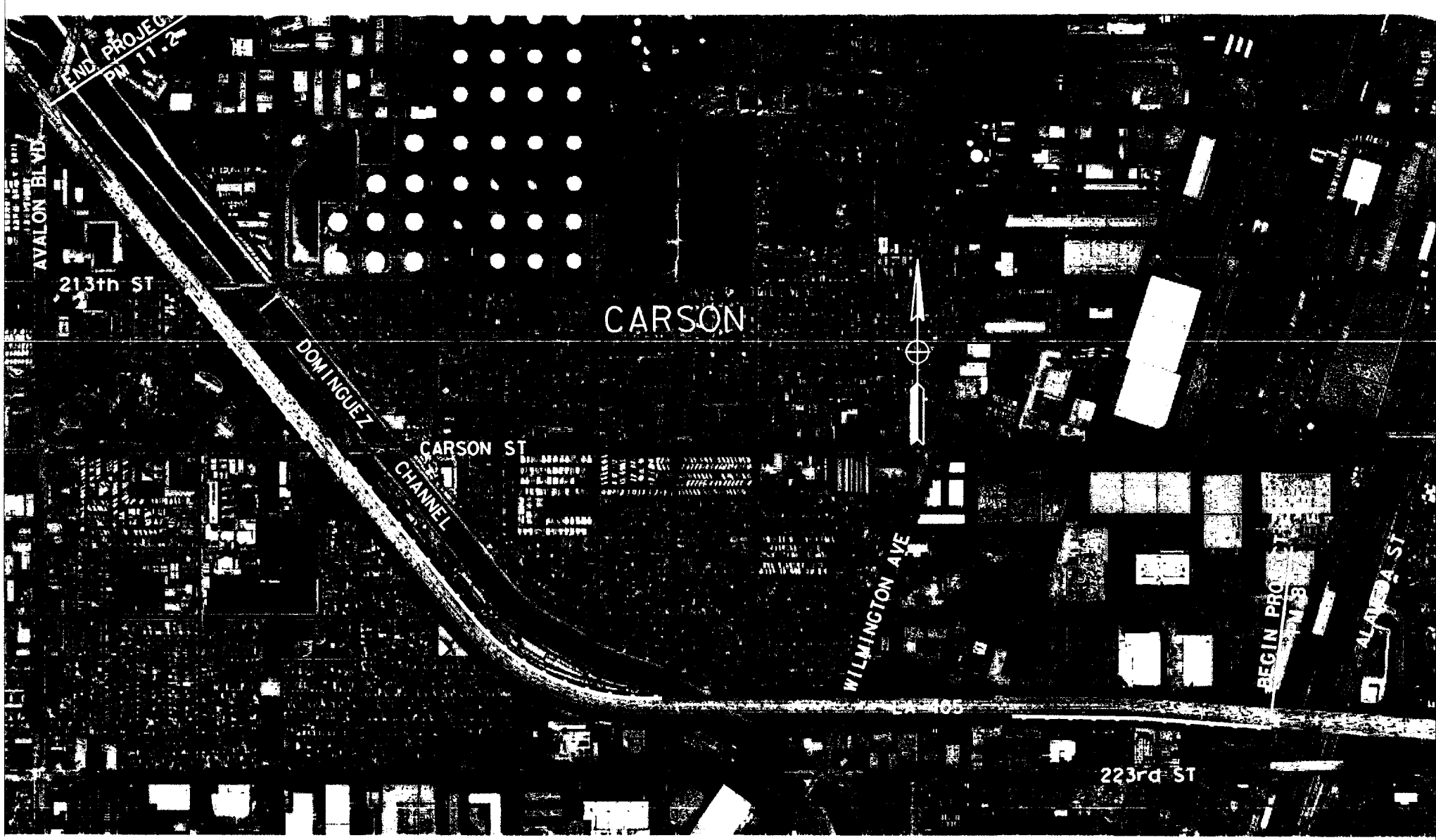
Required Attachments

- Vicinity and Strip Maps
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation

Supplemental Attachments

***Note: Supplement Attachments are to be supplied during the SWDR approval process; where noted, some of these items may only be required on a project-specific basis.***

- 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)
- PID Cost Estimate




LEGEND

CONSTRUCT MBGR

CONSTRUCT CONC BARRIER (TYPE 60)

EA 28740K

# VICINITY MAP

NOT TO SCALE

DATE: 05/25/2011

Project ID ( or EA): 07-0002-0935 (28740K)

| 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.<br>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.<br>4/27/11 S.P. *(Dist./Reg. SW Coordinator initials)*<br>If **No**, continue to 4. |
| 4. | Is the project located within an area of a local MS4 Permittee? | | | If **Yes**. *(Los Angeles County)*, go to 5.<br>If **No**, document in SWDR go to 5. |
| 5. | Is the project directly or indirectly discharging to surface waters? | | | If **Yes**, continue to 6.<br>If **No**, go to 10. |
| 6. | Is it a new facility or major reconstruction? | | | If **Yes**, continue to 8.<br>If **No**, go to 7. |
| 7. | Will there be a change in line/grade or hydraulic capacity? | | | If **Yes**, continue to 8.<br>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.<br>If **No**, go to 10.<br>*0.2 acre (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.<br>_____*(Dist./Reg. Design SW Coord. Initials)*<br>_____*(Project Engineer Initials)*<br>_____ *(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: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

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** | |
| • Location Map | 2011 |
| • Caltrans Topographic Mapping | 2011 |
| • County of LA Department of Public Works | 2011 |
| **Hydraulic** | |
| • District 07 Watershed Index Map | |
| • http://dpw.lacounty.gov/wmd/dspFloodControlDist.cfm | 2011 |
| • | |
| **Soils** | |
| • NCRS Statgo Soils | |
| • District 07 Soils Group Index Map | 2006 |
| • County of LA Department of Public Works | 2005 |
| **Climatic** | |
| • LACDPW – Hydrologic Report | |
| • http://www.wrcc.dri.edu/CLIMATEDATA.html | 2011 |
| • | |
| **Water Quality** | |
| • http://www.water.ca.gov/waterdatalibrary/ | 2011 |
| • htt;://www.ladpw.com/wmd/ | 2009 |
| • California State Water Resources Control Board | 2007 |
| **Other Data Categories** | |
| • D7 Design GIS website | 2007 |
| • | |
| • | |

## Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

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 |

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

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

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: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

## 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.

## Design Pollution Prevention BMPs

## Checklist DPP-1, Part 2

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

### Downstream Effects Related to Potentially Increased Flow

| | | |
|---|---|---|
| 1. | Review total paved area and reduce to the maximum extent practicable. | ☒Complete |
| 2. | Review channel lining materials and design for stream bank erosion control. | ☐Complete |
| | (a) See Chapters 860 and 870 of the HDM. | ☐Complete |
| | (b) Consider channel erosion control measures within the 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 |

# Design Pollution Prevention BMPs
## Checklist DPP-1, Part 3

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

### Slope / Surface Protection Systems

| | | |
|---|---|---|
| 1. | What are the proposed areas of cut and fill? (attach plan or map) | ☐Complete |
| 2. | Were benches or terraces provided on high cut and fill slopes to 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). | |
| 7. | Estimate the net new impervious area that will result from this project. 0.2acres | ☒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

# Design Pollution Prevention BMPs

## Checklist DPP-1, Part 4

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

### Concentrated Flow Conveyance Systems

**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

# Design Pollution Prevention BMPs

## Checklist DPP-1, Part 5

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

### 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: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

### Consideration of Treatment BMPs (more information will be provided next phase)

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

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

   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[1] can be infiltrated. When calculating the WQV, use a 12-hour drawdown for Type A and B soils, a 24-hour drawdown for Type C soils, and a 48-hour drawdown for Type D soils. ☐Complete

   ___ < 20%
   ___ 20 % - 50%
   ___ 50% - 90%
   ___ > 90%

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

[1] A complete methodology for determining WQV infiltration is available at: http://www.dot.ca.gov/hq/oppd/stormwtr/index.htm

(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[2]). ☐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:

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

☐Complete

(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[3]). 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

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

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

[3] 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

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

(use 24 hr WQV)
___ < 20% (do not consider this BMP combination)
___ 20% - 50%
___ 50% - 90%
___ >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)
___ < 20%
___ 20% - 50%
___ > 50%

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

☐Complete

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
☐ phosphorus
☒ nitrogen
☐ copper (dissolved or total)
☒ lead (dissolved or total)
☒ zinc (dissolved or total)
☐ general metals (dissolved or total)[1]

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

[1] 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.

| BMP Selection Matrix A: General Purpose Pollutant Removal | | | |
|---|---|---|---|
| Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored. | | | |
| | BMP ranking for infiltration category: | | |
| | Infiltration < 20% | Infiltration 20% - 50% | Infiltration > 50% |
| Tier 1 | Strip: HRT > 5<br>Austin filter (concrete)<br>Austin filter (earthen)<br>Delaware filter<br>MCTT<br>Wet basin | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches*<br>Biofiltration Strip | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches*<br>Biofiltration Strip<br>Biofiltration Swale |
| Tier 2 | Strip: HRT < 5<br>Biofiltration Swale<br>Detention (unlined) | Austin filter (concrete)<br>Delaware filter<br>Biofiltration Swale<br>MCTT<br>Wet basin | Austin filter (concrete)<br>Delaware filter<br>MCTT<br>Wet basin |
| HRT = hydraulic residence time (min)<br><br>*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. | | | |

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 the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored. | | | |
| | BMP ranking for infiltration category: | | |
| | Infiltration < 20% | Infiltration 20% - 50% | Infiltration > 50% |
| Tier 1 | MCTT<br>Wet basin<br>Austin filter (earthen)<br>Austin filter (concrete)<br>Delaware filter | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches*<br>MCTT<br>Wet basin | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches*<br>MCTT<br>Biofiltration Strip<br>Biofiltration Swale<br>Wet basin |
| Tier 2 | Strip: HRT > 5<br>Strip: HRT < 5<br>Biofiltration Swale<br>Detention (unlined) | Austin filter (concrete)<br>Delaware filter<br>Biofiltration Strip<br>Biofiltration Swale | Austin filter (concrete)<br>Delaware filter |
| HRT = hydraulic residence time (min)<br>*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. | | | |

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 the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored. | | | |
| | BMP ranking for infiltration category: | | |
| | Infiltration < 20% | Infiltration 20% - 50% | Infiltration > 50% |
| Tier 1 | Austin filter (earthen)<br>Austin filter (concrete)<br>Delaware filter** | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches* | Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins*<br>Infiltration trenches*<br>Biofiltration Strip<br>Biofiltration Swale |
| Tier 2 | Wet basin<br>Biofiltration Strip<br>Biofiltration Swale<br>Detention (unlined) | Austin filter (concrete)<br>Delaware filter<br>Biofiltration Strip<br>Biofiltration Swale<br>Wet basin | Austin filter (concrete)<br>Delaware filter<br>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. | | | |

| **BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs** | | | |
|---|---|---|---|
| Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored. | | | |
| | BMP ranking for infiltration category: | | |
| | Infiltration < 20% | Infiltration 20% - 50% | Infiltration > 50% |
| Tier 1 | Wet basin*<br>Austin filter (earthen)<br>Austin filter (concrete)<br>Delaware filter** | Wet basin*<br>Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins***<br>Infiltration trenches*** | Wet basin*<br>Austin filter (earthen)<br>Detention (unlined)<br>Infiltration basins***<br>Infiltration trenches***<br>Biofiltration Strip<br>Biofiltration Swale |
| Tier 2 | Biofiltration Strip<br>Biofiltration Swale<br>Detention (unlined) | Austin filter (concrete)<br>Delaware filter<br>Biofiltration Strip<br>Biofiltration Swale | Austin filter (concrete)<br>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. | | | |

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
    __X__ Infiltration Devices: Checklist T-1, Part 4
    __X__ 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
    __X__ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    __X__ 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): ____47____% ☐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

# Treatment BMPs

## Checklist T-1, Part 2

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

**Biofiltration Swales / Biofiltration Strips** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

### *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*

* **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 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

# Treatment BMPs

## Checklist T-1, Part 4

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

***Infiltration Devices*** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

### *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? | ☐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. | | |
| 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<br>If Yes, continue to Design Elements section.<br>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 freeboard above the overflow event elevation (reference Appendix B.1.3.1)? * | ☐Yes | ☐No |
| 6. | Can the Infiltration Basin be designed with interior side slopes no steeper than 4:1 (h:v) (may be 3:1 [h:v] 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 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 ≤ 96 hours? It is recommended to use a drawdown time between 40 and 48 hours. (Note: the WQV must be ≥ 4,356 $ft^3$ [0.1 acre-feet], unless the District/Regional NPDES Storm Water 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? * | ☐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 vegetation)? * | ☐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

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

***Detention Devices*** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

***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 plus 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)? ☐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 Detention Device(s) 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 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 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 overflow event elevation? * | ☐Yes | ☐No |
| 4. | Is an overflow outlet provided? * | ☐Yes | ☐No |
| 5. | Is the drawdown time of the Detention Device within 24 to 72 hours with 40-hrs the preferred design drawdown time? * | ☐Yes | ☐No |
| 6. | Is the basin 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 4:1 (h:v) or flatter for interior slopes? ** (Note: Side slopes up to 3:1 (h:v) allowed with approval by District Maintenance.) | ☐Yes | ☐No |
| 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 (≥ 2:1 length to width ratio at WQV elevation is recommended)? ** | ☐Yes | ☐No |

# Treatment BMPs

## Checklist T-1, Part 8

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

***Media Filters*** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

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?<br>If No to any question above, then an Austin Sand Filter is not feasible. | ☐Yes | ☐No |
| 5. | Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)?<br>If Yes, continue to Design Elements sections. If No, continue to Question 6. | ☐Yes | ☒No |
| 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<br>If Yes, continue to the Design Elements section.<br>If No, continue to Question 7. | ☐Yes | ☒No |
| 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 Design Storm Water Coordinator 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? Confirm that check valves and vector proof lid as shown on standard detail sheets will be allowed, is used. ☐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

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

   If yes, contact the Regional/District NPDES Storm Water Coordinator to determine if standing water in this treatment BMP would be a risk to downstream water quality. If standing water is a potential issue, consider use of another treatment BMP.

   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 vegetation)? ** | ☐Yes | ☐No |
| 6. | Can the Austin Sand Filter be placed using an earthen configuration? **<br>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)? *<br>If No, design with an impermeable liner. | ☐Yes | ☐No |
| 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 |

## *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. | Is the drawdown time of the 2nd chamber between 40 and 48 hours, typically 40-hrs? * | ☐Yes ☐No |
| 2. | Is access for Maintenance vehicles provided to the Delaware Filter? * | ☐Yes ☐No |
| 3. | Is a bypass/overflow provided for storms > WQV? ** | ☐Yes ☐No |
| 4. | Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** | ☐Yes ☐No |
| 5. | Is maximum depth ≤ 13 ft below ground surface? * | ☐Yes ☐No |

# Treatment BMPs

## Checklist T-1, Part 9

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

***MCTT (Multi-chambered Treatment Train)*** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

*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 ≥ 4,346 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? Confirm that check valves and vector proof lid as shown on standard detail sheets be allowed. | ☐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)? If Yes, continue to Design Elements sections. If No, continue to Question 6. | ☐Yes | ☐No |
| 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 If Yes, continue to Design Elements section. If No, continue to Question 7. | ☐Yes | ☐No |
| 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 | |
| 8. | Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for bacteria, mercury, sulfides, low dissolved oxygen, or odors? | ☐Yes | ☐No |
| | If yes, contact the Regional/District NPDES Storm Water Coordinator to determine if standing water in this treatment BMP would be a risk to downstream water quality. If standing water is a potential issue, consider use of another treatment BMP. | | |

*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, typically designed for 24-hrs? * | ☐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 vegetation)? ** | ☐Yes | ☐No |

# Treatment BMPs

## Checklist T-1, Part 10

Prepared by: Trilly Nguyen Date: 05/25/2011 District-Co-Route: 07-LA-405

PM : 8.72/11.22 Project ID (or EA): 28740K RWQCB: Los Angeles

***Wet Basin*** The analysis for the feasibility has been completed under I-405 Corridor Storm Water Management Study (PM 0.0 to 13.1) on June 2, 2009.

### *Feasibility*

| | | | |
|---|---|---|---|
| 1. | Is the volume of the Wet Basin above the permanent pool equal to at least the WQV using a 24 to 96 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 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? | ☐Yes | ☐No |
| | If No to any question above, then a Wet Basin is not feasible. | | |
| 9. | Is the maximum basin width ≤ 49 ft as suggested in Section B.10.2? | ☐Yes | ☐No |
| | If No, consult with the local vector control agency and District Maintenance. | | |

10. Does adequate area exist within the right-of-way to place a Wet Basin? ☐Yes ☐No
    If Yes, continue to Design Elements sections.

    If No, continue to Question 11.

11. 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 12.

12. Have the appropriate state and federal regulatory agencies been contacted to discuss location and potential to attract and harbor sensitive or endangered species? ☐Yes ☐No

    If No, contact the Regional/District NPDES Coordinator

13. 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

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

    If yes, contact the Regional/District NPDES Storm Water Coordinator to determine if standing water in this treatment BMP would be a risk to downstream water quality. If standing water is a potential issue, consider use of another treatment BMP.