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

Long Form - Storm Water Data Report

Dist-County-Route: 01-MEN-222
Post Mile Limits: R0.01 – R1.30
Project Type: Bridge Replacement
Project ID (or EA):01-XXXXXX
Program Identification: SHOPP-MAJ 20.10.201.111
Phase: ☐ PID
☒ PA/ED
☐ PS&E

Regional Water Quality Control Board(s): North Coast (Region 1)

Is the Project required to consider Treatment BMPs? Yes ☐ No ☒
If yes, can Treatment BMPs be incorporated into the project? Yes ☐ No ☐
If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date:

Total Disturbed Soil Area: 3 acres Risk Level: 2
Estimated: Construction Start Date: June 2011 Construction Completion Date: June 2013
Notification of Construction (NOC) Date to be submitted: 30 days prior to construction

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.

Betsy Ross 9-23-10
Betsy Ross, Registered Project Engineer — Date

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

George Washington 9-23-10
George Washington, Project Manager — *Date*

Paul Revere 9-23-10
Paul Revere, Designated Maintenance Representative — *Date*

Horatio Gates 9-23-10
Horatio Gates, Designated Landscape Architect Representative — *Date*

Friedrich Wilhelm von Steuben 9-23-10
[Stamp Required for PS&E only] *Friedrich Wilhelm von Steuben, District/Regional Design SW Coordinator or Designee* — *Date*

EXAMPLE ONLY

STORM WATER DATA INFORMATION

1. Project Description

This project is located at the Russian River Bridge (Br. No. 10-80) in Mendocino County on Talmage Road (Route 222). The bridge is located east of the Ukiah city limits and just west of Talmage. It is approximately one mile east of the intersection of Route 222 and Route 101. The bridge was constructed in 1954, and over the last 30 years it has experienced significant channel bed degradation. It was identified as scour critical in the 1997 Structure Replacement and Improvement Needs (STRAIN) Report.

Should the bridge experience catastrophic failure, there would be a large release of sediment into a sediment impaired waterbody. For this reason Alternative 2, the no build option, was not chosen and this project will more forward into design. This project proposes to replace and widen the two-lane Russian River Bridge. The project is funded in the 2011 SHOPP as a Bridge Scour Mitigation Project and is programmed for construction in 2011.

The existing structure is approximately 500 feet in length and 36 feet wide. The bridge has two 12-foot lanes, two 1-foot shoulders, and two 4-foot sidewalks. The proposed structure will be widened by 10 feet to include two 12-foot lanes, one 11-foot shoulder, and one 8-foot shoulder. Type 80 “see through” aesthetic concrete barrier railing and tubular bicycle railings will be used on the bridge. Vertical and horizontal alignments will remain the same.

Seasonal construction limitations must be considered for this project. Construction activities occurring below the ordinary high water mark (OHWM), 583.60 ft, are allowable from June 15 to October 15. Work below the OHWM will begin as soon as allowed by the permitting agencies. Construction activities above the OHWM may take place year-round. If necessary, the Russian River channel may be diverted to prevent flows from entering the work area. The diversion would consist of a barrier between the waterway and the work area (including the access road).

No permanent right-of-way (ROW) acquisition is required; however, temporary construction easements will be required on the south side of the bridge for construction and staging. These easements involve two land parcels.

The total disturbed soil area for the project is approximately 3 acres. The area was calculated using the project survey and Microstation (a CADD software package) and includes areas for construction, access, and staging. The existing impervious surface for the bridge is 0.42 acres, and at completion of the project the total impervious surface area will be 0.53 acres. Thus, a total of 0.11 acres of impervious area will be added as a result of the project. This project is not located within an area of a local MS4 permittee.

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

The project is located in the Ukiah hydraulic sub-area (HSA 114.31) and the receiving waterbody is the Russian River, which flows directly under the bridge. The Russian River is a 303(d) listed waterbody for sedimentation/siltation and temperature. No TMDLs have been established for this waterbody.

EXAMPLE ONLY

The replacement of the bridge will impact water quality due to work within the river and the removal of riparian vegetation. The following permits will be required: Section 404 Permit from U.S. Army Corps of Engineers (Clean Water Act), 1602 Streambed Alteration Agreement from California Department of Fish and Game, and Water Quality Certification, Section 401 from the Regional Water Quality Control Board.

The North Coast RWQCB has jurisdiction over these project limits. There are no municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. The project is not located within an area of biological significance (ASBS).

The project is located in the Inner North Coast Ranges of the California Floristic province within the Russian River watershed in Yokayo Valley. The climate is mild with average temperatures ranging from 46 to 74 °F. The average annual rainfall in the area is 37 inches, and the elevation is 610 feet above sea level. River flows are greatest during the rainy season, which varies annually but is generally estimated as October 1 through May 1.

The soil type in the project area is classified as Type B soils per the project geotechnical report. The river channel is an open waterway composed primarily of gravel. The riverbanks are moderately sloped and eroded in some sections. The river bar is largely silt, fine-grained material.

As required by the new Construction General permit, the project risk level was calculated and has been determined to be Level 2. Initially, the GIS Map Method was used per the Project Risk Level Determination Guidance July 2010 and a risk level of 3 was calculated. The Individual Method was then used in an attempt to lower the risk level. Because the project sediment risk was reduced using the Individual Method, the overall risk level has been reduced to a Level 2.

The May 2000 Asbestos and Lead Survey Report states there are no hazardous waste issues related to the soil under the bridge. The report says the soil materials generated from shallow excavations at the site should be suitable for reuse and/or offsite disposal with no restrictions based on lead content. Thus, soil reuse and Aerially Deposited Lead (ADL) issues are not a concern for this project.

There are no existing treatment BMPs within the project area, and there will be no additional right-of-way costs associated with the proposed BMPs.

To reduce potential storm water impacts, erosion control and BMPs will be incorporated as part of this project and soil disturbing work will be minimized during the rainy season. In addition, all runoff from the bridge will be directed to appropriately sized biofiltration systems.

3. Regional Water Quality Control Board Agreements

The North Coast RWQCB considers all projects that increase impervious surface area to be a risk to water quality. The feasibility of post construction Treatment BMPs must be evaluated as a condition of the 401 Water Quality Certification process. It has been determined that bioswales are feasible and will be incorporated into the project to meet the Board requirement.

A meeting was held by District NPDES Stormwater Coordinator, Nathanael Greene on 8/31/10 with the North Coast RWQCB. The project requires the following permits: Section

EXAMPLE ONLY

404 Permit from U.S. Army Corps of Engineers (Clean Water Act), 1602 Streambed Alteration Agreement from California Department of Fish and Game, and Water Quality Certification, Section 401 from the RWQCB. The required permit applications have been submitted.

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

Design Pollution Prevention BMPs will be incorporated into the project where appropriate to minimize impacts to water quality by preventing downstream erosion and stabilizing disturbed soil areas. These BMPs can provide water quality benefits including settling of solids and other pollutants and increasing detention time by incorporating and preserving vegetated surfaces.

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

The proposed improvements will increase the impervious area by 0.11 acres, which will increase velocity and volume of flow within the project limits. This increase has been accounted for in the project design and mitigated through the use of BMPs. Per the project Drainage Report, the design matches the pre-project runoff curve number and time of concentration and controls erosive velocities in accordance with the HDM. Because the design has accounted for the increased velocity and volume of flow, the project should have a negligible impact on downstream flow.

Currently, drainage from the road is allowed to discharge directly to the main river channel below. The new bridge drainage system will collect runoff from the bridge deck and approaches and route it though appropriately sized bioswales, providing treatment and reducing volume prior to discharge. The bioswales are designed with rock check dams to increase the residence time of runoff in the swales. The project will continue to discharge to the Russian River, which is an unlined channel. The potential for increased sediment loading post construction will be very small because the runoff will be treated with a bioswale prior to discharge.

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

The cut and fill requirements are anticipated to be minimal for this project. The existing and proposed slope conditions will be similar. Slopes will be 4:1 or flatter. Slopes will require temporary and permanent measures to provide protection from erosion. Both onsite riparian replacement planting and offsite riparian mitigation will be implemented to offset the removal of trees and other riparian vegetation that is required for bridge construction. Permanent erosion control and vegetation will be implemented on slopes that are substantially complete.

The Erosion Prediction Procedure will be used to validate erosion control design during the design phase of work. It is unknown at this time if hard surfaces will be required; however, such information will be provided in the PS&E phase.

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

The proposed bridge drainage system provides four deck drain outfalls (two at each end) that will drain roadway runoff into the rock slope protection (RSP) and around the

EXAMPLE ONLY

abutments. The runoff will dissipate through the RSP down the slope and into the river. Runoff from the impervious area approaching the bridge is transferred via dikes to vegetated swales. The swales will treat the runoff prior to discharge.

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

This project will limit clearing, grubbing, and excavation to specific locations as delineated on the plans to maximize the preservation of existing vegetation. Areas that are off limits to the contractor are also delineated on the plans.

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

Treatment BMPs are not required as part of this project per the Evaluation Documentation Form (EDF); however, bioswales are feasible and will be incorporated to meet sustainability goals and the requirements of the North Coast RWQCB. As stated previously, the North Coast RWQCB requires all projects that increase impervious surface area to evaluate the feasibility of post construction permanent Treatment BMPs as a condition of the 401 Water Quality Certification process.

Four bioswales will be incorporated into the project, two along the eastbound bridge approach and two along the westbound approach. The swale details are listed below.

Eastbound Approach

- South side of the approach from station "A" 16+28 to 17+00 Rt, bioswale No. 1 is approximately 300 feet long with a flowline slope of 1.5%, normal depth of 0.44 ft, and a hydraulic residence time (HRT) of 11 minutes.
- North side of the approach from station "A" 16+28 to 17+00 Lt, bioswale No. 2 is approximately 236 feet long with a flowline slope of 0.25%, normal depth of 0.50 ft, and a HRT of 20 minutes.

Westbound Approach

- South side of the approach from station "A" 18+84 to 19+30 Rt, bioswale No. 3 is approximately 150 feet long with a flowline slope of 0.50%, normal depth of 0.50 ft, and a HRT of 9 minutes.
- North side of the approach from station "A" 18+80 to 19+55 Lt, bioswale No. 4 is approximately 246 feet long with a flowline slope of 0.70%, normal depth of 0.05 ft, and a HRT of 49 minutes.

Rock check dams will be used in the swales to increase residence time during construction. Quantities and costs for the rock check dams have been included in the construction site BMP estimate.

EXAMPLE ONLY

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

This project has a total disturbed soil area of 3 acres and, therefore, requires preparation of a Storm Water Pollution Prevention Plan (SWPPP).

The overall site risk level has been determined to be Level 2. Two monitoring locations will be needed for this project and are identified on the project plans. The project working days will be specified in the order of work specification for this project at the PS&E phase. The R factor in the risk level determination calculation is dependant on project duration. If the project duration is changed at any time prior to project completion, the R factor will change and the project risk level must be recalculated. Monitoring quantities and costs may have to be adjusted if the project risk level changes.

Projects with similar scope and range of construction activities typically require the Construction Site BMPs indentified in this section. Soil stabilization and sediment control typically consists of placing linear sediment barriers (e.g., fiber rolls and temporary fence) around the excavation to provide run-on and run-off control and to prevent concentrated flow from eroding areas of soil disturbance. Storm drain inlet protection will be deployed throughout the project. Since there are two rainy seasons, multiple temporary erosion control mobilizations will be required. Compliance of the CGP can be met through the use of traditional BMPs, therefore an active treatment system is not required.

Tracking controls, including stabilized construction entrances and street sweeping, will be required as the work will be adjacent to a roadway.

Various non-storm water management, waste management, and housekeeping BMPs shall be used throughout the duration of the project and will be included in the Construction Site Management cost item. Concrete wastes shall be managed through the use of portable concrete washout facilities.

Miscellaneous items include storm water monitoring that is required because this project is a RL 2. Monitoring will consist of storm water sampling and analysis. In addition to monitoring, this project is required to implement a rain event action plan (REAP). Quantities for sampling and testing are included in the table below; costs are included in the cost summary attached to this report.

The following BMPs will be included as separate bid line items: move-in/move-out temporary erosion control, scheduling, temporary fence type ESA, temporary erosion control blanket, temporary silt fence, temporary fiber rolls, temporary drainage inlet protection, temporary hydraulic mulch, stabilized construction entrance/exit, street sweeping, temporary portable concrete washout facility, preparation of a Storm Water Pollution Prevention Plan, implementation of a REAP, and storm water sampling and analysis day.

The following BMPs will be included as a lump sum under the Construction Site Management item: stockpile management, spill prevention and control, concrete waste management, dewatering operations, paving and grinding operations, concrete curing, material and equipment usage over water and structure demolition/removal over or adjacent to water. Dewatering will be required during the construction of this project; however, a separate dewatering permit is not anticipated.

A combination of the Historical Project Method (Option 2) and Unit Cost Method (Option 3) were used to estimate costs for Construction Site BMPs. The quantities shown in

EXAMPLE ONLY

the following table are related to the selected Construction Site BMPs and were estimated from take-off measurements using the layout sheets.

BEES	Temporary BMPs - PPDG Appendix C	Quantity	Unit
074037	Move-In/Move-out (Temporary Erosion Control)	12	EA
	Scheduling	1	LS
071325	Temporary Fence (Type ESA)	1,020	ft
074027	Temp. Erosion Control Blanket	1,800	yd^2
074029	Temp. Silt Fence	2,365	ft
074028	Temporary Fiber Roll	3,500	ft^2
074038	Temp. Drainage Inlet Protection	8	EA
074039	Temp. Hydraulic Mulch	13,700	yd^2
074033	Stabilized Constr. Entrance/Exit	2	EA
074041	Street Sweeping	1	LS
074042	Temp. Concrete Washout (Portable)	4	LS
074019	Water Pollution Control (SWPPP)	1	LS
	Rain Event Action Plan (REAP)	114	EA
074058	Storm Water Sampling and Analysis Day	30	EA
CSM*	***Construction Site Management**	1	LS
*CSM**	*Stockpile Management*		*LS*
*CSM**	*Spill Prevention and Control*		*LS*
*CSM**	*Concrete Waste Management*		*LS*
*CSM**	*Dewatering Operations*		*LS*
*CSM**	*Paving & Grinding Operations*		*LS*
*CSM**	*Concrete Curing*		*LS*
*CSM**	*Material & Equipmt use over water*		*LS*
*CSM**	*Structure Demolition/Removal Over or Adjacent to Water*		*LS*

A meeting was held on 9/1/10 to coordinate the temporary construction site BMP implementation strategy with the District Construction Stormwater Coordinator (CSWC) William Alexander. Other attendees included Betsy Ross – Project Engineer, Horatio Gates – District Landscape Architect, and Nathanael Greene– District NPDES Stormwater Coordinator. Topics discussed at the meeting included: construction site BMP selection, construction site BMP quantity estimating strategy, temporary soil stabilization BMP selection, monitoring requirements, the construction site management item, permanent erosion control strategy, mitigation planting and plant establishment period, and stream crossing concerns.

Concurrence on the implementation strategy will be obtained during PS&E.

EXAMPLE ONLY

7. Maintenance BMPs (Drain Inlet Stenciling)

A meeting was held on 9/1/10 to coordinate the maintenance BMPs and concerns for this project with the District Maintenance Stormwater Coordinator (MSWC) Paul Revere. Topics discussed included drain inlet stenciling and the permanent erosion control strategy for the site. Drain inlet stenciling is not required as determined by the District MSWC. At this time Mr. Revere is in agreement with the project maintenance strategy. Final concurrence on the implementation strategy will be obtained during PS&E.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form
- Risk Level Determination Documentation
    - GIS Map Method
    - Individual Method

Supplemental Attachments

- Construction Site BMP Consideration Form
- SWDR Tracking Form
- Storm Water BMP Cost Summary
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5

EXAMPLE ONLY

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	222	1.6	1	1

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

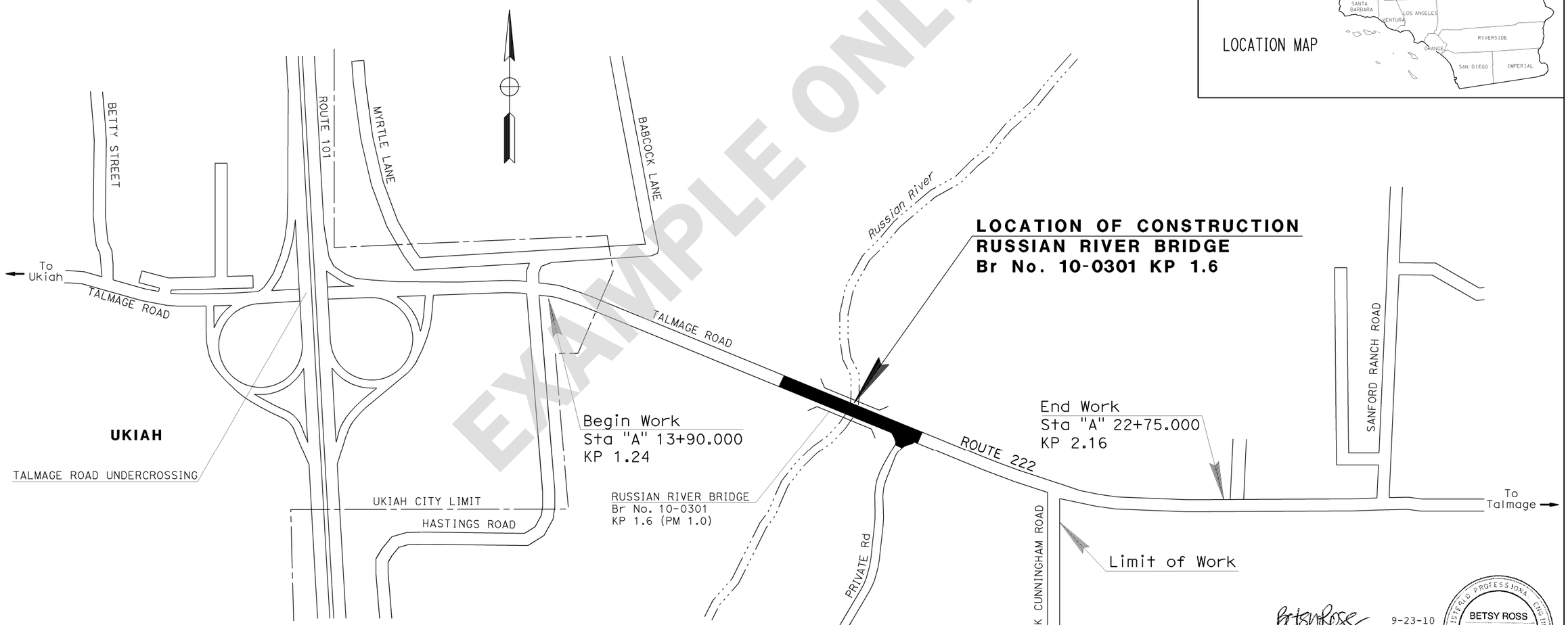
PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN MENDOCINO COUNTY
NEAR UKIAH
AT RUSSIAN RIVER BRIDGE

TO BE SUPPLEMENTED BY STANDARD PLANS DATED JULY 2004

LOCATION MAP



LOCATION OF CONSTRUCTION
RUSSIAN RIVER BRIDGE
Br No. 10-0301 KP 1.6

EXAMPLE ONLY

NO SCALE

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS".

Betsy Ross 9-23-10
Project Engineer Date
Registered Civil Engineer

REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA

Plans Approval Date

PROJECT MANAGER: GEORGE WASHINGTON
DESIGN ENGINEER: BETSY ROSS

LAST REVISION 9-15-10

CONTRACT No. **01-XXXXXX**

EXAMPLE ONLY

DATE: _____9-23-10_____

Project ID (or EA): _____01-XXXXXX_____

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2
2.	Is this an emergency project?		✓	If **Yes**, go to 10. If **No**, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.**Sedimentation/siltation and temperature**	✓		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. _____ *(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**. *(write the MS4 Area here)*, go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If **Yes**, continue to 6. If **No**, go to 10.
6.	Is it a new facility or major reconstruction?	✓		If **Yes**, continue to 8. If **No**, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?			If **Yes**, continue to 8. If **No**, go to 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?		✓	If **Yes**, continue to 9. If **No**, go to 10. *0.11 ac (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. FWS *(Dist./Reg. Design SW Coord. Initials)* BR *(Project Engineer Initials)* 9-23-10 *(Date)*	✓	Document for Project Files by completing this form, and attaching it to the SWDR.	

EXAMPLE ONLY

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

Risk Level - GIS Method
EA 01-XXXXXX, PA/ED 9/23/10

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		118
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		1.6
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	188.8	
16	**Site Sediment Risk Factor**	**High**	
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

EXAMPLE ONLY

Risk Level - GIS Method
EA 01-XXXXXX, PA/ED 9/23/10

Receiving Water (RW) Risk Factor Worksheet	**Entry**	**Score**
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp	**yes**	**High**

EXAMPLE ONLY

Risk Level - GIS Method
EA 01-XXXXXX, PA/ED 9/23/10

Combined Risk Level Matrix

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

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

EXAMPLE ONLY

Risk Level - Individual Method
EA 01-XXXXXX, PA/ED 9/23/10

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		118
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.33
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1.33
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		51.7902
16	**Site Sediment Risk Factor**		**Medium**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

EXAMPLE ONLY

Risk Level - Individual Method
EA 01-XXXXXX, PA/ED 9/23/10

Receiving Water (RW) Risk Factor Worksheet	**Entry**	**Score**
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml **OR**	**Yes**	**High**
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp		

EXAMPLE ONLY

Risk Level - Individual Method
EA 01-XXXXXX, PA/ED 9/23/10

Combined Risk Level Matrix

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

Project Sediment Risk: **Medium**
Project RW Risk: **High**
Project Combined Risk: **Level 2**

EXAMPLE ONLY

01-MEN-222
R0.01 - R1.30
Bridge Replacement
01-XXXXXX
9-23-10 PATED
B. Ross

Risk level Determination:

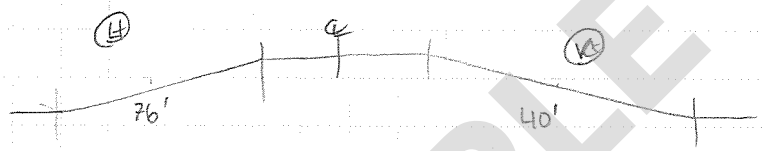
From PID, using the GIS Map Method, RL=3

Try Individual Method to Reduce Risk level:

R Factor Value: 118 (From EPA website, printout attached)
K Factor Value: 0.33 (From Soil Survey Website, print out attached)
LS Factor Value:

Cross sections drawn through disturbed soil areas

Sta 16+80



$L_{Lt} = 76'$
S_{Lt}

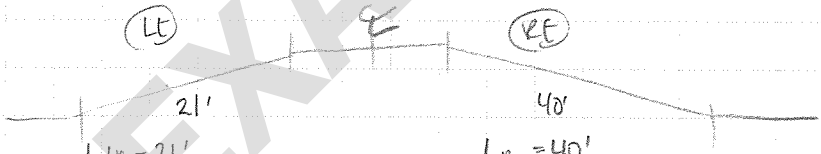
$L_{Rt} = 40'$
$S_{Rt} =$

Total length = 116'
Weighted Avg by length:

$$\frac{76(0.10) + 40'(0.1)}{76 + 40} = 0.10$$

LS from table: 1.62

Sta 19+00



$L_{Lt} = 21'$
$S_{Lt} =$

$L_{Rt} = 40'$
S_{Rt}

Total length = 61'
Weighted Avg by length:

$$\frac{21'(0.10) + 40'(0.10)}{21' + 40'} = 0.10$$

LS From table: 1.04

$LS_{avg} = 1.62 + 1.04/2 = 1.33$

The Individual Method reduced the Sediment Risk to Medium, reducing the overall Risk Level

RL=2

EXAMPLE ONLY

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Route 222 Bridge Replacement
Start Date: 06/01/2011
End Date: 06/01/2013
Latitude: 39.1344
Longitutde: -123.1863

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **118.05** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **06/01/2011** - **06/01/2013**.

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

Start Over

EXAMPLE ONLY

Search

Properties and Qualities Ratings

Open All | Close All

Soil Chemical Properties

Soil Erosion Factors

K Factor, Rock Free

View Description | View Rating

View Options

Map ☑

Table ☑

Description of Rating ☑

Rating Options ☑

☐ Detailed Description

Advanced Options

Aggregation Method: Dominant Condition

Component Percent Cutoff:

Tie-break Rule: Lower / Higher

Layer Options: Surface Layer / Depth Range / All Layers

Top Depth

Bottom Depth

Inches / Centimeters

View Description | View Rating

K Factor, Whole Soil

T Factor

Wind Erodibility Group

Wind Erodibility Index

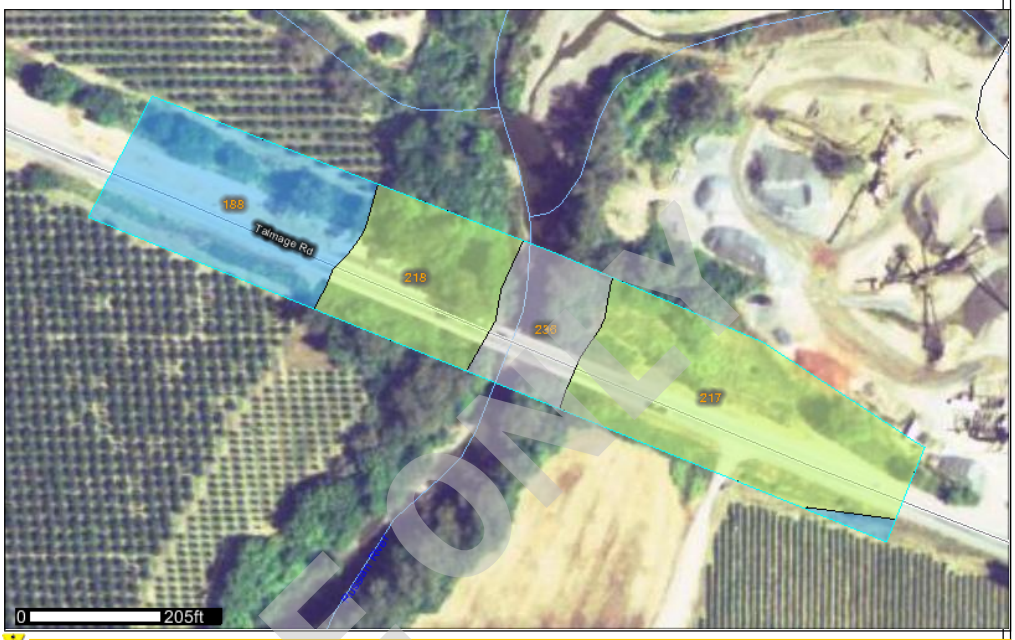
Soil Physical Properties

Soil Qualities and Features

Water Features

Map — K Factor, Rock Free

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at 1:24,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Tables — K Factor, Rock Free — Summary By Map Unit

Summary by Map Unit — Mendocino County, Eastern Part and Southwestern Part of Trinity County, California

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
188	RUSSIAN LOAM, 0 TO 2 PERCENT SLOPES	.43	1.9	30.3%
217	XEROFLUVENTS, 0 TO 2 PERCENT SLOPES	.24	2.4	38.1%
218	XEROFLUVENTS-RIVERWASH COMPLEX, 0 TO 2 PERCENT SLOPES	.24	1.2	19.3%
236	WATER		0.8	12.2%
Totals for Area of Interest			**6.4**	**100.0%**

Description — K Factor, Rock Free

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kf (rock free)" indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Rating Options — K Factor, Rock Free

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options: Surface Layer

EXAMPLE ONLY

DATE: ____9-23-10_____

Project ID (or EA): ___ 01-XXXXXX___

Project Evaluation Process for the Consideration of Construction Site BMPs

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	✓		If Yes, Construction Site BMPs for Soil Stabilization (SS) will be required. Complete CS-1, Part 1. Continue to 2. If No, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the right-of-way, etc?	✓		If Yes, Construction Site BMPs for Sediment Control (SC) will be required. Complete CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	✓		If Yes, Construction Site BMPs for Tracking Control (TC) will be required. Complete CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	✓		If Yes, Construction Site BMPs for Wind Erosion Control (WE) will be required. Complete CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	✓		If Yes, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	✓		If Yes, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Parts 5 & 6. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; stormwater run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 9.
9.	End of checklist.	✓	Document for Project Files by completing this form, and attaching it to the SWDR.	

PE to initialize after concurrence with Construction (PS&E only) *Date*

EXAMPLE ONLY

EXAMPLE ONLY

Rpt_to_hq	Dist_EA	District	EA	County	Route	Beg_PM	End_PM	Descrip	Phase	LongSWDR	PhaseRptDate	Exempt	TBMP	Pollution_Program	Disturbance Acr	AddImpArea	PercentTreated	MS4Area	MS4CiCo	ater Bodies Affec	Criteria	BioStrip	BioSwale	Detention	Infiltration	InfilTrench	GSRD	TST	DryWeath	MedFilter	MCTT	WetBasin	Const_Start	Const_Comp	SWComment
23-Sep-10	01-XXXXXX	1	XXXXXX	MEN	222	R0.01	R1.30	Bridge Replacement	PA/ED	TRUE	23-Sep-10	TRUE	TRUE	SWPPP	3	0.11	100	FALSE		Russian River	303	0	4	0	0	0	0	0	0	0	0	0	01-Jun-11	01-Jun-13	

EXAMPLE ONLY

EXAMPLE ONLY

SWDR Tracking Form

IDNO	STBMPCode	PE	District	County	Route	LocBPM	LocEPM	Location	Direction	Facility	Cubic Yards	Const_Comp	Comments
1	BIOSWL	B. Ross	1	MEN	222	R0.01	R1.30	RW-STBMP	R			01-Jun-13	"A" 16+28 to 17+00
2	BIOSWL	B. Ross	1	MEN	222	R0.01	R1.30	RW-STBMP	L			01-Jun-13	"A" 16+28 to 17+00
3	BIOSWL	B. Ross	1	MEN	222	R0.01	R1.30	RW-STBMP	R			01-Jun-13	"A" 18+84 to 19+30
4	BIOSWL	B. Ross	1	MEN	222	R0.01	R1.30	RW-STBMP	L			01-Jun-13	"A" 18+80 to 19+55

EXAMPLE ONLY

EXAMPLE ONLY

Storm Water BMP Cost Summary PA/ED

THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Project Name:	**Bridge Replacement**
District:	**1**
County:	**MEN**
Route:	**222**
Postmile Limits:	**R0.01 - R1.30**
Project ID (or EA):	**01-XXXXXX**

Total Treatment BMP Costs	$ 10,000
Total Design Pollution Prevention BMP Costs	$ 48,950
Total Permanent Storm Water BMP Costs	$ 58,950
Subtotal Soil Stabilization BMPs	$ 17,980
Subtotal Sediment Control BMPs	$ 31,905
Subtotal Wind Erosion Control BMPs	$ 17,125
Subtotal Tracking Control BMPs	$ 12,000
Subtotal Waste Management & Materials Handling BMPs	$ 8,000
Subtotal Non-Storm Water Management	$ 60,000
Subtotal Miscellaneous Items	$ 98,000
Total Construction Site BMP Costs	$ 245,010
TOTAL COST FOR STORM WATER BMPs	$ 303,960

EXAMPLE ONLY

Note: Please enter data in the fields shaded on this and the following pages. The totals will be reflected on this sheet automatically.

Storm Water BMP Cost Summary PA/ED

THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Treatment BMPs

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Biofiltration Swale			4	EA	2,500	$ 10,000
						Total Treatment BMP Costs	$ 10,000

Design Pollution Prevention BMPs

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Downstream Effects/Increased Flow Mitigation						
705307	- 12" Alternative Flared End Section	No	Yes	4	EA	250	$ 1,000
	Slope/Surface Protection Systems- Hard Surfaces						
729010	- Rock Slope Protection Fabric	72-150	No	600	SQYD	2	$ 1,200
	- Rock Slope Protection			570	CY	75	$ 42,750
	Slope/Surface Protection Systems- Vegetated Surfaces						
203021	Fiber Rolls (*included in CS BMP estimate)*			1,665	LF		$ -
204099	Plant Establishment Work	20-550		1	LS	4,000	$ 4,000
						Total Design Pollution Prevention BMP Costs	$ 48,950

Total Permanent Storm Water BMP Costs	**$ 58,950**

EXAMPLE ONLY

Storm Water BMP Cost Summary PA/ED

THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Temporary Construction Site BMPs

BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Temporary Soil Stabilization						
074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	12	EA	500	$ 6,000
	Scheduling		No	1	LS	2,500	$ 2,500
071325	Temporary Fence (Type ESA)	07-446	Yes	1,020	ft	4	$ 4,080
074027	Temp. Erosion Control Blanket	07-390	Yes	1,800	yd^2	3	$ 5,400
						Subtotal Soil Stabilization BMPs	**$ 17,980**

BEES	*Temporary Sediment Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074029	Temp. Silt Fence	07-430	Yes	2,365	ft	5	$ 11,825
074028	Temporary Fiber Roll	07-420	Yes	3,500	ft	4	$ 14,000
074031	Temporary Gravel Bag Berm	07-470	No	560	ft	8	$ 4,480
074038	Temp. Drainage Inlet Protection	07-490	Yes	8	EA	200	$ 1,600
						Subtotal Sediment Control BMPs	**$ 31,905**

BEES	*Temporary Wind Erosion Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074039	Temp. Hydraulic Mulch (Polymer Stabilized Fiber Matrix)	07-382	No	13,700	yd^2	1	$ 17,125
						Subtotal Wind Erosion Control BMPs	**$ 17,125**

BEES	*Temporary Tracking Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074033	Stabilized Constr. Entrance/Exit	07-480	Yes	2	EA	3,000	$ 6,000
074041	Street Sweeping	07-360	No	1	LS	6,000	$ 6,000
						Subtotal Tracking Control BMPs	**$ 12,000**

BEES	*Temporary Waste Management Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Stockpile Management	07-346	No		LS		$ -
CSM*	Spill Prevention and Control	07-346	No		LS		$ -
CSM*	Concrete Waste Management	07-346	No		LS		$ -
074042	Temp. Concrete Washout (Portable)	07-406	No	4	LS	2,000	$ 8,000
						Subtotal Waste Management & Materials Handling BMPs	**$ 8,000**

BEES	*Temporary Non-Storm Water Management*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Dewatering Operations	07-341	No		LS		$ -
CSM*	Paving & Grinding Operations				LS		$ -
CSM*	Concrete Curing	07-346	No		LS		$ -
CSM*	Material & Equipmt use over water	07-346	No		LS		$ -
CSM*	Structure Demolition/Removal Over or Adjacent to Water	07-346	No		LS		$ -
CSM*	***Construction Site Management**	07-346	No	1	LS	60,000	$ 60,000
						Subtotal Non-Storm Water Management	**$ 60,000**

BEES	*Miscellaneous Items*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074019	Water Pollution Control (SWPPP)	07-345	No	1	LS	8,600	$ 8,600
	Rain Event Action Plan (REAP)		No	114	EA	500	$ 57,000
074058	Storm Water Sampling and Analysis Day		No	30	EA	1,080	$ 32,400
						Subtotal Miscellaneous Items	**$ 98,000**

Total Construction Site BMP Costs	**$ 245,010**

EXAMPLE ONLY

01-XXXXX
Storm Water Costs
PA/ED
B. Ross 9-23-10
1/2

Construction Site BMPs – Miscellaneous Items

- Prepare a SWPPP $1,500,000 to $12,000,000 = $3200 + RQM (table F6, PPDG 2010, F-11)

RQM = (Mths/3 + 1) × (N+4) × Labor (EQN 1, PPDG 2010, pg F-11)

where:
Mths (project duration): 24
N: 2
Labor: $100 RQM = $5,400

Cost to prepare SWPPP = $3,200 + $5,400 = $8,600

- Rain Event Action Plan (REAP)

Project Risk Level: 2 REAP = $500 × Days$_{0.1''}$ (pg F-12 PPDG 2010)

Annual Mean Number of Daily Precipitation ≥ 0.1 = 57
Project Rainfall: Ukiah (see print out attached.)

REAP = $500 × 57 × 2 rainy seasons = $57,000

- Storm Water Sampling + Analysis Day:

SW Sampling + Analysis Day = SWM cost / Days$_{0.5''}$ (eqn 3, PPDG 2010, F-13)

SWM costs = M × {[Days$_{0.5''}$ × $1,000] + $2000[1 + 0.1(Mths/12)]} (eqn 2, PPDG 2010 F-12)

where:
M: 1
Mths: 24
Days$_{0.5''}$ = 30

Annual Mean # of Daily Precip ≥ 0.1 : 57 ≥ 0.5 : 27.1

EXAMPLE ONLY

01-XXXXXX
Storm Water Costs
PA/ED
B. Ross 9-23-10
2/2

Storm Water Sampling + Analysis Day (cont)

$Days_{0.5''} = 57 - 27.1 = \underline{29.9}$ (definition PPDG 2010, pg F-13)

Storm costs = $32,400

$\boxed{\text{SW Sampling + Analysis Day} = \$32,400/30 = \$1,080}$

EXAMPLE ONLY

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: UKIAH, CA

COOP ID: 049122

Climate Division: CA 1 **NWS Call Sign:** **Elevation: 633 Feet** **Lat: 39˚09N** **Lon: 123˚13W**

EXAMPLE ONLY

Precipitation (inches)

	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	7.96	7.45	5.66	1974	16	24.76	1995	.50	1976	12.8	9.6	5.3	2.5	.82	1.41	2.50	3.61	4.81	6.15	7.74	9.71	12.41	16.88	21.25
Feb	7.05	5.33	4.65	1958	24	22.33	1998	.34	1988	12.3	9.3	5.2	2.5	.64	1.13	2.08	3.06	4.13	5.35	6.79	8.59	11.08	15.23	19.29
Mar	5.92	4.40	5.74	1995	9	18.64	1995	.16	1988	12.1	8.6	4.4	1.8	.57	.99	1.80	2.62	3.52	4.53	5.72	7.22	9.27	12.68	16.01
Apr	2.19	1.88	2.30	1983	23	6.99	1983	.14	1977	7.2	4.9	1.6	.4	.22	.38	.68	.98	1.31	1.69	2.12	2.67	3.42	4.67	5.89
May	1.20	.54	2.11	1990	27	6.42	1998	.00+	1985	4.7	2.6	.7	.2	.00	.00	.11	.26	.46	.70	1.01	1.42	2.01	3.05	4.11
Jun	.28	.04	1.30	1967	2	1.39	1992	.00+	1999	1.4	.7	.1	.1	.00	.00	.00	.00	.00	.05	.13	.25	.46	.86	1.29
Jul	.05	.00	.73	1974	8	.84	1974	.00+	2000	.3	.1	@	.0	.00	.00	.00	.00	.00	.00	.00	.00	.01	.15	.36
Aug	.14	.00	.79	1997	20	1.16	1976	.00+	2000	.8	.4	.1	.0	.00	.00	.00	.00	.00	.00	.00	.06	.19	.48	.81
Sep	.67	.16	2.25	1957	27	3.02	1977	.00+	1998	2.2	1.2	.4	.2	.00	.00	.00	.00	.06	.22	.43	.73	1.18	1.96	2.77
Oct	2.07	1.75	3.19	1962	12	5.75	1981	.00+	1995	5.3	3.6	1.4	.5	.00	.25	.64	.97	1.31	1.67	2.09	2.58	3.26	4.37	5.43
Nov	5.40	4.30	3.85	1920	18	16.33	1973	.31	1995	11.1	7.6	3.9	1.6	.37	.70	1.38	2.12	2.95	3.91	5.07	6.54	8.59	12.06	15.49
Dec	5.97	4.99	6.18	1964	22	16.92	1996	.00	1989	11.9	8.4	4.0	1.7	.35	.92	1.84	2.72	3.65	4.68	5.88	7.36	9.37	12.68	15.89
Ann	38.90	36.84	6.18	Dec 1964	22	24.76	Jan 1995	.00+	Aug 2000	82.1	57.0	27.1	11.5	18.81	22.15	26.71	30.38	33.78	37.17	40.79	44.91	50.07	57.85	64.82

57.0 - 27.1 = 29.9

use 30

+ Also occurred on an earlier date(s)
# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1906-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Checklist SW-1, Site Data Sources

Prepared by: B. Ross Date: 8-26-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• Aerial Topography/Maps	August 2010
•	
•	
Hydraulic	
• http://www.water-programs.com/wqpt.htm	August 2010
• http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/pdf/100106/RussianRiver__MAP.pdf	August 2010
•	
Soils	
• Geotechnical Design Report	May 2010
•	
•	
Climatic	
• Average Temperatures (http://www.weather.com/)	August 2010
•	
•	
Water Quality	
• Caltrans Storm Water Quality Handbooks, Project Planning and Design Guide (PPDG)	July 2010
• Caltrans SWPPP/WPCP Preparation Manual	March 2007
• North Coast Regional Water Quality Control Basin Plan	June 2007
Other Data Categories	
•	
•	

EXAMPLE ONLY

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

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

1.	Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation). **RUSSIAN RIVER (HSA 114.31)**	☒Complete	☐NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern. **RUSSIAN RIVER IS LISTED FOR SEDIMENTATION/SILTATION AND TEMPERATURE.**	☒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. **NONE**	☒Complete	☐NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc. **NONE AND NO TMDLS**	☒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. **YES, AND BOARD HAS REQUIREMENTS FOR TREATMENT BMPS**	☒Complete	☐NA
7.	List rainy season dates. **OCT 1 TO MAY 1**	☒Complete	☐NA
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves. **MILD 46-74°F, 37 IN RAIN**	☒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. **NONE**	☒Complete	☐NA
11.	Determine the total disturbed soil area of the project. **3 AC**	☒Complete	☐NA
12.	Describe the topography of the project site. **FLAT BUT SURROUNDED BY MOUNTAINS**	☒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.).**NONE**	☒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? **NONE**	☒Complete	☐NA
15.	Determine if a right-of-way certification is required. **NONE**	☒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. **NONE**	☒Complete	☐NA
17.	Determine if project area has any slope stabilization concerns.	☒Complete	☐NA

EXAMPLE ONLY

18. Describe the local land use within the project area and adjacent areas. ☒Complete ☐NA
AGRICULTURAL, RESIDENTIAL

19. Evaluate the presence of dry weather flow. **NONE** ☒Complete ☐NA

EXAMPLE ONLY

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

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

The PE must confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR.

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

1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	☐ Yes	☒ No	☐ NA
2.	Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	☒ Yes	☐ No	☐ NA
3.	Can any of the following methods be utilized to minimize erosion from slopes:			
	a. Disturbing existing slopes only when necessary?	☒ Yes	☐ No	☐ NA
	b. Minimizing cut and fill areas to reduce slope lengths?	☒ Yes	☐ No	☐ NA
	c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	☐ Yes	☒ No	☐ NA
	d. Acquiring right-of-way easements (such as grading easements) to reduce steepness of slopes?	☐ Yes	☐ No	☒ NA
	e. Avoiding soils or formations that will be particularly difficult to re-stabilize?	☒ Yes	☐ No	☐ NA
	f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates?	☒ Yes	☐ No	☐ NA
	g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	☒ Yes	☐ No	☐ NA
	h. Rounding and shaping slopes to reduce concentrated flow?	☒ Yes	☐ No	☐ NA
	i. Collecting concentrated flows in stabilized drains and channels?	☒ Yes	☐ No	☐ NA
4.	Does the project design allow for the ease of maintaining all BMPs?	☒ Yes	☐ No	
5.	Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season?	☒ Yes	☐ No	
6.	Can permanent storm water pollution controls such as paved slopes, vegetated slopes, basins, and conveyance systems be installed early in the construction process to provide additional protection and to possibly utilize them in addressing construction storm water impacts?	☐ Yes	☒ No	☐ NA

EXAMPLE ONLY

Design Pollution Prevention BMPs
Checklist DPP-1, Part 1

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

Consideration of Design Pollution Prevention BMPs

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

Will project increase velocity or volume of downstream flow?	☒ Yes	☐ No	☐ NA
Will the project discharge to unlined channels?	☒ Yes	☐ No	☐ NA
Will project increase potential sediment load of downstream flow?	☐ Yes	☒ No	☐ NA
Will project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	☒ Yes	☐ No	☐ NA

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

Slope/Surface Protection Systems

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

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

Concentrated Flow Conveyance Systems

Will the project create or modify ditches, dikes, berms, or swales?	☒ Yes	☐ No	☐ NA
Will project create new slopes or modify existing slopes?	☒ Yes	☐ No	☐ NA
Will it be necessary to direct or intercept surface runoff?	☒ Yes	☐ No	☐ NA
Will cross drains be modified?	☐ Yes	☒ No	☐ NA

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

Preservation of Existing Vegetation

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

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

EXAMPLE ONLY

Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

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

EXAMPLE ONLY

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

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. 0.11 acres ☒Complete

VEGETATED SURFACES

1. Identify existing vegetation. ☒Complete
2. Evaluate site to determine soil types, appropriate vegetation and planting strategies. ☒Complete
3. How long will it take for permanent vegetation to establish? ☒Complete
4. Minimize overland and concentrated flow depths and velocities. ☒Complete

HARD SURFACES

1. Are hard surfaces required? ☐Yes ☐No

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

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

EXAMPLE ONLY

Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

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

EXAMPLE ONLY

Design Pollution Prevention BMPs
Checklist DPP-1, Part 5

Prepared by: B. Ross Date: 9-23-10 District-Co-Route: 1-MEN-222

PM : R0.01-R1.30 Project ID (or EA): 01-XXXXXX RWQCB: North Coast

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

EXAMPLE ONLY

EXAMPLE ONLY