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: 4 acres Risk Level: 3
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 — 8-26-10
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 — 8-26-10
George Washington, Project Manager — *Date*

Paul Revere — 8.26.10
Paul Revere, Designated Maintenance Representative — *Date*

Horatio Gates — 8.26.10
Horatio Gates, Designated Landscape Architect Representative — *Date*

[Stamp Required for PS&E only)

Friedrich Wilhelm von Steuben — 8.26.10
Friedrich Wilhelm von Steuben, District/Regional Design SW Coordinator or Designee — *Date*

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.

At this stage of the project there are two alternatives being considered to satisfy project need and purpose. Alternative 1 proposes to replace and widen the two-lane Russian River Bridge and is described in this report. Alternative 2 is a no build alternative.

The existing structure is approximately 500 feet (ft) in length and 36 feet wide. The bridge has two 12-foot lanes, two 1-foot shoulders, and two 4-foot sidewalks. It is proposed to widen the structure by 10 feet to include two travel lanes and two shoulders. Concrete barrier railing and tubular bicycle railings may be used on the bridge. 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 any access roads required).

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

The total disturbed soil area (DSA) for the project is has been estimated to be 4 acres. The area was estimated using limited data and includes areas for construction, access, and staging. The DSA will be recalculated when the project survey is complete. 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. The Talmage/Ukiah area is considered an NPDES Phase II MS4 area.

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.

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 predominant soil types in the project area are Xerofluvents (0-2% slopes) and Xerofluvents-Riverwash complex (0-2% slopes). 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 3 using the GIS Map Method.

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 project 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. If Caltrans is unable to incorporate post construction Treatment BMPs, the North Coast RWQCB requires a copy of the feasibility analysis for their files.

At this phase of the project, no meetings have been held with the North Coast RWQCB. The project has been discussed with the District NPDES Stormwater Coordinator, Nathanael Greene. A meeting will be scheduled by Nathanael Greene with the North Coast RWQCB to negotiate project specific agreements before the project PS&E submittal.

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 will be 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 because the existing bridge is being replaced in kind. Both onsite riparian replacement planting and offsite riparian mitigation will be implemented to offset the necessary removal of trees and other riparian vegetation for the existing bridge demolition and new bridge construction.

The Erosion Prediction Procedure will be used to validate erosion control design during the next 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

This project will require the construction of concentrated conveyance systems to transfer flows from the bridge deck and approaches to bioswales. This system will be more defined in the PA/ED phase.

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

This project will involve clearing, grubbing, and excavation in specific locations that will be defined on the plans to maximize the preservation of existing vegetation. Areas that are

off limits to the contractor will also be delineated on the plans. These locations will be more defined in the PA/ED phase.

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 have been considered 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 Treatment BMPs as a condition of the 401 Water Quality Certification process.

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

This project has an estimated total disturbed soil area of 4 acres and, therefore, requires preparation of a Storm Water Pollution Prevention Plan (SWPPP).

The overall site risk level has been determined to be Level 3. It is assumed that two monitoring locations will be needed for this project. Monitoring locations will be identified at the PA/ED phase of the project. 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.

Of the six water pollution control categories, Construction Site BMPs representing all six of the categories are anticipated on this project. These include:

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Waste Management & Materials Pollution Controls

Selection of specific Construction Site BMPs will occur in the PA/ED and PS&E phases of the project, along with identification of separate bid line items and lump sum items. Compliance of the CGP can be met through the use of traditional BMPs; therefore an active treatment system is not anticipated. Dewatering will be required during the construction of this project; however, a separate dewatering permit is not anticipated. The percent of total project cost method has been used to estimate costs for Construction Site BMPs. The cost for preparing a SWPPP has been estimated using Table F-6 of the Project Planning and Design Guide.

At this phase of the project, no meetings have been held with the District Construction Stormwater Coordinator (CSWC). The District CSWC, William Alexander, has been notified by the PE about this project via email on March 1, 2010. A meeting will be scheduled to

coordinate the temporary construction site BMP implementation strategy before the project PA/ED submittal. Concurrence on the implementation strategy will be obtained during PS&E.

7. Maintenance BMPs (Drain Inlet Stenciling)

At this phase of the project, no meetings have been held with the District Maintenance Stormwater Coordinator (MSWC). The District MSWC, Paul Revere, has been notified about this project via email. A meeting will be scheduled to coordinate the maintenance BMP implementation strategy before the project PA/ED submittal. During this meeting the need for drain inlet stenciling will be discussed. 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

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 (Design Pollution Prevention BMPs)

01-MEN-222
R0.01 – R1.30
Bridge Replacement
01-XXXXXX

Vicinity Map
Not to Scale

DATE: 8-26-10

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.		✓	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. JWS *(Dist./Reg. Design SW Coord. Initials)* BR *(Project Engineer Initials)* 8-26-10 *(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

Risk Level - GIS Method
EA 01-XXXXXX, PID 8/26/10

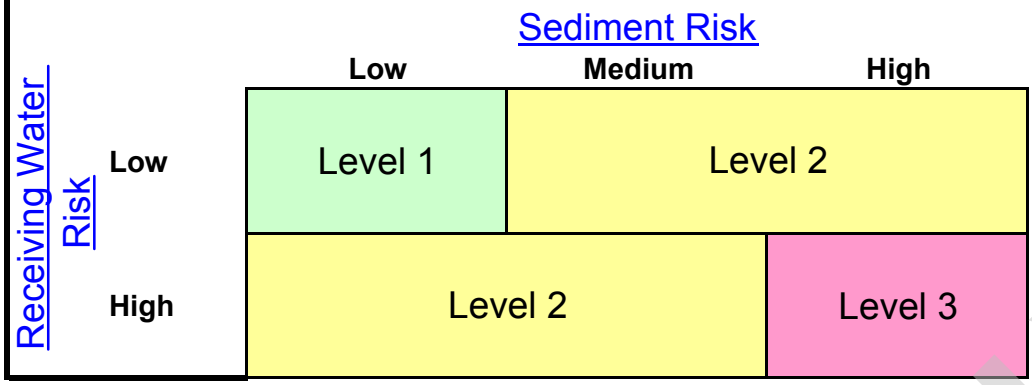
	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier 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			

Risk Level - GIS Method
EA 01-XXXXXX, PID 8/26/10

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:	**yes**	**High**
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		

Risk Level - GIS Method
EA 01-XXXXXX, PID 8/26/10

Combined Risk Level Matrix



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

DATE: 8-26-10

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*

SWDR Tracking Form

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	ter Bodies Affec	Criteria	BioStrip	BioSwale	Detention	Infiltration	InfilTrench	GSRD	TST	DryWeath	MedFilter	MCTT	WetBasin	Const_Start	Const_Comp	SWComment
26-Aug-10	01-XXXXXX	1	XXXXXX	MEN	222	R0.01	R1.30	Bridge Replacement	PID	TRUE	26-Aug-10	TRUE	TRUE	SWPPP	3	0.11	FALSE			Russian River	303	0	0	0	0	0	0	0	0	0	0	0	01-Jun-11	01-Jun-13	

Storm Water BMP Cost Summary - PID Phase Only
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**

1.0 DPP BMPs

Perm Erosion Control	Unit Cost			
LS	$40,000.00	**SUBTOTAL**	$	40,000

2.0 Treatment BMPs

Miles of Pavement	Cost per Mile			
0.2	$200,000.00	**SUBTOTAL**	$	40,000

3.0 Prepare SWPPP

Total Construction Cost	Cost per Table F-6			
$10,000,000.00	$8,600.00	**SUBTOTAL**	$	8,600

RQM Value* (if SWPPP is required): $5,400.00

4.0 Construction Site BMPs

Total Construction Cost	2.00% **per Table F-3			
$10,000,000.00	$200,000.00	**SUBTOTAL**	$	200,000

5.0 ROW Acquisition

Length of ROW	Unit Cost per Length			
		SUBTOTAL	$	-

Additional ROW not required

6.0 Stormwater Monitoring

Project Risk Level	SWM Cost* (PPDG Appen F)			
3	$32,400.00	**SUBTOTAL**	$	32,400

TOTAL COST FOR STORM WATER BMPs $ 321,000

*Calculations attached

**Per the District/Regional NPDES Stormwater Coordinator direction, an adjustment of 0.50% was used to account for work near a 303(d) listed waterbody.

01-XXXXXX
Storm Water Costs
PID
B. Ross 8-26-10

3.0 Prepare a SWPPP

$1,500,000 to $12,000,000 = $3,200 + RQM (Table F6, PPDG 2010 pg F-11)

RQM = (Mths/3 + 1) x (N+4) x Labor (Eqn 1 PPDG 2010 F-11)

where:
Mths (Project duration): 24
N: 2
Labor: $100

RQM = $5,400

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

6.0 Storm Water Monitoring

Swm Costs = $M \times \{[Days_{0.5}" \times \$1{,}000] + \$2{,}000(1 + 0.1(Mths/12))\}$ (eqn 2 PPDG 2010, pg F12)

Project Rainfall: Ukiah (see print out attached)

Annual Mean Number of Daily Precipitation (def. PPDG 2010 pg F-13)
≐0.1: 57
≐0.5: 27.1

$Days_{0.5}" = 57 - 27.1 = 29.9$

where:
M: 1
$Days_{0.5}"$: 30
Mths: 24

Swm Costs: = $32,400

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**

Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	7.96	7.45	5.66	1974	16	24.76	1995	.50	1976
Feb	7.05	5.33	4.65	1958	24	22.33	1998	.34	1988
Mar	5.92	4.40	5.74	1995	9	18.64	1995	.16	1988
Apr	2.19	1.88	2.30	1983	23	6.99	1983	.14	1977
May	1.20	.54	2.11	1990	27	6.42	1998	.00+	1985
Jun	.28	.04	1.30	1967	2	1.39	1992	.00+	1999
Jul	.05	.00	.73	1974	8	.84	1974	.00+	2000
Aug	.14	.00	.79	1997	20	1.16	1976	.00+	2000
Sep	.67	.16	2.25	1957	27	3.02	1977	.00+	1998
Oct	2.07	1.75	3.19	1962	12	5.75	1981	.00+	1995
Nov	5.40	4.30	3.85	1920	18	16.33	1973	.31	1995
Dec	5.97	4.99	6.18	1964	22	16.92	1996	.00	1989
Ann	38.90	36.84	6.18	Dec 1964	22	24.76	Jan 1995	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.8	9.6	5.3	2.5
Feb	12.3	9.3	5.2	2.5
Mar	12.1	8.6	4.4	1.8
Apr	7.2	4.9	1.6	.4
May	4.7	2.6	.7	.2
Jun	1.4	.7	.1	.1
Jul	.3	.1	@	.0
Aug	.8	.4	.1	.0
Sep	2.2	1.2	.4	.2
Oct	5.3	3.6	1.4	.5
Nov	11.1	7.6	3.9	1.6
Dec	11.9	8.4	4.0	1.7
Ann	82.1	57.0	27.1	11.5

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.82	1.41	2.50	3.61	4.81	6.15	7.74	9.71	12.41	16.88	21.25
Feb	.64	1.13	2.08	3.06	4.13	5.35	6.79	8.59	11.08	15.23	19.29
Mar	.57	.99	1.80	2.62	3.52	4.53	5.72	7.22	9.27	12.68	16.01
Apr	.22	.38	.68	.98	1.31	1.69	2.12	2.67	3.42	4.67	5.89
May	.00	.00	.11	.26	.46	.70	1.01	1.42	2.01	3.05	4.11
Jun	.00	.00	.00	.00	.00	.05	.13	.25	.46	.86	1.29
Jul	.00	.00	.00	.00	.00	.00	.00	.00	.01	.15	.36
Aug	.00	.00	.00	.00	.00	.00	.00	.06	.19	.48	.81
Sep	.00	.00	.00	.00	.06	.22	.43	.73	1.18	1.96	2.77
Oct	.00	.25	.64	.97	1.31	1.67	2.09	2.58	3.26	4.37	5.43
Nov	.37	.70	1.38	2.12	2.95	3.91	5.07	6.54	8.59	12.06	15.49
Dec	.35	.92	1.84	2.72	3.65	4.68	5.88	7.36	9.37	12.68	15.89
Ann	18.81	22.15	26.71	30.38	33.78	37.17	40.79	44.91	50.07	57.85	64.82

+ 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

(57.0 - 27.1) = 29.9

use 30

(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	
•	
•	

Checklist SW-2, Storm Water Quality Issues Summary

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

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. **4 AC (estimated)**	☒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

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

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

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

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

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: 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

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: 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

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: 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

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

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

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: 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

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