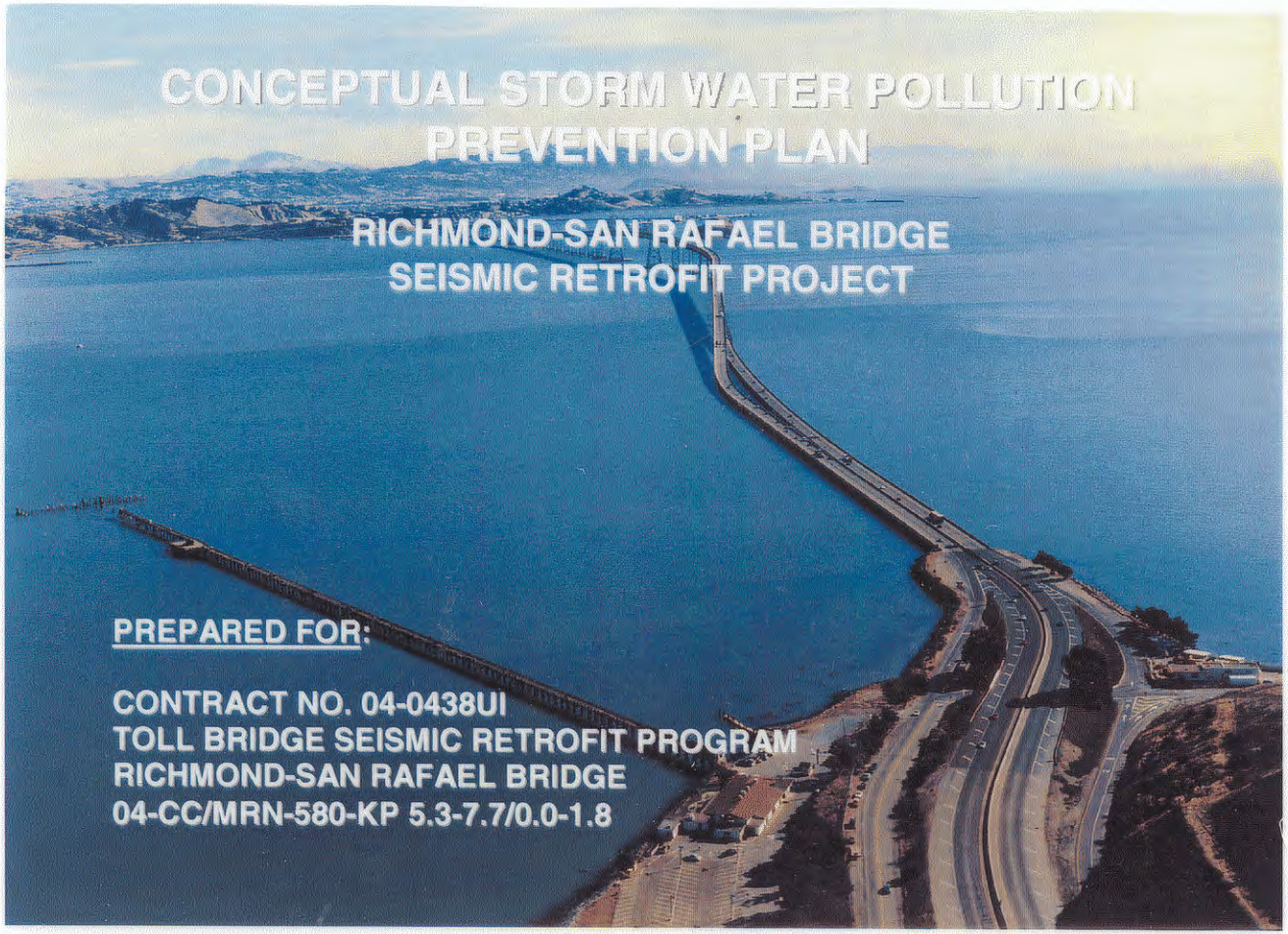


CONCEPTUAL STORM WATER POLLUTION PREVENTION PLAN

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT PROJECT

PREPARED FOR:

CONTRACT NO. 04-0438UI
TOLL BRIDGE SEISMIC RETROFIT PROGRAM
RICHMOND-SAN RAFAEL BRIDGE
04-CC/MRN-580-KP 5.3-7.7/0.0-1.8

PREPARED BY:

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 04

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Prepared by:

Leslie Dumas

Leslie Dumas, Project Engineer

7/1/99

Date

Approved and Certified by:

Charles D. Smith

for Mike Flake, Caltrans Environmental Engineer

7-2-99

Date

AMENDMENT SUMMARY SHEET

Amendment #	Date	Brief Description of Amendment	Prepared by	Resident Engineer's Approval

Table of Contents

Section **Page No.**

I. INTRODUCTION **1**
A. Trestle Structure *1*
B. East Approach Structure *1*
C. West Approach Structure *6*
D. Main Span Superstructure and Foundation *6*

II. REFERENCE **12**

III. PURPOSE **12**

IV. OBJECTIVE **13**

V. SOURCE IDENTIFICATION **13**
A. Topography Map *13*
B. Water Pollution Control Plans *13*
1. Location of Control Practices Used During Construction 14
2. Areas Used to Store Soils, Materials and Wastes 18
3. Areas of Cut and Fill and Excavation 18
4. Drainage Pattern and Slopes Anticipated After Grading Activities are Completed 19
5. Areas of Soil Disturbance 19
6. Surface Water Locations 21
7. Areas of Potential Soil Erosion Where Control Practices will be Used During Construction 21
8. Existing and Planned Paved Areas and Buildings 21
9. Locations of Post-Construction Control Practices 22
10. Vehicle Storage and Service Areas 22
11. Areas of Existing Vegetation 22
C. Narrative Descriptions *22*
1. Toxic Materials 22
2. Practices to Minimize Contact with Stormwater 24
3. Construction Material Loading, Unloading, and Access Areas 29
4. Preconstruction Control Practices 30
5. Equipment Storage, Cleaning, and Maintenance Areas 30
6. Methods of Storage and Disposal of Construction Materials 31
7. The Nature of Fill Material and Existing Data Describing the Soil 33
D. Pollutants Likely to be Present in Stormwater Discharges *33*
E. Construction Site Estimates *33*

VI. EROSION AND SEDIMENT CONTROL **34**
A. Soil Stabilization Practices *34*
B. Control Practices to Prevent a Net Increase of Sediment Load in Storm Water Discharge *34*
1. Straw and Tack Treatment 34
2. Plastic Covering 34
3. Silt Fences 34
4. Storm Drain Inlet Protection 35
5. Velocity Control Straw Bale Dikes 35
6. Diversion Berms 35
7. Sediment Basins 35
8. Flared End Protections 35

9. Creek or Channel Protection Measures 35
C. Practices to Control the Tracking of Sediment onto Public Roads *35*
1. Stabilized Construction Entrances 36
2. Watering for Dust Control 36
3. Sweeping 36
D. Stockpile Management *36*
E. Wind Erosion Control Practices *37*
F. Water-Based Sediment Control Practices *37*
1. Clamshell and Hydraulic Dredging 37
2. Minimization of Sediment Disturbance 37
3. Control of Barge Runoff 37
4. Hydraulic Jet Cleaning 38
5. Pile Cleaning 38
6. Dewatering of Cofferdams 38

VII. NON-STORMWATER MANAGEMENT 38
1. Dredging and Pile Driving Spoils 39
2. Dewatering of Excavations, Piles and Cofferdam Sites 39
3. Painting and Paint Removal 40
4. Concrete Wash-Out Water 40
5. Concrete Release Agents 41
6. Concrete Saw Cutting and Drilling 41
7. Vehicle and Equipment Washing 41
8. Vehicle and Equipment Fueling 41
9. Dust Control Water 41
10. Grouting 42
11. Tremied Concrete 42
12. Illicit Discharges 42
13. Accidental Discharges 42

VIII. ACCIDENTAL DISCHARGES 42
A. Minor Spills *42*
B. Semi-Significant Spills *43*
C. Significant/Hazardous Spills *44*

IX. POST-CONSTRUCTION STORMWATER MANAGEMENT 44

X. WASTE MANAGEMENT AND DISPOSAL 45
A. General
B. Painting and Paint Removal *46*
C. Concrete Wash-Out *46*
D. Concrete Debris/Asphalt Debris *47*
E. Contaminated and Hazardous Waste Stockpile Management *47*
F. Litter Control *48*
G. Drilling and Use of Tremie Concrete and Grout *48*

XI. MAINTENANCE, INSPECTION, AND REPAIR 48

XII. TRAINING 50

XIII. LIST OF CONTRACTORS/SUBCONTRACTORS 50

XIV. OTHER PLANS 50

XV. MONITORING PROGRAM AND REPORTS **51**
A. General *51*
B. Changes *51*
C. Implementation *52*
D. Site Inspection *52*
E. Compliance Certification *53*

XVI. RECORD KEEPING AND REPORTS **53**
A. Noncompliance Reporting *53*
B. Monitoring Records *53*
C. Contract Plans *53*
D. During Construction (Amendments) *53*
E. Other Agencies *54*
F. Yearly Certificate of Compliance *54*
G. Final Disposition *54*

XVI. APPENDIX

A. *Water Pollution Control Plan*
B. *Water Pollution Control Details*
C. *Figures Showing Sampling Locations and Results*
D. *Applicable BMPs for Construction Activities from CalTrans Storm Water Quality Handbooks*

1. Contractor's Activities
   - CD7(2) Dewatering
   - CD9(2) Structure Construction and Painting
   - CD10(2) Material Delivery and Storage
   - CD11(2) Material Use
   - CD12(2) Spill Prevention and Control
   - CD13(2) Solid Waste Management
   - CD14(2) Hazardous Waste Management
   - CD15(2) Contaminated Soil Management
   - CD16(2) Concrete Waste Management
   - CD17(2) Sanitary and Septic Waste Management
   - CD18(2) Vehicle and Equipment Cleaning
   - CD19(2) Vehicle and Equipment Fueling
   - CD20(2) Vehicle and Equipment Maintenance
   - CA40 Employee/Subcontractor Training
   - CD44(2) Illicit Discharge/Illegal Dumping Reporting
   - CD45(2) Clear Water Diversion
   - CD46(2) Liquid Waste Management
2. Erosion and Sedimentation Control
   - CD22(2) Scheduling
   - CD23(2) Preservation of Existing Vegetation
   - CD24B(2) Temporary Seeding and Planting
   - CD25(2) Mulching
   - CD26B(2) Geotextiles, Mats/Plastic Covers and Erosion Control Blankets
   - CD28(2) Temporary Stream Crossing
   - CD29B(2) Stabilized Construction Roadway
   - CD29A(2) Stabilized Construction Entrance
   - CD29C(2) Entrance/Outlet Tire Wash
   - CD31(2) Earth Dike, Drainage Swales, and Lined Ditches
   - CD32A(2) Slope Drains and Sub-surface Drains
   - CD33A(2) Outlet Protection/Velocity Dissipation Devices
   - CD34(2) Check Dams
   - CD36(2) Silt Fence
   - CD37(2) Straw Bale Barrier
   - CD38(2) Sand Bag Barrier
   - CD39(2) Brush or Rock Filter
   - CD40(2) Storm Drain Inlet Protection
   - CD41(2) Sedimentation Trap
   - CD42(2) Sediment Basins
   - CD43(2) Fiber Rolls

E. *Inspection Forms*
F. *Estimated Dredge Volumes at Piers*
G. *Computation of Construction Site Estimates*
H. *Non-Stormwater Spill Log*
I. *Sample Subcontractor Notification Letter and Subcontractor Notification Log*
J. *Dewatering Field Monitoring Sheet*
K. *Annual Certification of Compliance with NPDES Permit No. CAS029998*
L. *Notice of Non-Compliance*
M. *SWPPP Amendment Log*

I. INTRODUCTION

Caltrans has included the Richmond-San Rafael Bridge (Bridge) in its Toll Bridge Seismic Retrofit Program. As part of Interstate 580 extending from Richmond (Contra Costa County) on the east across the San Francisco Bay to Point San Quentin (Marin County) on the west (Figure 1), the 4.5-mile Bridge will be seismically retrofitted to meet current seismic safety standards. Figure 2 shows the complete bridge and the delineation of its segments.

Seismic retrofit construction activities will occur within the same alignment as the existing Bridge. Development of seismic retrofit construction strategies for the Bridge required separating the Bridge into four separate segments; 1) Concrete Trestle Structure; 2) East Approach Structures; 3) West Approach Structure; and 4) Main Span Superstructure and Foundation, as indicated on Figure 2. Work to be conducted on each of these segments is discussed below.

This Conceptual Stormwater Pollution Prevention Plan (CSWPPP) covers retrofit activities for the entire bridge.

A. Trestle Structure

Single deck concrete trestles extend from Point San Quentin to the West Approach Structure of the Richmond-San Rafael Bridge. This section of the Bridge will be completely replaced along the existing alignment with a similar structure. Construction activities for the Concrete Trestle Structure include:

- Removal of the existing 50-foot-long concrete deck sections, to be replaced by 100-foot-long concrete deck sections
- Removal of existing 2-foot-diameter concrete piles at the mud line
- Installation of new 4-foot-6-inch-diameter piles, which includes driving steel pile shells to bedrock, cleaning out, and filling with tremie concrete
- Extension of west abutment
- Installation of approach slab adjacent to the abutment

Figure 3 illustrates an existing and proposed section of the Concrete Trestle Structure section.

B. East Approach Structure

The East Approach Structure transitions the single parallel roadway decks extending from the toll plaza on the east side of the Bridge to a double-deck structure. Seismic retrofit activities will include work on the superstructure and the foundations and piers of this structure in San Francisco Bay waters. Figure 4 illustrates existing and retrofitted sections of the East Approach Structure. East Approach seismic retrofit construction elements occurring in and over the San Francisco Bay include:

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT

PROJECT SITE

SAN PABLO BAY

CENTRAL BAY

SAN FRA

MARIN CO

CONTRA COSTA CO

CONTRA COSTA

ALAMEDA

San Rafael

San Rafael Bay

Marin Islands

East Brother Light Station

Pt San Pablo

Pt Pinole Reg Shoreline

Pt San Quentin

San Quentin

Pt Molate

Richmond San Rafael Bridge

Castro Pt

Red Rock

Cypress Pt

Paradise Cay

Pt Chauncey

Pt Potrero

Brooks Island

Gravel Pit

Dominican College

Madera

Richmond

Scale 1" = 1.3 Miles

Scale 1cm = 837m

IT

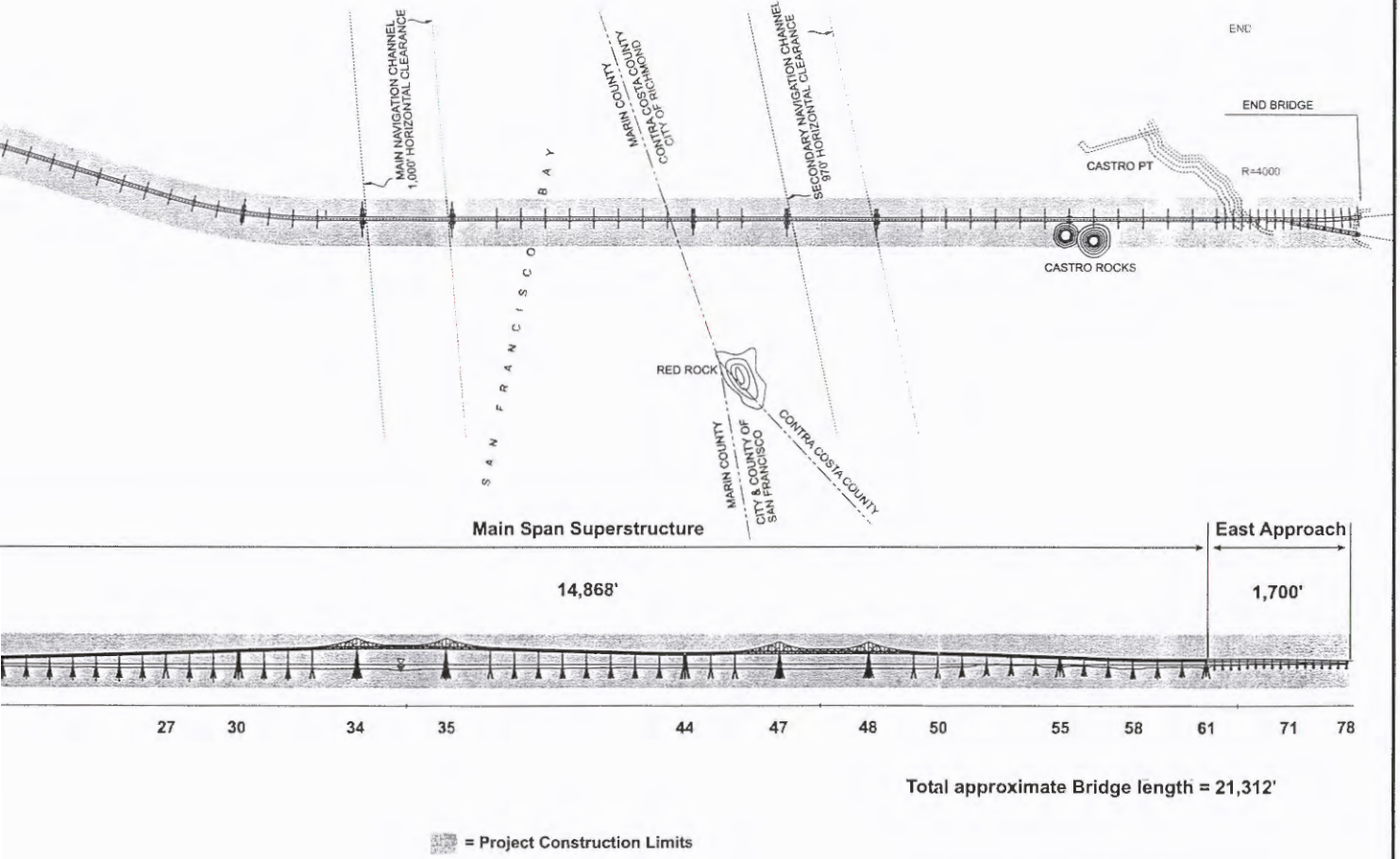
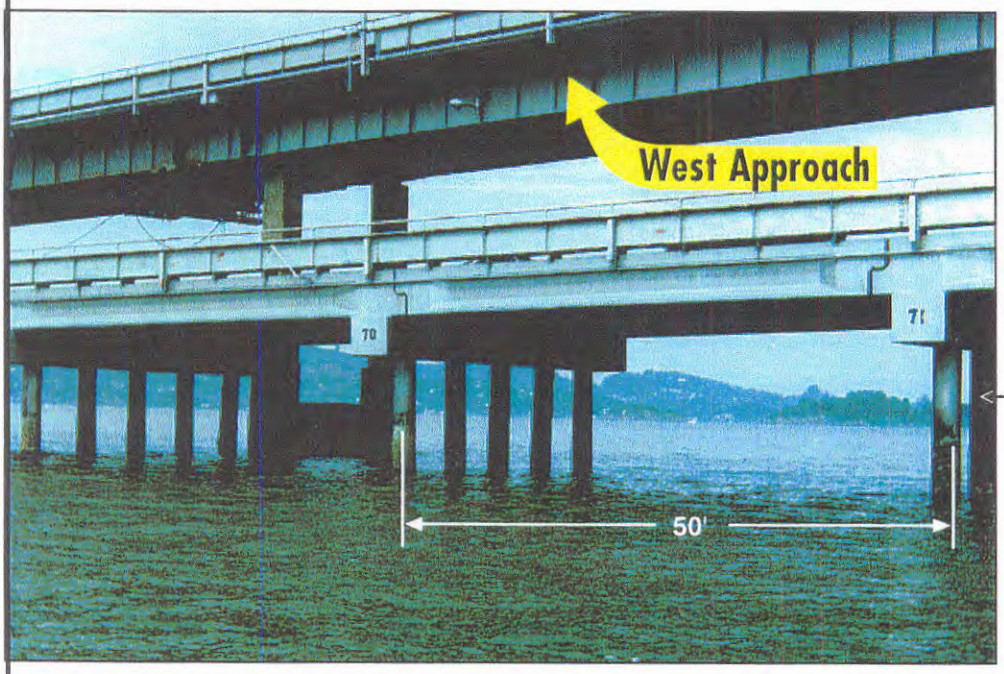


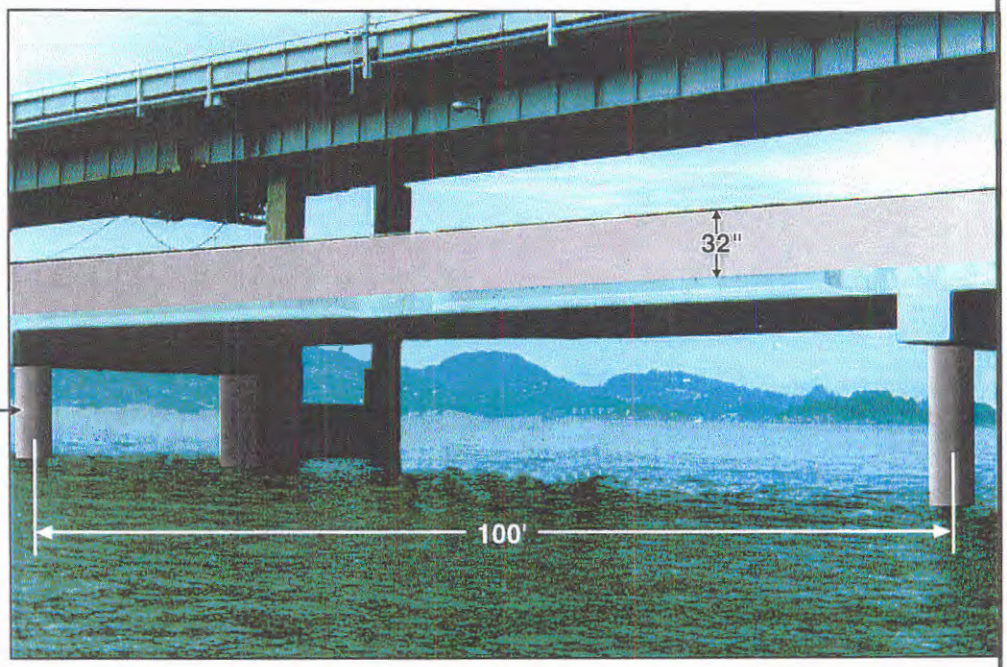
Figure 2
BRIDGE CONSTRUCTION SEGMENTS AND PROJECT LIMITS

CH2MHILL

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT



Existing Concrete Trestle Section–Typical view from Bay



New Concrete Trestle Section–Typical view from Bay

Figure 3
EXISTING AND RETROFITTED
CONCRETE TRESTLE STUCTURE

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT

Existing East Approach - looking west from bike path

Retrofitted East Approach - looking west from bike path

Figure 4
EXISTING AND RETROFITTED EAST APPROACH STRUCTURE

- Excavation for cofferdams and backfill around the base of piers.
- Pile installation (16-inch-diameter piles maximum)
- Grade beam/footing strengthening
- Diaphragm wall extension
- Installation of concrete shaft casing

C. West Approach Structure

The West Approach structure also transitions single parallel roadway decks (in this case, from the Concrete Trestle Structure) to a double-deck structure. The West Approach superstructure seismic retrofit is similar to the East Approach, and seismic retrofit construction elements occurring in and over the Bay are similar to the Main Superstructure elements. These elements include:

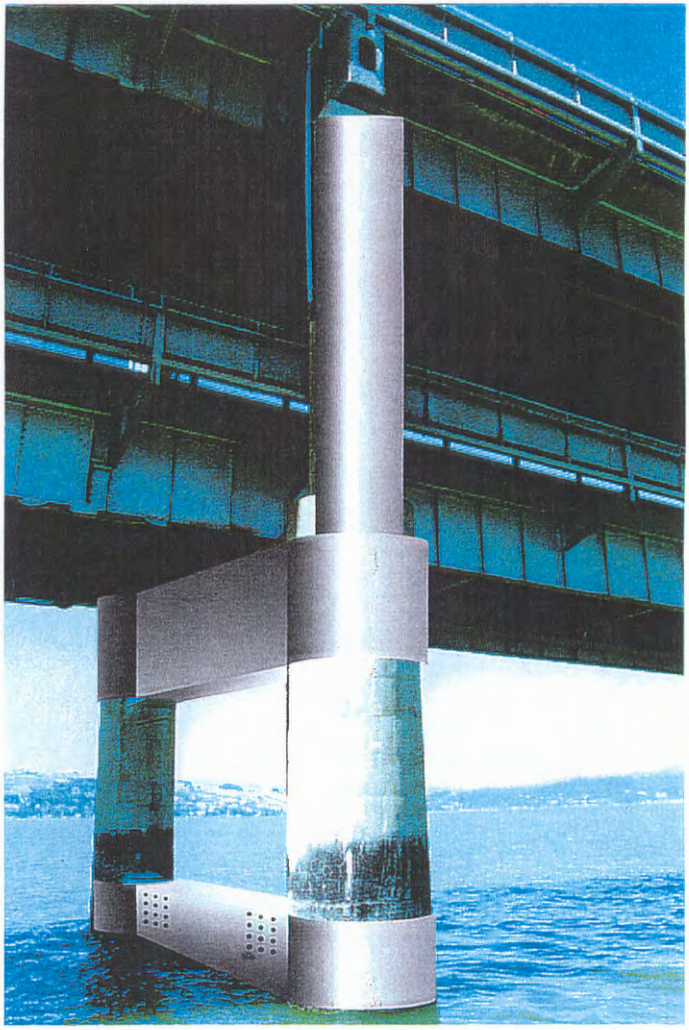
- New piles (approximately 13 inches in diameter) installed through the existing pier bells and socketed into bedrock
- Steel casings around the sides of the bells
- Diaphragm wall extension
- Installation of precast concrete shaft casing

Figure 5 illustrates existing and retrofitted sections of the West Approach Structure.

D. Main Span Superstructure and Foundation

Major Main Span Superstructure seismic retrofit elements include:

- Installation of friction dampers, seismic isolation joints, expansion joints and bearings on the deck
- Installation of dual eccentrically braced frames, requiring spot sandblasting on steel members and steel rivet removal
- Tower leg strengthening
- Truss sway bracing installation
- Truss member strengthening



Retrofitted Pier 13 On West Approach

Figure 5
EXISTING AND RETROFITTED WEST APPROACH STRUCTURE

- New piles (approximately 13 inches in diameter) installed through the existing pier bells and socketed into bedrock
- Steel casings around the sides of the bells
- Diaphragm wall extension
- Installation of precast concrete shaft casing

Figure 6 illustrates the Main Span bridge components, while Figures 7 and 8 show some of the retrofit construction for 2- and 4-bell piers, respectively.

Construction activities will be staged from a location to be determined by the Contractor and will be documented in the Contractor's SWPPP. The Contractor shall use Best Management Practices (see Appendix D) to produce a Water Pollution Control Plan (see Appendix A) showing measures to reduce erosion and sedimentation from the selected staging location, and descriptions and drawings of the work to take place on barges and other platforms.

Table 1 summarizes key information for this project.

TABLE 1
SUMMARY OF PROJECT INFORMATION

Type of Project	Bridge Seismic Retrofit
Construction Limits:	On Interstate 580 on the Richmond-San Rafael Bridge over the entire length extending from Point San Quentin, approximately 4.5 miles east to Richmond.
Duration:	3-1/2 years (1999-2003)
Estimated Beginning Date:	Fall 1999
Estimated End Date:	Spring 2003
Contractor's Name:	Unknown, estimated award date: Summer 1999
Resident Engineer:	To be determined

This CSWPPP covers the construction area of the Richmond-San Rafael Bridge Concrete Trestle Structure, East Approach Structure, West Approach Structure, Main Span Superstructure, and any adjacent staging areas obtained by the Contractor. Should the Contractor obtain a remote staging area, requirements from all appropriate regulatory agencies must be met.

This CSWPPP is dynamic, viable, and will be modified and amended when there is a change in construction or operations which may affect the discharge of stormwater from the construction site to receiving waters.

The Contractor will comply with the conditions of the SWPPP and make a "best faith effort" to comply with the NPDES regulations and CSWPPP requirements. Caltrans staff shall enforce a strict compliance with the SWPPP contract documents.

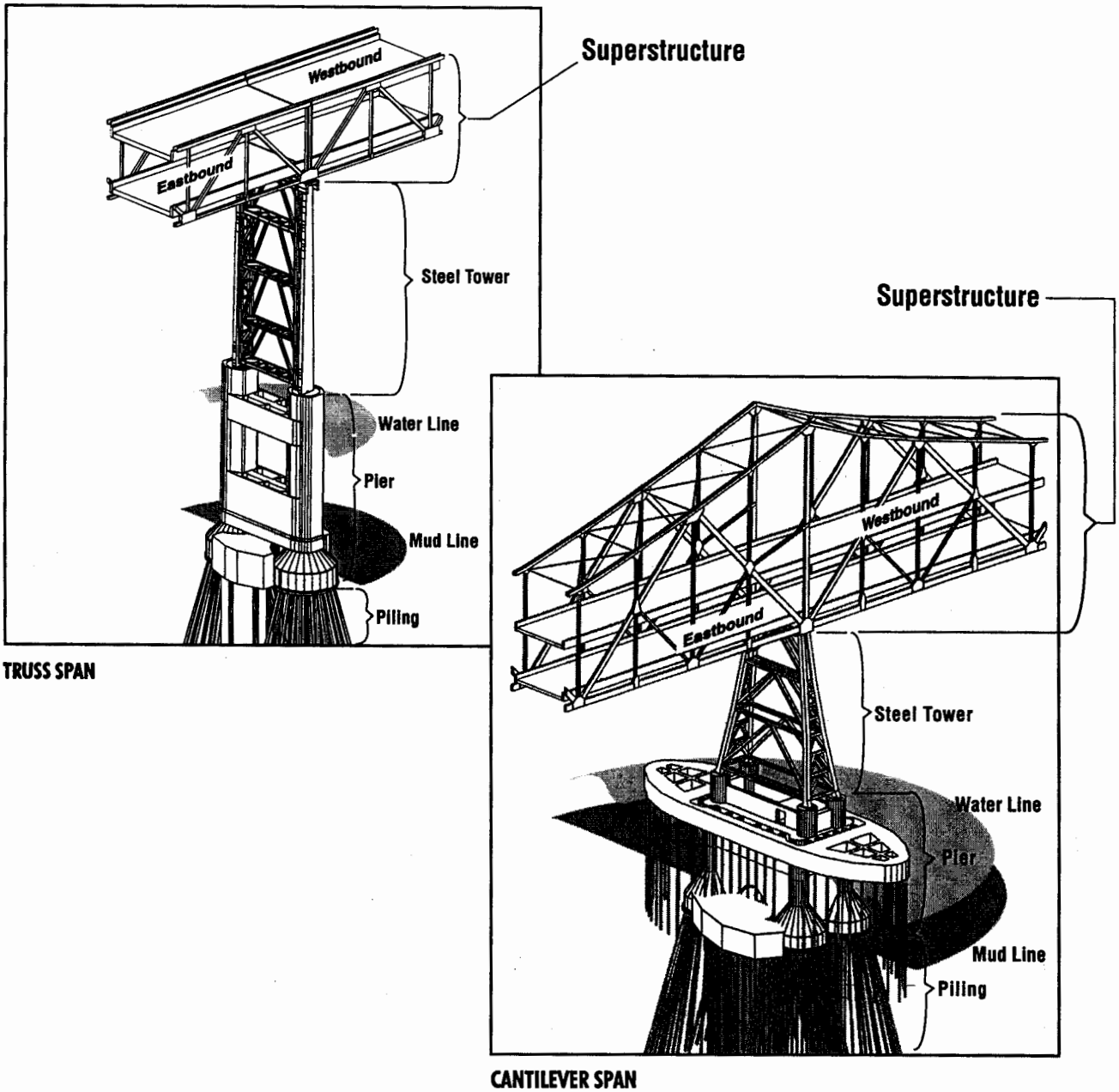
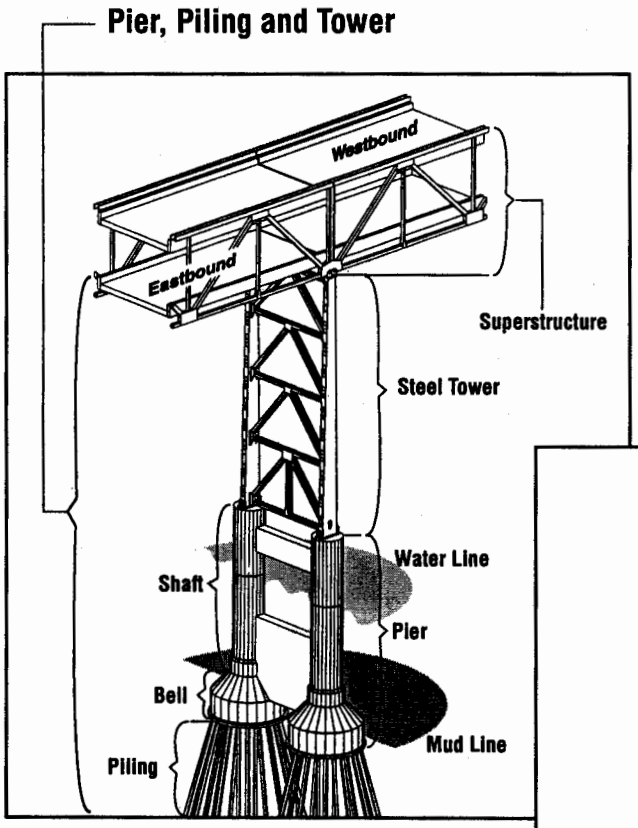
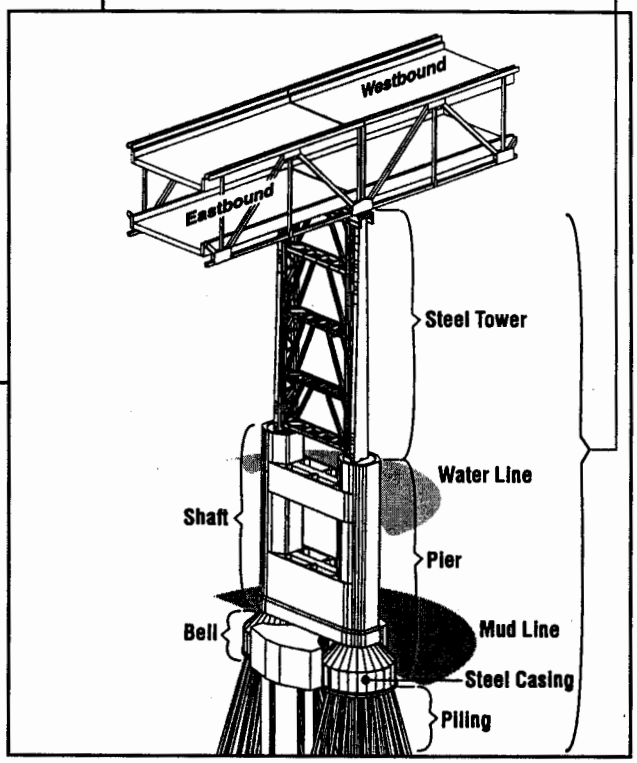


Figure 6
Main Span Bridge Components

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT



EXISTING
Typical Two-Bell Pier
(Pier 29)



RETROFITTED
Typical Two-Bell Pier
(Pier 29)

Figure 7
Existing and Retrofitted
2 Bell Piers - Main Structure

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT

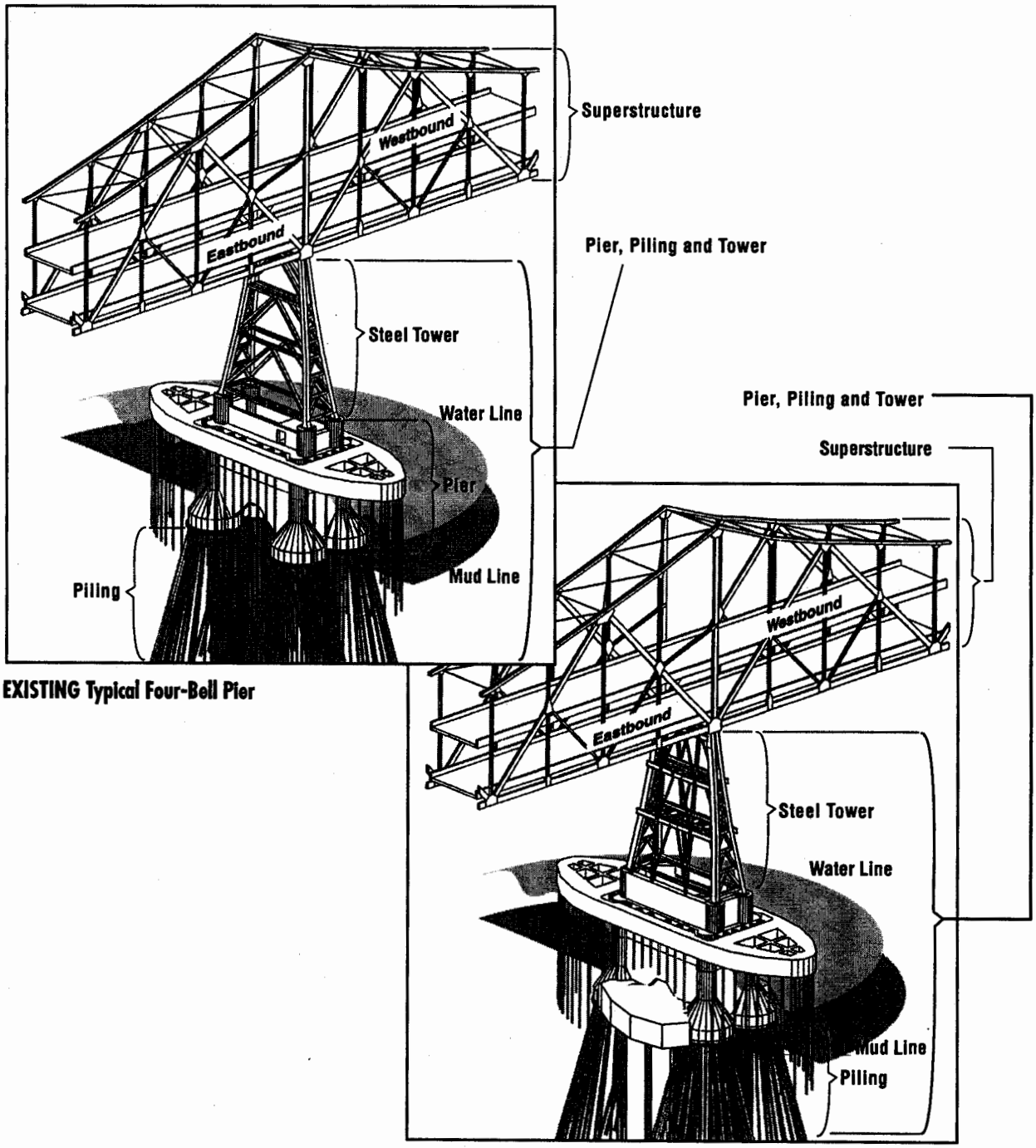


Figure 8
Existing and Retrofitted
4 Bell Piers - Main Structure

II. REFERENCE

The following documents are referred to in this Conceptual Storm Water Pollution Prevention Plan for the seismic retrofit of the Richmond-San Rafael Bridge.

- Caltrans Storm Water Quality Handbook: Construction Contractor's Guide and Specifications dated April 1997. Best Management Practices (BMPs) considered: CD7(2), CD9(2), CD10(2), CD11(2), CD12(2), CD13(2), CD14(2), CD15(2), CD16(2), CD17(2), CD18(2), CD19(2), CD20(2), CD22(2), CD23(2), CD24B(2), CD25(2), CD26B(2), CD27(2), CD28(2), CD29A(2), CD29B(2), CD29C(2), CD31(2), CD32A(2), CD33A(2), CD33B(2), CD34(2), CD36(2), CD37(2), CD38(2), CD39(2), CD40(2), CD41(2), CD42(2), CD43(2), CD44(2), CD45(2), CD46(2), CA40, ESC21.
- National Pollution Discharge Elimination System (NPDES) Permit No. CAS029998.
- Preliminary Site Investigation Report: East Approach San Rafael Bridge, Richmond, CA, prepared by PSI, June 1998.
- Project Plans (Contract 04-0438U4)
- Project Standard Special Provisions.
- Sediment Sampling and Analysis prepared by Clayton Environmental Consultants for the Richmond-San Rafael Bridge Seismic Retrofit Project, December 1996.
- Site Investigation Report: Richmond-San Rafael Bridge Dust and Debris Investigation, June 1999, Geocon Environmental Consultants and Caltrans.
- Upland Soil and Groundwater Characterization Richmond-San Rafael Bridge Seismic Retrofit Project, prepared for California Department of Transportation, District 4, by CH2M HILL, April 1997.

These documents are available for review by any interested party during normal working hours at the following locations:

Toll Bridge Functional Support:	Toll Bridge Duty Senior 111 Grand Ave., 12th Floor Oakland, CA 94623-0660 (510) 286-5549
Resident Engineer Office:	Contact information unknown
Contractor Office:	Contact information unknown

III. PURPOSE

The purpose of this CSWPPP is to:

- Identify pollutant sources that may affect the quality of discharges of stormwater associated with construction activities of the Richmond-San Rafael Bridge Seismic Retrofit Project.

- Aid the Contractor in properly identifying, constructing, and implementing stormwater pollution prevention measures to reduce pollutants in stormwater discharges from the construction site during construction and post construction.

The Contractor's SWPPP will incorporate the principles of this CSWPPP and will be amended whenever there is a change in construction or operations which may affect the discharge of significant quantities of pollutants into the receiving water. The Contractor's SWPPP will also be amended if it is in violation of any condition of the Permit or has not achieved the general objective of reducing pollutants in storm water discharge.

The preparation of this CSWPPP is based on the principal of BMPs, and not numeric effluent limitations, to control and abate the discharge of pollutants in storm water discharges. This CSWPPP conforms to the required elements of Permit No. CAS029998 issued by the State of California San Francisco Bay Regional (Region 2) Water Quality Control Board.

IV. OBJECTIVE

The objectives of this CSWPPP are: 1) to minimize the degradation of off-site receiving waters to the best extent possible with the current BMP's for the construction industry, and 2) to reduce the mass loading of chemicals and suspended solids to the downstream drainage systems and the receiving waters of San Francisco Bay. It is imperative that the Contractor comply with the requirements of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and the conditions of this CSWPPP and make a "best faith effort" to comply with National Pollution Discharge Elimination System (NPDES) regulations and SWPPP requirements. Caltrans staff shall enforce a strict compliance with this CSWPPP, the Contractor's SWPPP, and the contract documents.

V. SOURCE IDENTIFICATION

A. Topography Map

Figures 1 and 2 show the location and project limits of the Richmond-San Rafael Bridge and the Seismic Retrofit Project. Figures 9 and 10 are drainage maps showing the limits of the construction area, drainage tributary basins, surface water boundaries, general topography, and anticipated discharge locations for retrofit work to be conducted on the Concrete Trestle Structure and the East Approach Structure. Figure 11 shows the location of proposed barge access dredging and the temporary work platforms between the trestle decks that may be required to facilitate construction. The locations of contractor staging areas and access roads have not yet been determined for the project. All water falling on the deck of the Bridge discharges directly into San Francisco Bay.

B. Water Pollution Control Plans

The Water Pollution Control Plan is contained in Appendix A. The Contractor will amend this plan in the SWPPP, including detailed descriptions and drawings of water pollution control measures that will be implemented during construction conducted on land, and on barges and/or other platforms over the Bay.

1. Location of Control Practices Used During Construction

Water Pollution Control Plans, as applicable for each portion of the project, show the location of the control practices required of the Contractor (Appendix A). These control practices shall be implemented in staging, access, and construction areas, and include temporary silt fences, temporary seed and straw, inlet protection, straw dikes, temporary stock pile cover, stabilized construction entrance/exit, and stabilized construction roadway. Designated vehicle and equipment cleaning areas, concrete washout areas, and waste management receptacles will also be required. The Contractor shall provide, in the SWPPP, plans detailing water pollution prevention measures on access roads and staging areas, and for work occurring over or within San Francisco Bay. All requirements imposed by regulatory agencies with jurisdiction over the project area shall be met by the Contractor.

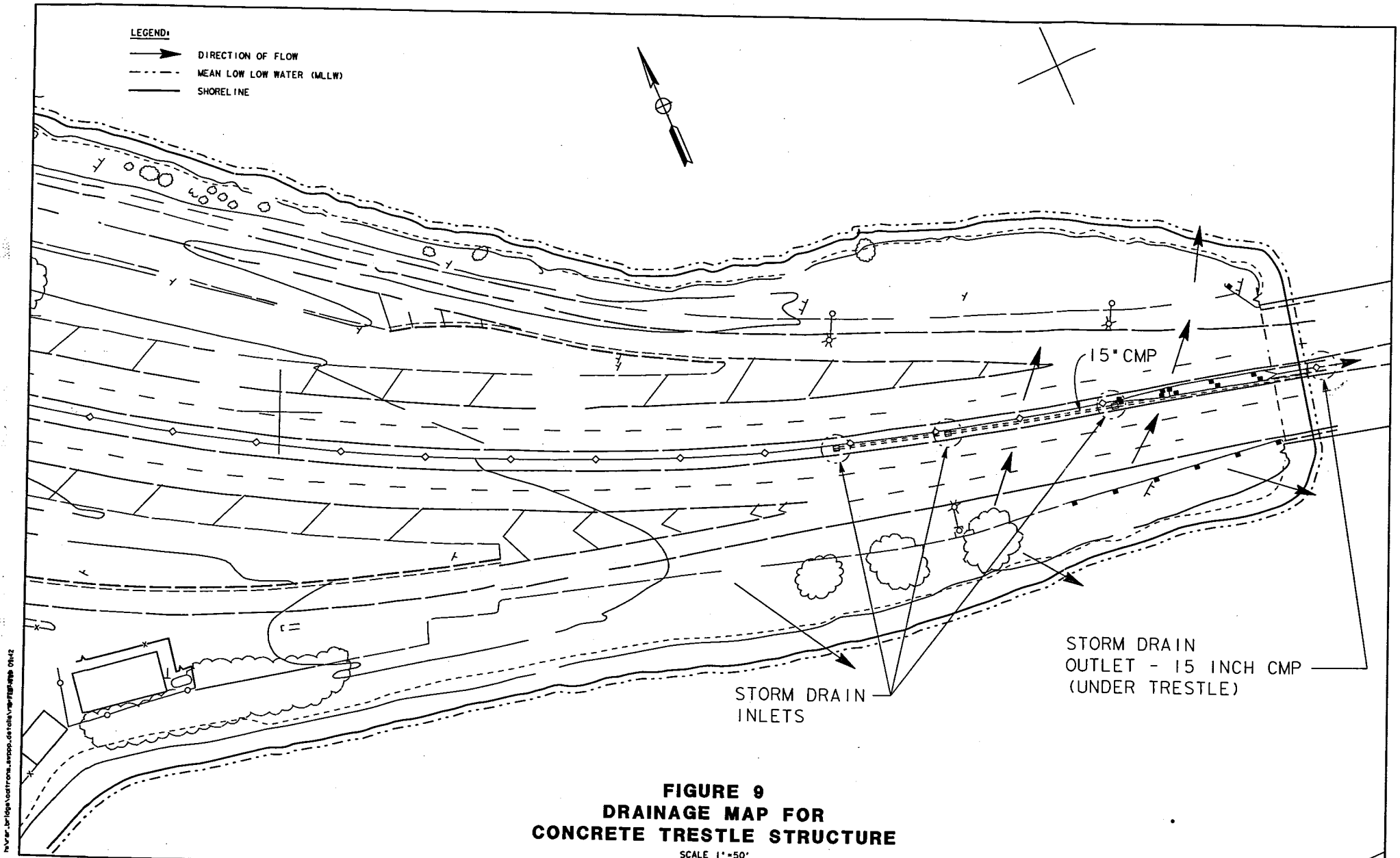


FIGURE 9
DRAINAGE MAP FOR
CONCRETE TRESTLE STRUCTURE

SCALE 1"=50'

CH2MHILL

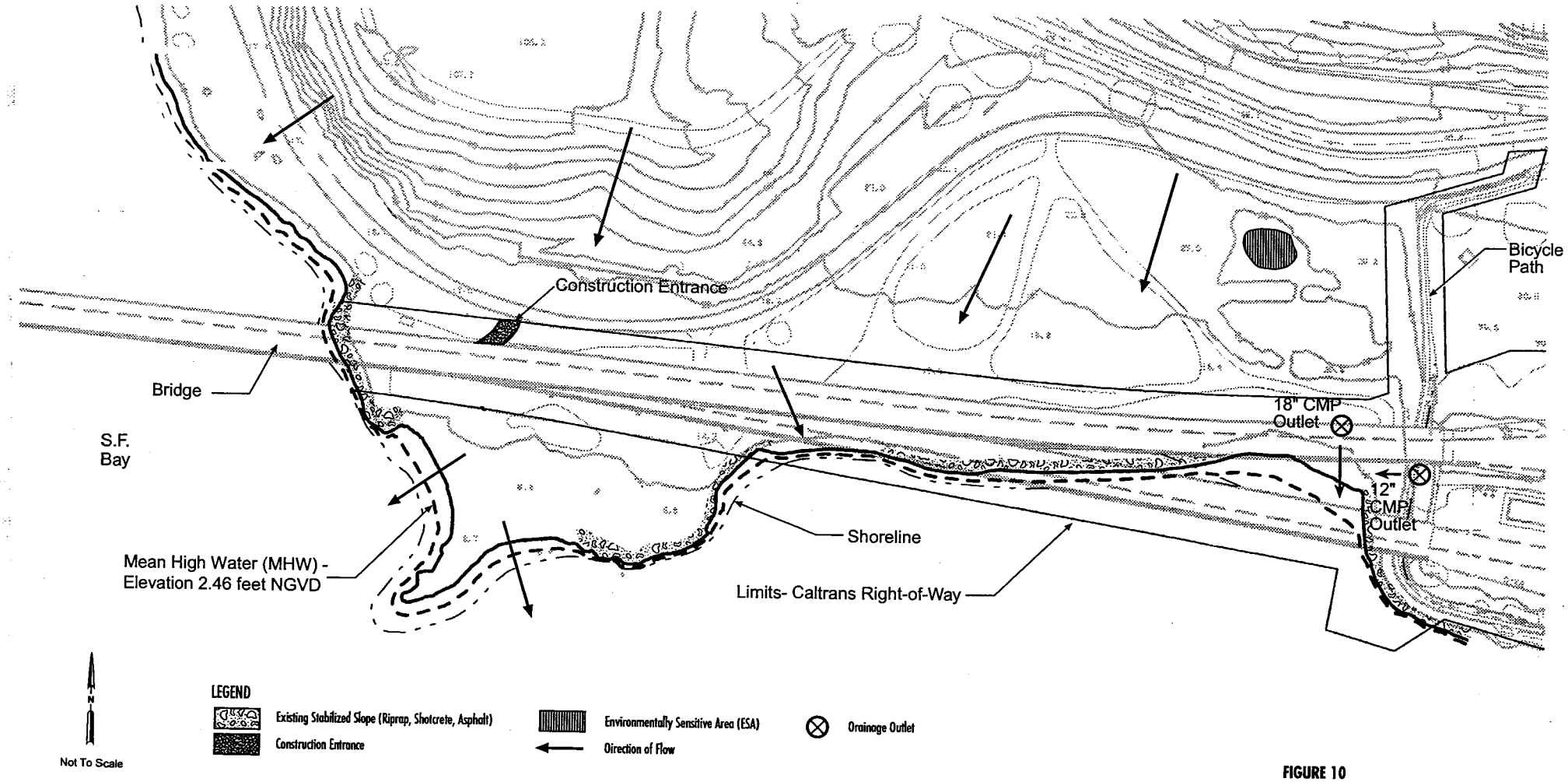
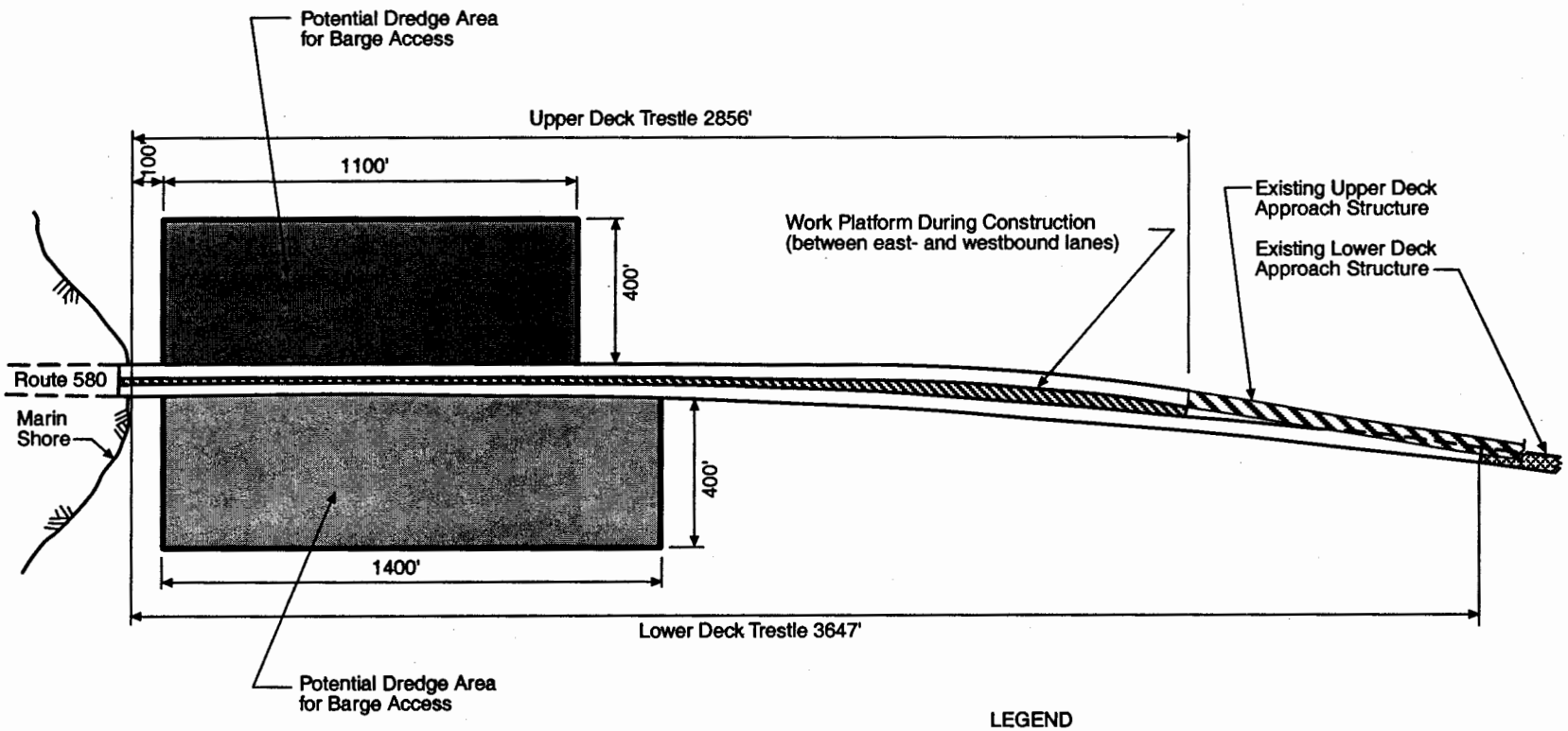


FIGURE 10
Drainage Map For East Approach Structure

CH2MHILL

47375.25.1A Drainage.fh5) - 2/18/99 ccc



LEGEND

- Existing Upper Deck
- Existing Lower Deck
- Work Platform During Construction

Note: Cofferdams will not be used on the west end of the bridge.

Not to Scale

Figure 11
TYPICAL PLAN VIEW OF CONCRETE TRESTLE AND BARGE ACCESS DURING CONSTRUCTION

Should the Contractor obtain a staging area on a site adjacent to the project limits, all new water pollution control practices for this area must be included in the SWPPP. The Contractor shall locate any new water pollution control practices in his SWPPP.

2. Areas Used to Store Soils, Materials, and Wastes

Exact locations for storage of soils, materials, and wastes have not yet been determined. The Contractor shall designate these locations within the SWPPP. Sites used for soil and waste storage shall be chosen in accordance with the relevant BMP's and will be approved by the Resident Engineer. As construction proceeds, new stockpiles may be generated and/or existing stockpiles relocated as necessary. The Contractor's Water Pollution Control Plans will be amended as appropriate to indicate the new and relocated stockpile areas. The SWPPP Amendment Log will be updated to reflect these changes. The following criteria for selecting storage areas shall be considered by the contractor:

Soil Storage:	Place soil storage areas away from waterways. The storage areas shall be paved, if possible. The areas shall have appropriate control measures for preventing the loss of sediments from the stockpiles.
Waste Storage:	The waste storage areas shall have measures for preventing water from entering containers for various types of wastes in the storage area. Hazardous wastes shall be separated from non-hazardous wastes, and dry hazardous wastes shall be separated from saturated hazardous wastes. Place waste storage areas away from waterways. Waste storage areas shall be paved, if possible, so that groundwater infiltration of spilled or leaking material is prevented.
Material Storage:	The material storage areas shall have appropriate control measures for preventing water from entering storage area. Place material storage areas near construction entrances and away from waterways. Material storage areas shall be paved, if possible, so that groundwater infiltration of spilled or leaking material is prevented.
Dredged Material:	Dredged material shall be disposed of at appropriate sea or land disposal sites as per Dredged Materials Management Office (DMMO) requirements. There will be no temporary storage of dredged material; barges shall transport dredged material directly to the final disposal site(s).

3. Areas of Cut and Fill and Excavation

Cut and fill areas are shown on the detailed Water Pollution Control Plans (Appendix A). Upland cut and fill areas completed prior to October 1st will be temporarily hydroseeded or covered with riprap. Cut and fill areas being worked during winter months will be covered with plastic, temporarily seeded or covered with straw.

Dredging adjacent to the Concrete Trestle Structure to depths of 10 feet below Mean Low Low Water (MLLW) may be required for barge access. Barge access dredging to this depth would result in an estimated 135,000 cubic yards (cys) of dredged Bay sediments. Figure 11 shows the location of the proposed dredging. The dredging site will not be backfilled after construction.

An estimated total of 4,700 cys is to be excavated from upland areas and from within cofferdams under the East Approach Structure. Approximately 3,000 cubic yards of concrete, crushed gravel,

and rock will be used for backfill. For more details regarding the volume to be dredged for every pier, refer to Appendix F.

Typical excavation and backfill details at the base of piers of the West Approach and Main Span are depicted in Figure 12. Proposed dredging volumes for each pier are shown in Appendix F. Dredging shall take place at all piers along the West Approach and Main Span except Pier 55.

For the Main Span piers, the total volume of sediment to be dredged is approximately 35,000 cubic yards. After construction on the piers is complete, approximately 10,000 cubic yards will be backfilled.

For the West Approach, roughly 5,000 cubic yards of sediment will be excavated prior to construction, and approximately 3,500 cubic yards will be backfilled following construction.

Any new areas of cut or fill shall be located in the Contractor's SWPPP.

4. Drainage Pattern and Slopes Anticipated After Grading Activities are Completed

Drainage patterns will remain the same throughout and after construction. Surface drainage will be handled by existing culverts or overland flow. Slopes will be graded to 2:1 or flatter.

This CWSPPP shows no proposed changes to the drainage patterns of the Bridge.

5. Areas of Soil Disturbance

The Richmond-San Rafael Bridge Seismic Retrofit construction site for the Concrete Trestle is approximately 25 combined acres in size; 7 acres for the Trestle Structure, 4 acres for the East and West Approach Structures, and 14 acres of the Main Span Superstructure. These areas include temporary wooden work platforms between the eastbound and westbound trestle decks.

A minimal area of soil will be disturbed by construction activities. A disturbed area is regarded as any location where in soil is excavated, graded, cleared of vegetation, or impacted by the placement of vehicles, materials, or temporary facilities. Disturbed areas shall be stabilized and protected by employment of erosion control measures. Access roads will be installed by the Contractor where required, and will be located in the Contractor's SWPPP. Construction of the access roads should minimize soil disturbance. Where grading is required, use of gravel and other measures will be taken by the Contractor to minimize soil erosion. All disturbed vegetated areas will be hydro-seeded following the completion of construction.

Areas of proposed soil disturbance are shown in the Water Pollution Control Plan (Appendix A). If changes are proposed to this project so as to include additional areas where soil will be disturbed, the Contractor's SWPPP shall include the locations of areas of soil disturbance.

RICHMOND-SAN RAFAEL BRIDGE SEISMIC RETROFIT

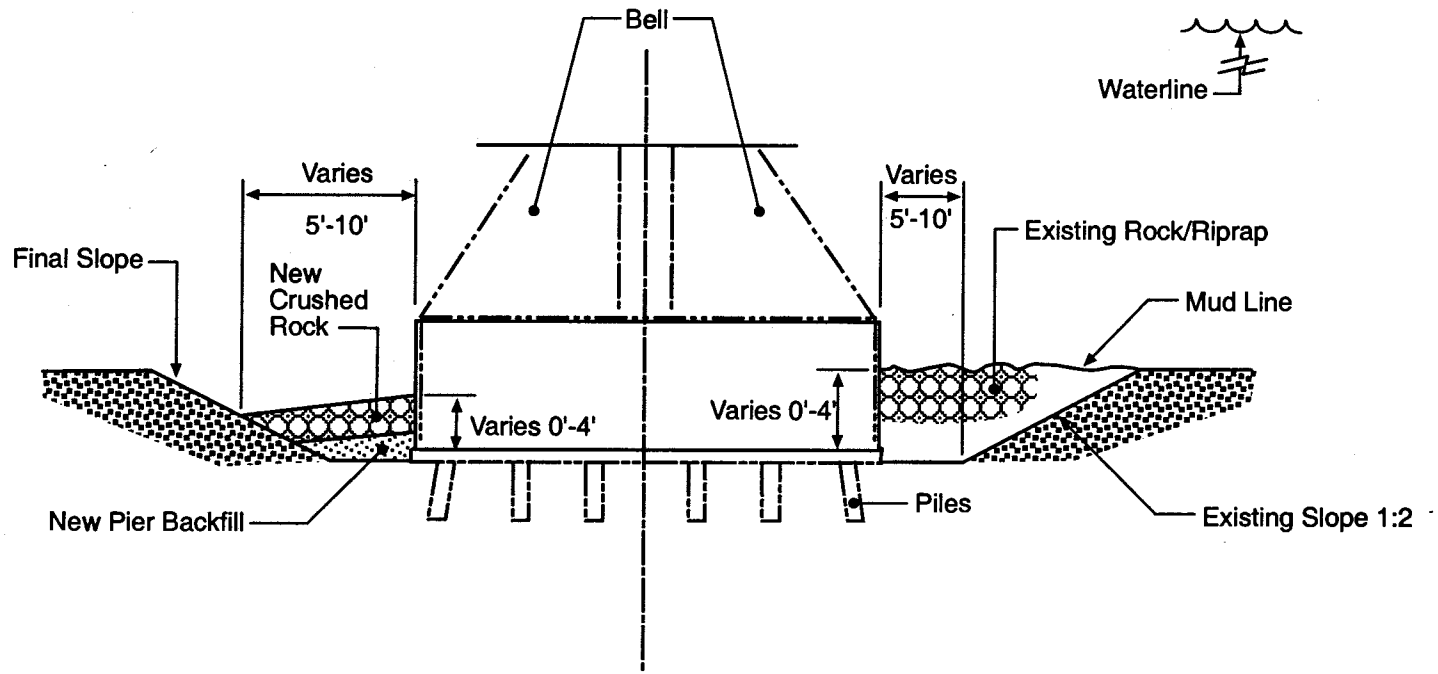


Figure 12
Backfill and Excavation Details Around Bell Piers

6. Surface Water Locations

Existing Drainage System

Stormwater falling on the deck of the Bridge runs off the sides of the decks through almost continuous openings at the road surface level. Stormwater runoff enters the San Francisco Bay below. The Richmond-San Rafael Bridge crosses the Central Bay of the San Francisco Bay from Richmond on the east to Point San Quentin (Marin County) on the west.

Proposed Drainage System

There are no proposed changes to the existing drainage system for the East and West Approach Structures and the Main Span. A new concrete barrier will be installed on the Trestle Structure, reducing the allowable size of openings for stormwater to flow off the bridge. Stormwater falling on the deck of the Trestle Structure will sheetflow to the sides of the roadway and exit the structure to the San Francisco Bay below via alternating deck drains and scuppers.

Any new changes to the drainage system shall be documented in the Contractor's SWPPP.

7. Areas of Potential Soil Erosion Where Control Practices will be Used During Construction

On the San Quentin approach west of the Trestle Structure, soils encountered to six feet below grade in the project area consist of roadbase gravel fill. East of the East Approach, soils encountered to ten feet below grade in the project area consist of silty gravel and sand fill, and in some areas include chips of concrete and asphalt. In general, this material is not highly erosive, but all graded/disturbed areas will either be hydroseeded, covered with mulching, or covered with rock blanket. During the initial stages of a storm event and until the growth of hydroseeding has developed to sufficiently stop the erosion, construction activities will be implemented as shown on the Water Pollution Control Plans (Appendix A) and in accordance with Caltrans Best Management Practices (BMP).

If areas of potential soil erosion are added to the project limits, the Contractor's SWPPP shall reflect these changes. The Contractor shall document in the SWPPP the types of soils that may be encountered at selected access and staging areas adjacent to project limits and detail the measures to be taken to minimize and eliminate erosion in these areas.

8. Existing and Planned Paved Areas and Buildings

Newly paved areas will consist of asphalt concrete. There is minor paving planned near San Quentin (Marin County) for the Concrete Trestle Structure relating to traffic staging. If paving or buildings are added to the project, they shall be cited in the Contractor's SWPPP.

9. Locations of Post-Construction Control Practices

Caltrans' maintenance forces will be responsible for maintaining the highway and bridge facilities after construction. The following post-construction BMPs are included with this project:

- Vegetation disturbed through construction will be seeded after construction to stabilize the soils.
- Rock riprap is proposed on shoreline slopes disturbed by construction activities.

All additional applicable post-construction BMPs for this project shall be included in the Contractor's SWPPP.

10. Vehicle Storage and Service Areas

Currently, areas for construction equipment to be stored and serviced have not been identified. Existing construction conditions and operations will dictate vehicle storage and service areas. Equipment service will occur off-site or in areas designated by the Contractor and the Resident Engineer. The Contractor's equipment will be serviced and fueled at designated protected staging areas. The Contractor shall place drip pans under equipment parked for periods of inactivity and during non-work periods. Debris removal staging areas are to be shown on the Contractor's Water Pollution Control Plans and Details. Vehicle storage and service areas are to be designated by the Contractor, described in the Contractor's SWPPP, and shown on the Contractor's Water Pollution Control Details. All vehicle storage locations shall be selected based upon the following objectives:

- To minimize the potential of vehicle leaks impacting receiving waters
- To contain vehicle wastes within a designated area
- To allow for thorough cleanup from vehicle servicing
- To prevent storm water runoff from passing through the area

11. Areas of Existing Vegetation

A minimal area of soil will be disturbed by the construction activities. All disturbed vegetated areas will be hydroseeded following the completion of construction. Environmentally Sensitive Areas (ESAs) and areas where existing vegetation is to be protected and preserved are indicated in the Water Pollution Control Plans (Appendix A).

Any additional areas of existing vegetation within the areas subsequently added to project limits shall be documented in the Contractor's SWPPP. Preserving Existing Vegetation shall be done in accordance with Caltrans Storm Water BMP CD 23(2).

C. Narrative Descriptions

1. Toxic Materials

Excavation, treatment, storage, transport, and disposal of contaminated material and/or toxic substances shall be performed in accordance with all state, Federal, and local requirements, and the project special provisions.

The following are possible materials that might be used during construction:

- Asphalt
- Concrete and Masonry
- Curing compounds

- Paint products
- Petroleum products (for construction equipment)
- Wash water
- Vehicle fluids (non-petroleum)
- Sanitary/Septic fluids
- Sealing agents

See Waste Management and Disposal (Section X) for the details on the disposal of contaminated soil and sediment.

A. Soil

Soil samples were collected immediately adjacent to the Concrete Trestle Structure at its intercept with Point San Quentin. At two boring locations (one each north and south of the Trestle Structure section), soil samples were collected at 0.5 and 5 feet below the ground surface (bgs). Lead was found in hazardous levels in the soil sample from the boring location north of the Trestle Structure at five feet deep.

Soil samples were also collected from the upland portion of the East Approach Structure (Piers 71 to 77) at varying depths. The samples were tested for potential aquatic disposal. The soil samples failed the bioassay test because lead and Total Recoverable Petroleum Hydrocarbons (TRPH) concentrations were elevated; the soil is therefore unsuitable for aquatic disposal.

Shallow soil samples from the East Approach Structure (from the ground surface to approximately 5 feet deep) were also tested for contamination and were found to contain TRPH and lead at hazardous waste levels (CH2M HILL, 1997). Appendix C shows the location of the borings and analytical results.

An initial site assessment (ISA) performed in 1996 revealed that soils in the vicinity of the Bridge may have been impacted by lead-based paint during sand blasting activities on the Bridge. The results of the ISA were provided to Caltrans in a summary report dated July 23, 1996 (CH2M HILL, 1997).

B. Sediment

Sediment samples were collected from the upper six feet of sediment along every pier of the Bridge. Samples were also taken from 300 feet north and south of the Trestle Structure over the area of potential barge access dredging. Individual pier samples were consolidated into composite samples for testing. Sediments under the Bridge are primarily silt with lesser and approximately equal proportions of sand and clay. Refer to Sediment Sampling and Analysis Plan for sediment analytical results (Clayton, 1996).

C. Groundwater

Groundwater samples were collected from boreholes installed adjacent to Piers 70, 75 and 77. Filtered and unfiltered groundwater samples were analyzed for metals (see Appendix C). The unfiltered grab samples exceeded the allowable limits set by the San Francisco Basin Plan for many contaminants. The filtered grab samples exceeded the Basin Plan limits for Silver at SB-77 and for Zinc at SB-75 (CH2M HILL, 1997).

Refer to non-stormwater section for required actions when groundwater is encountered.

D. Lead-Painted Steel Members

The Richmond-San Rafael Bridge was originally painted in 1956 with two coats of red lead paint. Approximately 7-1/4 million square feet of steel were painted. In 1981, spot painting occurred on the bridge. At this time, the steel was primed with a chlorinated rubber and topped with separate coats of red lead paint and a zinc-rich paint. The paint on the remainder of the bridge was considered to be in fair condition at this time (1981).

Although no paint samples were collected and analyzed from the Richmond-San Rafael Bridge, paint samples from other Bay Area bridges have contained elevated concentrations of zinc, chromium, and lead.

2. Practices to Minimize Contact with Stormwater

Construction stormwater management controls are essentially good housekeeping practices that will be utilized at this site for minimizing the contact between stormwater runoff and pollutants. The Contractor shall make specific commitments in their SWPPP; however, some of the practices anticipated to be used on this project are as follows:

A. Construction Materials

- The Contractor will deliver to the Engineer a list of accurate, up-to-date inventory of materials delivered and stored on the site.
- The storage of hazardous materials onsite or on barges over water shall be minimized. Secondary containment shall be mandatory for the storage of hazardous materials.
- During the rainy season, materials shall be stored in a covered area and in secondary containment such as an earthen dike or an equally appropriate container for non-reactive materials such as detergents, oil, grease, and paints.
- Storage items shall be placed on a pallet and, if possible, in secondary containment.
- Chemicals shall be kept in their original containers and well labeled.
- Materials that have the potential to react with other materials shall be stored separately.
- Avoid transporting materials near drainage paths or open waters.
- If drums must be kept uncovered, they shall be stored at a slight angle to reduce ponding of rainwater on the lids and to reduce corrosion.

Reference Caltrans Storm Water BMPs CD10(2), CD11(2), and CD12(2).

B. Construction Equipment and Vehicles

Maintenance

- All construction equipment shall be maintained so as to prevent oil or other fluid leaks. Drip pans shall be used for any oil or fluid changes that are required for maintenance of equipment.
- Vehicles and equipment shall be cleaned so as not to allow excessive build-up of oil and grease.
- Construction equipment, if feasible, shall be covered with tarps during rain.
- Offsite repair shops shall be used as much as possible.
- Secondary containment, such as a drain pan or drop cloth, shall be used to catch spills or leaks when removing or changing fluids.
- A stockpile of spill cleanup materials shall be readily accessible. This includes marine spill cleanup materials such as booms and absorbant floats.
- Onsite vehicles and equipment shall be regularly inspected for leaks, and repairs will be made immediately.
- Incoming vehicles and equipment (including delivery trucks, barges, and employee and subcontractor vehicles) shall be checked for leaking oil and fluids. Leaking vehicles or equipment shall not be allowed onsite.
- Wastes shall be segregated and recycled. Wastes include greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, and transmission fluids.
- Designate maintenance areas located away from the drainage courses.

Reference Caltrans Storm Water BMPs CD18(2), CD19(2), and CD20(2).

Fueling

- Offsite fueling stations shall be used as much as possible. On-site fueling will be performed in designated areas.
- If fueling must occur onsite, designated areas shall be located away from drainage facilities. Location of such facilities can be found in the Contractor's SWPPP.
- "Topping off" of fuel tanks is not allowed
- Secondary containment, such as a drain pan or drop cloth, will be used when fueling to catch spills/leaks.
- A stockpile of spill cleanup materials will be readily accessible, including sorbent material, drip pans, and booms in the case of a fuel spill on water.
- The Contractor shall avoid mobile fueling of construction equipment around the site; rather transport the equipment to designated fueling areas.
- Use absorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Any temporary pier, wharf or float for the fueling or docking of barges shall be of fire resistive construction and shall be impervious to spills of liquids and oils within the immediate area of a fuel dispenser

Washing

- Offsite washing facilities shall be used whenever possible.
- If washing must occur onsite, designated bermed wash areas shall be used to prevent wash water contact with stormwater, creeks, rivers, and other water bodies. The wash area can be sloped for wash water collection and subsequent infiltration to the ground. This facility shall be shown in the Water Pollution Control Details of the Contractor's SWPPP.
- Minimize water use so as to avoid having to install erosion and sediment controls for the wash area.
- Phosphate-free, biodegradable soaps shall be used.
- Steam cleaning onsite shall not be permitted. Steam cleaning can generate significant pollutant concentrations.
- Educate and train employees and Subcontractors on pollution prevention measures, and on proper fueling and clean-up procedures.

C. Toxic Materials

Through proper material use, waste disposal, and training of employees, the discharge of pollutants can be prevented or reduced. The following are general practices that should be adhered to for handling toxic materials:

- Wastes shall be disposed of in accordance with Federal, State, and local regulations. Wastes may include sandblasting grit mixed with lead, cadmium, or chromium-based paints; asbestos; PCBs (particularly those in older transformers); and those materials and chemicals listed in Table 2.
- Toxic products shall be used as much as possible before disposing of the container.
- The original product label shall not be removed; it contains important safety and disposal information.
- Herbicides and pesticides shall not be overly applied. The Contractor will prepare only the amount needed. Over application is expensive and environmentally harmful.
- Herbicide and pesticide application shall not be allowed just before rains. Surface dressings in several smaller applications, as opposed to one large application, shall be applied so as to allow time for infiltration and to avoid excess runoff.

- Brushes or paint containers shall not be cleaned out to allow runoff into the dirt, street, gutter, storm drain, or stream. Brushes shall be "painted out" as much as possible. Rinse water-based paints to the sanitary sewer. Thinners and solvents shall be filtered and re-used. Excess oil-based paints and sludge shall be disposed of as hazardous waste.
- There shall be designated hazardous waste collection areas onsite.
- Hazardous materials and wastes shall be in covered containers and protected from vandalism, if possible.
- Hazardous materials and waste containers shall be placed in secondary containment.
- Wastes shall not be allowed to be mixed; this can cause chemical reactions, make recycling impossible and complicate disposal.
- Any useful material such as oil or water-based paint shall be recycled.
- Toxic liquid wastes and chemicals shall not be disposed of in dumpsters designated for construction debris.
- Waste shall be collected regularly so as to prevent container overflow.
- Hazardous waste shall be collected, removed, and disposed of only at authorized disposal areas.
- A stockpile of spill cleanup materials shall be readily accessible.
- Minimize hazardous materials stored on-site.
- Water for saw cutting operations shall be contained. It shall not be permitted to fall on public traffic, to flow across shoulders or lanes occupied by public traffic, or to flow off the bridge deck, into gutters or other drainage facilities.
- Debris produced in spot sand blasting of steel truss members with lead-based primer paint shall be disposed of properly.

The Contractor and all subcontractors should provide their "Hazardous Substance Communication Program" and "Material Safety Data Sheets" and incorporate them into an appendix to their SWPPP. The Contractor should detail which appendix contains the MSDS sheets. The Contractor's SWPPP shall also provide details of any additional practices involving the handling or disposal of toxic materials.

TABLE 2
LIST OF CONSTRUCTION SITE POLLUTANTS

Category	Product	Pollutants
Adhesives	Adhesives, glues	Phenolics, formaldehyde
	Resins, epoxy	Phenolics, formaldehyde
	Caulks, sealers, etc.	Asbestos, phenolics, forma.
	Coal tars	Benzene, phenols, naphthalene
Cleaners	Polishes	Metals
	Etching agents	Metals
	Ammonia, lye, soda	Acidity/Alkalinity
	Bleaching agents	Acidity/Alkalinity
	Chromate Salts	Chromium
Plumbing	Solder	Lead, copper, zinc, tin
	Pipe fitting	Copper
	Galvanized Metal	Zinc
	Electric Wiring	Copper, lead
Woods	Sawdust	BOD
	Particle	Formaldehyde
	Treated Woods	Copper, creosote
Asphalt Paving	Asphalt	Sediment
	Sealing Agents	PAHs, Sediment
Masonry	Dusts	Acidity, sediments
Concrete and Grout	Pigments	Metals
	Curing compounds	
	Glazing	Asbestos
	Cleaning	Acidity
Yard Operations	Vehicle Maint.	Oil, grease, coolants
	Gasoline, oils, add.	Benzene, oil, grease & derivative
	Marking paints	Vinyl chloride, metals
	Grading	Erosion, sediments
	Portable toilets	BOD, disinfectants
	Fire hazard	Sodium arsenite, dinitro
	Health & safety	Rodenticides, insecticides
	Wash waters	Herbicides, oil, grease
Landscaping	Planting, maint.	Pesticides, herbicides

TABLE 2
LIST OF CONSTRUCTION SITE POLLUTANTS

	Excavation, tilling	Erosion, sediments
	Solid wastes	BOD, trees & shrub cuttings
	Exposing natural lime	Acidity/alkalinity, metal
	Soil additives	Aluminum sulfate, sulfur
	Revegetation	Fertilizers
Material	Waste storage	Spills, leaks, discharge
Storage	Hazardous waste	Spills, leaks, discharge
	Raw material piles	Dust, sediments, discharge

3. Construction Material Loading, Unloading, and Access Areas

Currently, the areas for material loading and unloading and barge access have not been identified. Material loading and unloading shall be designated by the contractor and approved by the Resident Engineer. The Contractor may utilize a staging area(s) located outside of the construction limits. These areas will be obtained by the Contractor, identified in their SWPPP, and approved by the Resident Engineer. The Contractor shall define and describe the measures, both physical and procedural, to be implemented for minimizing stormwater impacts associated with activities of leading and unloading materials. The Contractor shall:

- Keep an accurate list and inventory of materials delivered and stored on-site, and make an effort to minimize the amount of materials at the site.
- Store materials in a covered area and in a secondary containment such as an earthen dike, horse trough, or elaborate spill blanket with surrounding berm during periods of rain or the rainy season.
- Ensure the materials that have the potential to react with other materials are stored separately.
- Store chemicals in their original containers with original labels.
- Avoid transporting materials near drainage paths or waterways.
- Store uncovered drums at a slight angle to reduce ponding of rainwater on the lids and to reduce corrosion.
- Arrange for regular waste collection.

Material loading, unloading, and access areas will be located throughout the site depending upon current operations and materials being handled. The Contractor shall utilize stabilized areas, as necessary, to prevent potential spills or unnecessary tracking of sediment. The Contractor shall utilize the following BMPs described below for construction material loading, unloading and access areas as outlined in the Caltrans Handbook.

- CD10(2) – Material Delivery and Storage
- CD29A(2) – Stabilized Construction Entrance
- CD29C(2) – Entrance/Outlet Tire Wash

Materials stored on barges will be such that only the minimum amount of material needed to complete the operation will be available; excessive quantities of materials that pose a threat to San Francisco Bay will not be stored on barges.

A temporary wooden work platform will be erected between the eastbound and westbound deckstrestles on the west end of the Concrete Trestle Structure (See Figure 11). Any materials which can contaminate stormwater runoff are to be protected from rain with plastic sheeting or other means to prevent the materials from coming in contact with stormwater runoff. Any temporary pier, wharf or float for construction, the fueling and/or docking of barges shall be of fire-resistive construction and shall be impervious to spills of liquids and oils within the immediate area.

Unpaved access areas shall be stabilized using guidelines for stabilized entrances. The Contractor will utilize this gravel access and will maintain this gravel area throughout the winter season.

Housekeeping practices relating to loading and unloading shall be in accordance with Caltrans Storm Water BMPs CD10(2), CD13(2), CD14(2), CD15(2), CD29A(2) and CD29B(2).

4. Preconstruction Control Practices

There are no established pre-construction control practices to be implemented prior to the issuance of this CSWPPP.

5. Equipment Storage, Cleaning, and Maintenance Areas

Currently, areas for storage, cleaning, and maintenance of construction equipment have not been identified. The Contractor shall utilize runoff controls to ensure minimal contact of stormwater runoff with construction equipment. The Contractor will describe all control practices associated with storage cleaning and maintenance with in this section of their SWPPP. These practices shall include those listed in Section V.Source Description, Part C Narrative Descriptions, Number 2 Practices to Minimize Contact with Stormwater above.

All construction equipment, storage, cleaning, and maintenance will be located in areas designated by the Contractor. Any concentrated storm water runoff upstream of the vehicle storage and service areas shall be directed around the area by using berms of other devices and methods approved by the Resident Engineer. Equipment exposed to concentrated flows shall be raised on pallets or other similar devices.

Any onsite fuel storage tanks shall be located over a retention area that shall be designated to hold the total tank volume. The retention area shall be covered with an impervious material and shall be installed such to ensure that any fuel spills will be contained in this retention area.

Cleaning and maintenance areas for the Contractor's equipment shall be allowed only in locations as directed by the Resident Engineer. These areas shall also be located away from significant drainage courses. Cleaning and maintenance waste areas shall be cleaned and/or removed in accordance with applicable laws. The Contractor will be encouraged to perform all non-emergency maintenance work on vehicles and equipment offsite.

Cleaning, storage, and maintenance areas shall be in accordance with Caltrans Storm Water BMPs CD18, CD19, and CD20.

6. Methods of Storage and Disposal of Construction Materials

All construction materials shall be stored and disposed of in a manner that prevents or reduces the discharge of pollutants to stormwater by minimizing the storage of hazardous materials onsite,

storing materials in a designated area, installing secondary containment, and conducting regular inspections. Disposal of construction materials shall be performed offsite in accordance with local, State, and Federal regulations. All waste construction materials, which could contaminate stormwater runoff, shall be removed offsite and properly disposed of. The Contractor shall consider these general practices in formulating the methods of onsite storage and disposal of construction materials:

- Store stockpiled materials, wastes, containers, and dumpsters under a temporary roof or secured plastic sheeting.
- Berm around covered storage areas to prevent contact with stormwater runoff.
- Properly store containers of paint, chemicals, solvents, and other hazardous materials in garages or sheds with double containment during rainy periods.
- Inform trash-hauling contractors that only watertight dumpsters will be accepted for on-site use. Place dumpsters under roofs or cover them with plastic sheeting at the end of each work day and during rainy weather. If plastic is used, protect dumpster contents from stormwater by securing the plastic around the outside of the dumpster.
- Inspect dumpsters regularly for leaks, and repair or replace any dumpster that is not water-tight.
- Never clean out a dumpster by hosing it down on the construction site. Return dumpsters to the trash-hauling contractor for cleaning.
- Keep inventories down.
- Hazardous wastes shall be stored on-site for no longer than 30 days.
- Designate areas of the construction site for material delivery and storage.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.
- When possible, store materials on paved areas.
- Inspect storage areas regularly.
- When designating a storage area, include measures to prevent or contain spills.
- Conduct routine weekly inspections and check for external corrosion of material containers.
- Excavation, transportation, placement and handling of soils containing lead or other potentially hazardous substances shall result in no visible dust.
- A water truck shall be available at all times while performing earthwork, excavation or grubbing activities in work areas containing lead or other substances at hazardous levels.
- Place materials away from drainage paths and waterways.
- Comply with the fire codes on storage of reactive, ignitable, and flammable liquids.
- Keep an accurate, up-to-date inventory of materials delivered and stored on-site.
- Minimize the on-site storage of hazardous materials.
- Handle hazardous materials as infrequently as possible.

- Store uncovered drums at a slight angle to reduce ponding of rainwater on the lids.
- Keep chemicals in their original containers.
- Properly remove materials and any contaminated soils if significant residual materials remain on the ground after construction is complete.
- Select designated waste collection areas on-site.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.
- Separate wastes, and recycle or dispose of properly.

Refer to the Standard Special Provisions for additional information on disposing of wastes produced by the sandblasting of steel members with lead-based paint. The Contractor's SWPPP shall include specific procedures and practices for the handling and disposing of lead-containing materials and/or wastes. The Contractor shall minimize and manage cuttings and waste discharge resulting from concrete cutting and coring.

Storage and disposal of construction materials in the Contractor's construction yard shall be in accordance with the following BMPs.

- CD 10(2) – Material Delivery and Storage
- CD 13(2) – Solid Waste Management
- CD 14(2) – Hazardous Waste Management
- CD 15(2) – Contaminated Soil Management
- CD 16(2) – Concrete Waste Management
- CD 17(2) – Sanitary/Septic Waste Management

The Contractor shall review the BMPs and applicable contract provisions in order to define appropriate practices for their activities within their SWPPP.

7. The Nature of Fill Material and Existing Data Describing the Soil

Fill consisting of roadbase gravel was observed in borings at the intercept of the Concrete Trestle Structure and Point San Quentin. Sediment under the Trestle Structure is Bay Mud. After construction, no backfilling of the barge access channel will occur.

Fill consisting of roadbase silty gravel and sand was observed in borings at the intercept of the East Approach Section and the Toll Plaza. Sediment and soil borings from the base of East Approach piers (Pier numbers 61 to 78) consist of soft clayey silt or silty sand (Merritt sand).

Sediment consisting of Bay Mud was observed in borings from the base of the Main Span and West Approach piers west of Pier 36 and east of Pier 43. Between Piers 36 and 43 soft clayey silt and silty sand (Merritt sand) were observed in the borings. After sediment and existing rock and riprap around

the base of the piers have been dredged, the piers will be retrofitted, and new crushed gravel and rock will be used as backfill (see Figure 12).

Groundwater was encountered at the base of Piers 70, 75, and 77 at approximately 16 feet below ground surface (bgs). For boring locations (SB70, SB75, and SB77), see Appendix C.

The requirements for the handling of materials containing lead is provided in the Vehicle Emissions Lead Special Provisions and Special Provisions for the Handling of Lead-Contaminated Materials.

D. Pollutants Likely to be Present in Stormwater Discharges

Pollutants in stormwater discharges are often caused by construction activities such as the operation of equipment, stockpiling of materials, and grading and paving activities. The Contractor will be required to submit a list of materials to be used and/or stored onsite that may become pollutants in stormwater runoff, and will provide a list of additional controls for these materials.

Significant quantities of pollutants other than sediment are not expected to be present in stormwater discharges. However, Table 2 lists the anticipated pollutants which may be discharged in very small quantities. Good housekeeping practices and Best Management Practices (BMPs) will be used to reduce the discharges of the listed pollutants. The applicable BMPs, as outlined in the Caltrans Handbook, are indicated below:

1. Vehicle fluids, including oil, grease, petroleum, and coolants:
   - CD 18(2) – Vehicle and Equipment Cleaning
   - CD 19(2) – Vehicle and Equipment Fueling
   - CD 20(2) – Vehicle and Equipment Maintenance:
2. Cementatious materials associated with PCC concrete operations:
   - CD 16(2) – Concrete Waste Management
3. Curing Compounds:
   - CD 10(2) – Material Delivery and Storage
   - CD 11(2) – Material Use
   - CD 12(2) – Spill Prevention and Control
4. Paints and Solvents:
   - CD 10(2) – Material Delivery and Storage
   - CD 11(2) – Material Use
   - CD 12(2) – Spill Prevention and Control
5. Metals and plated products:
   - CD 10(2) – Material Delivery and Storage
   - CD 11(2) – Material Use

E. Construction Site Estimates

The Richmond-San Rafael Bridge Retrofit construction site is approximately 25 acres in size, including existing pavement areas. The design storm for this site is a 25-year return period storm with a 10-minute duration. The 1995 Caltrans Rainfall Intensity-Duration-Frequency PC Program yields 3.28 inches of rainfall per hour for this design storm. A runoff coefficient of 0.5 is used for unpaved areas, while 0.95 is used for paved areas. The cumulative runoff coefficient before and after construction is 0.95 since the area of pervious soil west of the Concrete Trestle Structure abutment and east of the East Approach Structure is negligible. There is no pervious soil in the right of way of

the Main Span and West Approach. All stormwater pollution prevention BMPs will be based on this total rainfall.

Before construction, the percentage of the area of the construction site that is impervious is estimated at 99 percent. After construction, 99 percent of the area will also be considered impervious. See Appendix G for computation of the runoff coefficients.

VI. EROSION AND SEDIMENT CONTROL

A. Soil Stabilization Practices

Soil stabilization of freshly graded slopes shall be employed to preserve existing vegetation where feasible immediately following the completion of grading activities. The intent of these practices is to prevent erosion of disturbed areas in the construction site and to capture sediment runoff.

Refer to the Standard Special Provisions for the contract specifications regarding control and implementation of the SWPPP by the Contractor. Soil stabilization shall be accomplished in the construction area in accordance with Caltrans BMPs CD 22(2), CD 23(2), CD 25(2), CD 26B(2), and CD 29A(2). Locations and construction details for these BMPs shall be shown in the Water Pollution Control Plans.

B. Control Practices to Prevent a Net Increase of Sediment Load in Storm Water Discharge

Sediment control practices will be implemented both on land and underwater during this portion of the Richmond- San Rafael Bridge Retrofit project. All land-based control practices are shown in the Water Pollution Control Plans (Appendix A). All land-based sediment control practices for any staging areas obtained adjacent to the current project limits shall be included in the Contractor's SWPPP. Some control practices depend upon the method of construction chosen by the Contractor, and will be documented in the Contractor's SWPPP.

Land-based sediment control practices may include:

1. Straw and Tack Treatment

All 2:1 or flatter slopes on the site will be seeded and then stabilized using straw and tack treatment. Specifically, this control measure will be used to stabilize the face of 2:1 or flatter fill slope. Straw and Tack treatments shall be in accordance with Caltrans Storm Water BMP CD25(2).

2. Plastic Covering

All slopes steeper than 2:1 of temporary nature will be covered with plastic sheeting or with temporary blanket if the Contractor chooses. These soil stabilization practices shall be done in accordance with Caltrans Storm Water BMP CD26B(2).

3. Silt Fences

The Contractor may choose to use silt fences as a means of controlling sediment movement in stormwater runoff. Silt fences may be used along the perimeter of the site, below the toe of a cleared slope, along the shoreline, around temporary spoil areas, across swales with catchments less than 1

acre in size, and below other small cleared areas as needed. Silt fencing shall conform to details shown in Appendix B and in accordance with Caltrans Storm Water BMP CD36(2).

4. Storm Drain Inlet Protection

During construction, protection measures may be implemented at each storm drain inlet added to the project area to prevent sediment from entering the storm drain system. The three storm drain inlets in the median on the San Quentin Approach west of the Trestle Structure shall be covered with filter fabric prior to barrier removal and prior to construction. The inlets will then be covered with traffic-rated impervious material while the filter material remains in place. Stormwater falling on the eastbound roadway near the protected drainage inlets will flow over the impervious material and continue across the westbound roadway and onto the shoulder. All filter and impervious materials will remain in place during construction and will be removed following construction completion.

Storm Drain Inlet Protection shall conform to details shown in Appendix B and in accordance with Caltrans Storm Water BMP CD40(2)

5. Velocity Control Straw Bale Dikes

Temporary barriers consisting of straw bales may be installed across the slope/flowline of ditches to reduce flow velocities and allow sediments to settle. Straw bale dikes shall conform to details shown in Appendix B and in accordance with Caltrans Storm Water BMP CD37(2).

6. Diversion Berms

Temporary diversion berms may be constructed to divert sediment-laden runoff from graded areas into controlled inlet/outlet locations. Diversion Berms shall be in accordance with Caltrans Storm Water BMPs CD31(2) and CD38(2).

7. Sediment Basins

Sediment basins may be used to settle sediment-laden runoff from graded areas. Sediment Basins shall be in accordance with Caltrans Storm Water BMP CD42(2).

8. Flared End Protections

Two rows of sandbags may be placed around all flared end sections of the storm drain system to minimize sediments from entering into the pipe system. Flared end protections shall be in accordance with Caltrans Storm Water BMP CD33B(2).

9. Creek or Channel Protection Measures

Appropriate measures will be taken to limit sediment runoff into the adjacent San Francisco Bay. These measures may include the BMPs referenced above and BMP CD 34(2). The Water Pollution Control Plan (Appendix A) currently proposes straw bales, silt fences and drainage inlet protection for managing runoff to San Francisco Bay.

C. Practices to Control the Tracking of Sediment onto Public Roads

All control practices shall be shown on the Contractor's Water Pollution Control Plans and shall be included in the contract specifications. These control practices include:

1. Stabilized Construction Entrances

The Contractor will install stabilized construction entrances, as needed and based on the construction operations, to prevent the tracking of material onto public roads and as directed by the Registered Engineer. Gravel construction entrances will be used at the site. The construction entrances consist of stabilized pads of crushed stone to eliminate tracking and flowing of sediment onto public streets. The entrances will be properly graded to prevent runoff from leaving the construction site. Construction entrances shall conform to details shown in the Water Pollution Control Detail in Appendix B and Caltrans Storm Water BMP CD 29A(2).

2. Watering for Dust Control

The Contractor shall implement dust abatement methods to reduce the amount of sediment tracked out of the construction site and reduce dust on the construction site. Dust control methods will consist of, but not be limited to, limiting on-site-traffic to 15 mph and watering traveled ways and exposed earthwork.

In addition, the following BMPs will be implemented as needed to control airborne dust:

- Access points where unpaved traffic surfaces adjoin paved roads will be stabilized.
- Haul trucks transporting materials that contribute to dust will be covered.
- Exposed soils will be watered or chemically stabilized.
- Unpaved haul roads, parking, and staging areas will be stabilized.
- Sediments deposited on paved roads will be cleaned-up quickly.

Heavily traveled dirt roads and grading areas will be watered down daily by a water truck for dust suppression. The Contractor should minimize the impact of dust by anticipating the direction of prevailing winds and scheduling construction activities to minimize exposed areas. No runoff will be created by this procedure. See Non-Stormwater Management sections of this document for further information on dust control. Also, refer to Lead Special Provisions.

3. Sweeping

If dirt or other materials are deposited on existing or new roadway surfaces from any construction operations, the materials will be swept from the roadway surface and disposed of properly. Debris shall not be swept into storm drain systems, but shall be disposed of properly. Water shall not be used to remove deposits on the roadway.

D. Stockpile Management

Clean (uncontaminated) soil resulting from excavation and/or grading operations onsite may be stockpiled pending reuse. All stockpiles will be temporary in nature, and will be located on level ground more than 50 feet from surface water bodies. Stockpiles will contain no more than 200 cubic yards of material in any single stockpile. Stockpiles will be covered to minimize contact with rainfall runoff; covers will be secured with staples, rock bags or other similar weight device. A berm or swale shall be constructed around the stockpile to route surface runoff from the pile. All stockpiles shall conform to the details show in Appendix B and in accordance with Caltrans Storm Water BMP CD45(2).

All soils stockpiled for dewatering will be placed on visqueen or other similar impermeable material. An impermeable swale or berm will be created around the stockpile to capture drainage from the stockpile. Stockpile dewater will be captured, tested, and disposed of in accordance with Federal,

State, and local regulations. Stockpile dewatering shall be in accordance with Caltrans Storm Water BMP CD46(2).

Any contaminated or potentially contaminated material stockpiled onsite shall be in accordance with Section X.D (Contaminated and Hazardous Waste Stockpile Management) of this document.

E. Wind Erosion Control Practices

All soil which has been disturbed will be watered during and after construction operations in accordance with local dust control ordinances to prevent dust from becoming airborne. In general, dust control will be applied in order to prevent dust from becoming visible to the human eye. Care will be taken to water down additional areas of exposed soil as necessary during windy periods. Only the minimum amount of water will be used; no runoff will result from this practice. See the Non-Stormwater Management section of this document for further information on dust control.

The contractor will cover stockpiles of soil and steep slopes of temporary nature with plastic or fabric as directed by the Resident Engineer.

F. Water-Based Sediment Control Practices

There are no BMPs available for control of sediments underwater. The Contractor will be responsible for minimizing, whenever possible, sediment disturbance during underwater construction activities. The Regional Water Quality Control Board, San Francisco Bay (Region 2) Water Quality Control Plan (Basin Plan) dictates that suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the beneficial uses of the Bay. In addition, waters shall be free of changes in turbidity that cause nuisance or adversely affect the Bay's beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 Nephelometric Turbidity Units (NTU).

Water-based sediment control practices may include:

1. Clamshell and Hydraulic Dredging

When possible, sediment shall be dredged using a clamshell dredge. Hydraulic dredging may also be used. However, suction dredging shall not occur in water 20 feet or shallower as directed by the National Marine Fisheries Service (NMFS). Hydraulic dredging may also be used. All dredging issues will be managed as part of the Dredge Material Management Office (DMMO) authorization.

2. Minimization of Sediment Disturbance

The Contractor shall avoid site leveling by dragging the dredging bucket over uneven sediment.

3. Control of Barge Runoff

Spoils from dredge operations will be disposed of on barges. After the dredge spoils are placed on the barges, the barge operator will move to the pre-approved disposal location to discharge both the sediment and water. No overflow of water or dredged material from barges during dredging or transportation to a dumping site will be allowed. Barges shall not be loaded above the load limitation.

4. Hydraulic Jet Cleaning

The Contractor shall minimize sediment disturbance during hydraulic jet cleaning of the base of the piers.

5. Pile Cleaning

All piles are steel pipe that are advanced through the mud to bedrock, and, in most cases, driven into the bedrock. Mud and cuttings within the casing will be flushed out of the casing and onto barges using water or air, and tremie concrete is placed into the steel casing.

Similar to dredge spoil management, wastes from pile installation and clean-out will be stored on barges prior to disposal. There is the potential that the drill cuttings from the pile installation may contain drilling muds (although the majority of the mud slurry will be contained as part of the drilling system).

Sediment disturbance during pile driving is expected to be insignificant.

6. Dewatering of Cofferdams

The key water quality issue that may result during cofferdam dewatering is the suspension of fine sediments during dewatering, thus increasing turbidity. Contractors shall desilt water within the cofferdam prior to or during discharge. In addition, the Contractor shall take all reasonable precautions to avoid disturbance of sediment at the discharge location. Caltrans will perform visual inspections during dewatering activities to ensure that the Contractor is complying with Best Management Practices.

For additional information on dewatering of cofferdams, refer to Section VI.F of this document.

VII. NON-STORMWATER MANAGEMENT

Various discharges are anticipated at the site; however, the controls and impacts associated with each discharge may or may not be entirely known. All discharges must be identified in the Contractor's SWPPP. The Contractor will be responsible for identifying all discharges in their SWPPP and complying with all restrictions set forth in the Non-Storm Water section of the Special Provisions. In addition, the Contractor will provide the following information on each discharge:

1) Quantity/Quality of discharge

2) Location of discharge

3) Frequency of discharge

4) Management practices (procedures) associated with the discharge

5) Control measures (treatment) associated with the discharge

6) Inspection and monitoring of discharge

At the time of this submittal, the following discharges were known to be associated with the construction. Also, some supplemental information may be provided in accordance with the six information categories described above. Ultimately, the Contractor will elaborate in the SWPPP upon each of these discharges and those not identified in this conceptual document. The Contractor is

referred to the Non-Storm Water specifications in the Contract Special Provisions. Non-stormwater discharges will be kept to a minimum or eliminated at all times.

1. Dredging and Pile Driving Spoils

Preliminary information is not currently available.

2. Dewatering of Excavations, Piles and Cofferdam Sites

Dewatering operations for excavations, piles, and cofferdam sites shall prevent or reduce the discharge of pollutants to stormwater and adjacent surface water bodies by using sediment control (see Section VI. Erosion and Sediment Control) and by testing the extracted water for pollution. The Contractor shall graphically describe the dewatering apparatus and process within the SWPPP.

Suspended solids shall be removed to the extent that visible, floating products are not apparent within the discharge, and the discharge shall be of a visible purity such that turbidity and apparent color beyond the present natural background levels are not apparent within the receiving water body. The point of effluent discharge shall not cause bottom sediments, aquatic vegetation, or surface soils to become dislodged or disturbed.

All dewatering discharge shall have a turbidity no greater than 10% beyond that measured for background turbidity. For example, if the background turbidity is 80 NTU, then the discharge turbidity should be no greater than 88 NTU.

The following BMPs that apply to dewatering activities include:

- Use sediment controls to remove sediment from water generated by dewatering. Sediment Traps and Sediment Basins shall be in accordance with Caltrans Storm Water BMPs CD41(2) and CD42(2).
- Use filtration to remove sediment from a sediment trap, basin, or other storage location. Filtration can be achieved with:
    1. Sump pit and a perforated or slit standpipe with holes and wrapped in filter fabric. The standpipe is surrounded by stones, which filter the water as it collects in the pit before being pumped out. Wrapping the standpipe in filter fabric may require an increased suction inlet area to avoid clogging and unacceptable pump operation; and/or
    2. Floating Suction hose to allow cleaner surface water to be pumped out; and/or
    3. A series of settlement tanks.

For excavation dewater contaminated with organic or inorganic constituents, the Contractor will be required to meet preset water quality objectives prior to Bay disposal, in addition to the requirements for desilting and minimization of sediment disturbance at the discharge location. The reference points proposed for the water quality objectives are:

- For organic constituents (most likely petroleum products), the State General Waste Discharge Requirements for the Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds.
- For inorganic constituents (most likely metals), the Regional Monitoring Program produced by the San Francisco Estuary Institute.

For all situations where pretreatment of dewater will be required, grab samples of the discharged (effluent) water from each excavation shall be tested to ensure compliance. Grab groundwater samples shall be collected once prior to initiating discharges to the Bay, 24 hours later, and weekly while the excavation is being dewatered. Grab samples shall be analyzed by a State-certified laboratory for the constituents expected to be removed. Because of the short term of the treatment and discharges, sampling of the influent is not recommended. Organic constituents in groundwater will be treated using Granular Activated Carbon (GAC) prior to disposal. Details regarding the treatment and disposal would be included in the Non-Stormwater Management section of the Contractor's SWPPP. The Contractor shall graphically describe the dewatering apparatus and process within their SWPPP. Conceptual details for this system are included in Appendix B.

The Contractor shall conduct daily inspections of dewatering equipment when in use to ensure that all components are functional and routinely maintained to prevent leakage prior to removal of suspended solids. In addition, the Contractor shall visually monitor both the discharge and received water body during dewatering, noting the color, size of affected area, presence of suspended material, presence of water fowl or aquatic wildlife, wind direction and velocity, tidal condition, atmospheric condition, time, date, and a turbidity measurement in NTUs. Monitoring shall be conducted a minimum of one hour prior to discharge, during the first ten minutes of initiating a discharge, every four hours during discharge, and upon cessation of discharge. Monitoring results will be recorded on the form included in Appendix E of this document, and shall be supplemented by photographs. Reports will be submitted to the Resident Engineer weekly or at any other time requested by the Resident Engineer.

The Contractor shall provide a sealed excavation and prevent the flow of groundwater, surface runoff, and tidal flow from entering any excavation. The maximum seepage rate of the sealed excavation, after initial dewatering is complete, shall not exceed five gallons per square yard of the excavation area per eight hour period. Refer to Non-Stormwater specification requirements found in Caltrans Special Provisions.

3. Painting and Paint Removal

The replacement, addition, and removal of structural steel requires spot paint removal via sandblasting, grinding with hand-held tools, hydroblasting and/or solvents. Residues and wastes generated during paint removal operations are required to be intercepted, so that the material does not impact San Francisco Bay. Although the methods for capturing the waste material are to be determined by the Contractor, the Contractor will need to provide details describing the interception system to the Resident Engineer for approval. The interception system deemed suitable for use will be described within the Contractor's SWPPP.

For locations where a traveler system can be utilized for paint removal and waste capture, a capture and filtering system for sandblasting/hydroblasting discharges will be used to minimize discharges to San Francisco Bay. The Contractor will employ similar measures to those currently used by bridge maintenance crews and construction crews. At all other locations, the Contractor will identify in the SWPPP the measures that will be implemented to control discharges.

4. Concrete Wash-Out Water

A significant volume of concrete will be required on this project. Wash water and material generated as a result of cleaning concrete residue from chutes, hand tools, and other equipment will need to be conveyed into a collection device. The collection device, otherwise known as a washout, will need to be constructed such that water, residue, and other wastes do not become present within drainage systems or San Francisco Bay. The Contractor will not be able to begin any operations requiring

concrete unless an appropriate washout is available for use. An appropriate washout will be able to accommodate the volume of the expected solid and liquid waste material. Washouts are required to be routinely maintained and inspected to insure their integrity and functional use.

For additional information on concrete wash-out water, refer to Waste Management and Disposal Section X.B of this document.

5. Concrete Release Agents

Solutions used to release concrete from the forms, along with additives and curing compounds shall be handled, used, and stored such that the solutions are not present on project surfaces, drainage paths, or the Bay. The Contractor shall include information of anticipated concrete release agents in his SWPPP.

6. Concrete Saw Cutting and Drilling

The Contractor shall prepare a containment and disposal plan for debris and runoff produced by saw cutting and drilling. This plan will be included in the Contractor's SWPPP, and will show the steps to be taken to capture wastes. These steps may include:

- Hydroblasting
- Berming of the work platform
- Filtration of runoff from sandblasting or saw cutting

7. Vehicle and Equipment Washing

Vehicle and equipment washing will not be allowed within the Caltrans right-of-way. The Contractor is encouraged to use commercial facilities for vehicle and equipment washing.

8. Vehicle and Equipment Fueling

Non-stormwater discharges due to fueling of construction vehicles on or near surface water will be kept to a minimum. The following practices shall be used:

- A stockpile of spill cleanup materials will be readily accessible, including sorbent material, drip pans, and sluice gates or booms in the case of a fuel spill on water.
- The Contractor shall avoid mobile fueling of construction equipment around the site; rather transport the equipment to designated fueling areas.
- Any temporary pier, wharf or float for the fueling or docking of barges shall be of fire-resistive construction and shall be impervious to spills of liquids and oils within the immediate area of a fuel dispenser.
- Spill contingency plans shall be prepared and submitted indicating the Contractor's ability and preparedness to fully deploy the control measures required to protect and contain petroleum or other oil-based products and other toxic or hazardous material in the event of spills in the San Francisco Bay or other defined water bodies.

9. Dust Control Water

Care will be taken when watering for dust control as to not use too much water, thereby causing runoff and erosion. The amount of water used for dust control should not produce runoff.

10. Grouting

The Contractor shall prevent grout, as well as residue from the cleaning of all loose or foreign material from the concrete areas and steel surfaces to be in contact with soil, from entering the storm drainage system and the Bay. For additional information on grouting, refer to Section X.F of this document.

11. Tremied Concrete

For additional information on tremie concrete, refer to Waste Management and Disposal Section X.F of this document.

12. Illicit Discharges

The construction site shall be inspected at the beginning of the project for any evidence of illicit discharges. Thereafter, regular inspections for the same purpose shall be carried out and any such evidence shall be reported immediately to the Resident Engineer. Illicit discharges could be any of the following: motor oil and paint, unlabeled materials in containers, continuous run-on from adjacent properties, and abnormal water flow during the dry weather season. Although the Contractor is not responsible for the investigation and cleanup of illicit discharges not generated by the Contractor, the Resident Engineer may direct the Contractor to clean up non-hazardous discharged material on the construction site.

Illicit discharges by the Contractor's operation will not be allowed by Caltrans. Illegal dumping within the site will be immediately reported to the California Highway Patrol or other appropriate authority. Also, the Resident Engineer and NPDES coordinator (510-286-5664) will be notified of illegal dumping.

13. Accidental Discharges

Accidental discharges will be cleaned up in accordance with Section VIII, "Accidental Discharges" of this document.

VIII. ACCIDENTIAL DISCHARGES

Accidental discharges can be the greatest threat to the pollution of the stormwater discharges. A continuing program shall be established to educate employees and subcontractors on the prevention of and prompt action on accidental discharges on site. Appendix H contains a copy-ready non-stormwater spill log to document any non-stormwater discharges. The non-stormwater spill log shall include the date of the spill, estimate of the quantity of the spill and the name of the person who logged the spill. Handling of all emergency spill controls and measures shall be performed as follows:

A. Minor Spills

Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill. For minor spill clean up, an adequate supply of absorbent cleaning materials shall be available on-site.

The following practices will be used for minor spills:

1. Contain the Spill
   - Stop the source of the spill.
   - Berm around the spill if necessary
   - Use absorbent materials to prevent spreading of spill area.
2. Recover Spilled Materials
   - Sweep up spilled dry materials immediately. Do not wash or busy spilled materials.
   - Recover liquid spills on dirt areas by digging up and properly disposing of contaminated soil.
   - Recover liquid spills on paved or impermeable surfaces using "dry" cleanup methods (absorbent materials, cat litter, and/or rags).
3. Clean the Contaminated Area and/or Dispose of Contaminated Materials
   - Used cleanup rags will be sent to a certified industrial laundry or dry cleaner, or disposed of properly.
   - Contaminated materials shall be disposed of in a proper waste container.
   - Toxic liquid wastes and chemicals will not be disposed of in dumpsters designated for construction materials.
   - Small non-hazardous spill residues and materials will be placed inside a sealed container and disposed of properly.
   - Labels will be examined for proper waste disposal instructions.
   - The spill area will be inspected periodically until it can be satisfactorily known that the spill material has been completely removed from the site.

The practice commonly followed for minor spills is to 1) contain the spill, 2) recover spilled materials, and 3) clean the contaminated area and/or dispose of contaminated materials. Spill prevention and control shall be in accordance with Caltrans Storm Water BMP CD12(2).

B. Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers, foreman, etc. This response may require the cessation of all other activities.

1. Notify the Resident Engineer immediately
2. Contain the spill
   - Stop the source of the spill
   - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike.
   - If the spill occurs on a paved or impermeable surface, encircle the spill with absorbent material to prevent the spill from spreading widely.
   - If the spill occurs during rain, cover the spill if possible.
3. Recover Spilled Materials
   - Sweep up spilled dry materials immediately. Do not wash or busy spilled materials.
   - Recover liquid spills on dirt areas by digging up and properly disposing of contaminated soil.
   - Recover liquid spills on paved or impermeable surfaces using "dry" cleanup methods (absorbent materials, cat litter, and/or rags).

4. Clean the Contaminated Area and/or Dispose of Contaminated Materials
   - Used cleanup rags will be sent to a certified industrial laundry or dry cleaner, or disposed of properly.
   - Contaminated materials shall be disposed of in a proper waste container.
   - Toxic liquid wastes and chemicals will not be disposed of in dumpsters designated for construction materials.
   - Small non-hazardous spill residues and materials will be placed inside a sealed container and disposed of properly.
   - Labels will be examined for proper waste disposal instructions.
   - The spill area will be inspected periodically until it can be satisfactorily known that the spill

C. Significant/Hazardous Spills

Significant or hazardous spills cannot be controlled by personnel in the immediate vicinity. Only qualified staff shall cleanup hazardous spillage. The following steps shall be taken:

1. The Contractor shall notify the Resident Engineer immediately and follow up with a written report.
2. The Resident Engineer and/or Contractor will notify the local emergency response by dialing 911. In addition to 911, the Resident Engineer will notify the proper City and County officials. It is the Resident Engineer's responsibility to have all emergency phone numbers at the construction site.
3. The Resident Engineer will also notify the Governor's Office of Emergency Services Warning Center, (805) 852-7550.
4. For spills of federal reportable quantities, the Resident Engineer will notify the National Response Center, (800) 424-8802.
5. Notification should first be made by telephone and followed up with a written report.
6. The services of a Spills Contractor or a HazMat team will be contracted immediately. Construction personnel should not attempt to clean up the spill until the appropriate and qualified staff has arrived at the job site.
7. Other agencies which may need to be consulted include the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances Control, California Division of Oil and Gas, Cal/OSHA, etc.

IX. POST-CONSTRUCTION STORMWATER MANAGEMENT

After construction is completed, the potential for contamination of stormwater runoff should be minimal. The following permanent features of the project shall preserve San Francisco Bay water quality:

- Rock riprap is proposed at shoreline slopes disturbed by construction activities.

- All disturbed vegetated areas will be hydroseeded following the completion of construction.

Upon completion and acceptance of all construction work, Caltrans will be responsible for maintaining post-construction control measures.

X. WASTE MANAGEMENT AND DISPOSAL

All wastes, including waste oil, drill cuttings, saw cut concrete debris and slurry, drilling muds, sandblasting debris, steel members, and other equipment wastes, should be disposed of at the site or removed from the site for disposal in compliance with Federal, State, and local regulations. Dredged sediments will be disposed of in accordance with the Dredged Materials Management Office (DMMO) requirements. Proper disposal of construction-related wastes and equipment wastes is the responsibility of the Contractor. Disposal of materials containing lead shall be in accordance with all rules and regulations of Federal, State, and local oversight agencies. For additional information on handling and disposing of soil and other wastes containing lead, refer to Section X.D of this document, as well as the Special Provisions for Sandblasting of Steel Members with Lead-based Paint, the Vehicle Emissions Lead Special Provisions, and Special Provision for the Handling of Lead-Contaminated Materials.

A. General

The purpose of this section is to outline practices for the proper disposal of wastes. The discharge of pollutants to stormwater runoff or adjacent surface water bodies from solid or construction waste will be reduced or prevented by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and contractors. The following steps will be taken to keep a clean site and reduce pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that only water-tight dumpsters will be accepted for onsite use. Inspect dumpsters for leaks and repair dumpster that is not water-tight.
- Place dumpsters under roofs or cover them with plastic sheeting at the end of each workday and during rainy weather. If plastic is used, dumpster contents shall be protected from stormwater by securing the plastic around the outside of the dumpster.
- Never clean out a dumpster by hosing it down on the construction site. Return dumpsters to the trash-hauling contractor for cleaning.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Locate sanitary facilities in a convenient location at lease least 50 feet from drainage conveyance systems.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- If discharging to the sanitary sewer, contact the local wastewater treatment plant for their requirements.

- Sanitary /septic facilities should be maintained in good working order by a licensed hauler before facilities overflow.
- Steel members such as rivets and truss members shall, upon removal, be contained and prevented from entering the Bay or drainage conveyances. All material shall be collected for disposal or recycling at a properly credentialed facility.

The Contractor's SWPPP shall include the locations of all waste collection sites, including dumpsters and sanitary. The Contractor's SWPPP will also provide details on the Waste Management Practices for steel members.

B. Painting and Paint Removal

The replacement, addition, and removal of structural steel requires spot paint removal via sandblasting, grinding with hand-held tools, hydroblasting and/or solvents. Residues and wastes generated during paint removal operations are required to be intercepted, so that the material does not impact San Francisco Bay. Although the methods for capturing the waste material are to be determined by the Contractor, the Contractor will need to provide details describing the interception system to the Resident Engineer for approval. The interception system deemed suitable for use will be described within the Contractor's SWPPP.

For locations where a traveler system can be utilized for paint removal and waste capture, a capture and filtering system for sandblasting/hydroblasting discharges will be used to minimize discharges to San Francisco Bay. The Contractor will employ similar measures to those currently used by bridge maintenance crews and construction crews. At all other locations, the Contractor will identify in the SWPPP the measures that will be implemented to control discharges. All wastes generated and captured during painting and paint removal will be disposed of at a permitted off site facility per federal, state, and local regulations.

C. Concrete Wash-Out

Concrete wash-out areas should be available at various locations throughout the construction site. When a concrete truck or mixer completes a pour, the truck or mixer shall wash-out at a designated concrete washout site or offsite. The concrete wash-out site shall not allow any discharge into Bay waters or storm drain inlets.

If concrete washout is necessary on barges or within 50 feet of open water, secondary containment facilities will also be used to prevent wash-out from entering the Bay. The wash-out locations and method of containment shall be detailed by the Contractor in the SWPPP and shown on the Contractor's Water Pollution Control (WPC) Plan. Wash-out locations must be approved by the Resident Engineer. Details on concrete washout construction may be found in Appendix B. The following criteria will guide the selection of washout areas and practices:

- Washout areas will be located at least 50 feet from storm drains, open ditches, or water bodies, unless properly protected when located on barges and bridge decks.
- A temporary pit or berm area large enough to contain liquid and solid wastes may be constructed. No runoff from this area shall be allowed.
- The concrete washout area will be of sufficient size to allow the settlement of suspended materials.

- The concrete washout area shall be covered during storm events. The cover will prevent precipitation from entering the washout. The cover shall be secured so that it can not be removed as a result of wind or thefts.
- The concrete washout area shall be exposed to direct sunlight and will be of sufficient surface area to be conductive to the evaporation of water.
- The washout area shall be maintained regularly. Solid material shall be collected weekly and disposed with other solid concrete debris.

D. Concrete Debris/Asphalt Debris

Concrete debris or asphalt debris should be handled in accordance with the following:

- Concrete and asphalt debris from concrete structures and broken pavement should be recycled, not mixed with other debris (see Appendix D).
- Do not allow excess concrete to be dumped onsite, except in designated areas. Concrete wash-out areas may be considered for the disposal of excess concrete.
- Shovel or vacuum concrete debris and saw cut slurry and remove from the site. Cover or barricade storm drains during saw cutting to contain slurry.
- Apply concrete, asphalt, and seal coat during dry weather. Keep contaminants from fresh concrete and asphalt out of the storm drains, creeks, and other water bodies by scheduling paving jobs during periods of dry weather, when new pavement will have time to cure before stormwater flows across it.
- The Contractor will avoid creating runoff when washing concrete to remove fine particles and expose aggregate, by draining water into a bermed or level area.
- Always park pavers over drip pans or absorbent materials, since they tend to drip continuously.

E. Contaminated and Hazardous Waste Stockpile Management

Known or potentially contaminated or hazardous soil resulting from excavation and/or grading operations onsite may be stockpiled pending testing and disposal and/or reuse. All stockpiles will be temporary in nature, contain no more than 200 cubic yards of material per stockpile, and will be located on level ground more than 50 feet from surface water bodies. Stockpiles will be placed on visqueen or other similar impermeable material into which a berm or swale has been constructed. All stockpiles will be covered to prevent contact with rainfall, with the impermeable cover weighted using gravel bags or other similar weights to prevent movement. The impermeable swale or berm will be used to capture drainage from the stockpile and any rainfall runoff that may have come in contact with the stockpile. All water captured within the stockpile berm will be contained, tested, and disposed of in accordance with Federal, State, and local regulations. Stockpiles of known or potential contaminated or hazardous materials shall conform to details shown in Appendix B and in accordance with Caltrans Storm Water BMP CD46(2).

Any stockpiles of uncontaminated materials onsite shall be in accordance with Section VI.D (Stockpile Management) of this document.

E. Litter Control

Receptacles for the collection of general debris and litter shall be available at the site. Dumpster locations shall be identified on the site map of the Contractor's SWPPP. The Contractor shall conduct a weekly pickup of litter around the construction site. The collection of litter should be especially important during windy weather or before the onset of rains. The Contractor may conduct this collection of litter in a manner known as a "Police Call," in which all activity ceases and all members of the construction site act as a team to line-up in a shoulder-to-shoulder fashion and walk the construction site picking up litter and debris. These pick-ups will be done more frequently if needed due to windy conditions. The weekly pick-ups will be scheduled to coincide with the waste collection days. Remember that erosion control devices tend to collect litter; this litter should be removed promptly.

F. Drilling and Use of Tremie Concrete and Grout

Drilling muds, cements, and grouts may be used during the drilling and construction of new piers under the replacement Trestle Structure and in the strengthening of the Main Span and East Approach foundations. The Contractor shall include sections in the SWPPP to address waste management from these specific construction practices.

XI. MAINTENANCE, INSPECTION, AND REPAIR

While many of the storm pollution control measures discussed in this CSWPPP relate to practices, some are actually structural controls which, to function properly, require ongoing inspection, maintenance, and repair.

The Contractor shall assign the authority for inspection, maintenance, and repair through the project manager. The project manager will conduct onsite monitoring during periods of non-inclement weather based on frequencies as described in Table 3 above. Table 3 applies only to staging and access areas in the project limits and outlines procedures to ensure that all graded surfaces and stormwater management measures identified within this CSWPPP are maintained in good and effective conditions and are properly repaired or restored. The Contractor shall provide a table similar to Table 3 as part of his SWPPP, and shall describe all controls at the site, all remote staging locations, and the corresponding inspection frequencies. The Resident Engineer shall assign personnel to conduct overall monitoring of the site and activities. Methods for documenting inspections and monitoring by both Contractor and state personnel are to be described within the Contractor's SWPPP in Section XVI, Record Keeping and Reports, Part B, Monitoring Records. Inspection forms to be used are included in Appendix E. If potential problems are observed, the interval will be reduced or continuous monitoring will be performed.

The Contractor should have a fleet of equipment on or near the site with which to perform any emergency repairs. The Contractor should also have a sufficient quantity of the materials necessary to respond to emergency cases.

A contingency plan in the event of unexpected rain or control measure failure shall be provided by the Contractor. Extra materials such as temporary silt fence, straw bales, and gravel-filled sand bags are to be kept onsite.

The following is the list of people to contact who are available to act or to solve potential problems in the event of an emergency:

	Name	Phone
Caltrans Resident		
Caltrans Maintenance:		
Local Authority:		
Contractor:		

This above list shall be included in the Contractor's SWPPP.

TABLE 3
MAINTENANCE, INSPECTION, AND REPAIR OF CONTROLS

Controls	Inspection Frequency	Maintenance/Repair Measures
Stabilization of Graded Areas	Monthly, before and after storms, and 2-hour interval during working hours coinciding with storms.	Regrade and reapply seed, straw, and tack. Cover with plastic if necessary.
Silt Fences	Weekly. Before and after storms.	Replace torn sections, remove accumulated debris, re-key bottom of fences.
Straw Bales	Weekly. Before and after storms.	Replace straw bales as necessary.
Diversion Berms	Monthly. Before and after storms.	Replace straw bales as necessary. Re-shape earth berms and compact.
Silt Basins	Monthly. Before and after storms, and 2-hour interval during working hours coinciding with storms.	Remove sediment as necessary, pump and discharge accumulated water. Remove impediments to flow.
Inlet Protections	Weekly. Before and after storms.	Remove accumulated debris and repair as required.
Covered Areas	Monthly. Before and after storms.	Cover up any exposed areas. Secure with gravel filled bags, if necessary
Flared End Protections	Monthly. Before and after storms.	Remove silts in pipes. Reinstall sandbags as necessary.
Construction Entrances	Weekly. Before and after storms	Remove excessive soil accumulation. Replace gravel as necessary. Sweep surrounding areas.
Concrete Wash-Outs	Weekly. Before and after storms. Before and after pours.	Remove accumulated debris. Replace straw bales and replace lining as necessary.
Waste Containers	Weekly. Before storms	Pick up refuse. Remove unacceptable materials. Segregate waste. Repair leaks. Replace as necessary.
Vehicle Storage Areas	Weekly. Before storms.	Remove leaked material. Replace drip pans. Restock spill materials.

XII. TRAINING

Caltrans personnel who are assigned the responsibility of implementing the SWPPP are required to attend an annual training event for this purpose. The resident engineer will provide the names of field personnel and their training background to be included in Contractor's SWPPP.

Prior to project startup, it is recommended that the Contractor's employees and the subcontractors participate in a stormwater training workshop. The workshop should cover basic stormwater information, the requirements of the NPDES permit and the SWPPP. Specifically, the workshop should focus on implementation, inspection, and maintenance of stormwater controls. Also, provide information regarding the background and qualifications of those providing training or designated to conduct stormwater inspections.

XIII. LIST OF CONTRACTORS/SUBCONTRACTORS

The Contractor shall provide in the SWPPP a listing of all subcontractors, including general descriptions of the subcontractor's responsibilities, contact name, address, phone number, pager or field number, and the date the notification letter was sent for each subcontractor employed on the project. A sample notification letter and copy-ready Subcontractor Notification Log is included in Appendix I. It is important that the Contractor stipulate the subcontractor's responsibility under the SWPPP. The implementation of this SWPPP will be the responsibility of the Contractor. The Contractor shall notify in writing all subcontractors of the SWPPP requirements.

XIV. OTHER PLANS

Many agencies are in the process of issuing permits for this project that impose limitations on construction activities. All documents from these agencies pertaining to this project shall be included as appendices to the Contractor's SWPPP. In addition, descriptions of the conditions relevant to water quality imposed by these agencies on construction shall be included in this section by the Contractor. The following is a list of agencies that will issue permits and authorizations:

Permits

- San Francisco Bay Conservation and Development Commission (BCDC), #1-97
- US Army Corps of Engineers (ACOE), #22065N

Authorizations

- California Department of Transportation
- Regional Water Quality Control Board (RWQCB)
- Federal Highway Administration (FHWA)
- US Coast Guard
- US Fish and Wildlife Service (FWS)

The Contractor is responsible for all work, records, reports, and costs involved in handling the water in accordance with the above permits.

XV. MONTIORING PROGRAM AND REPORTS

A monitoring program and reporting system is a record system process to find out how well the BMPs are working and to evaluate whether additional BMPs are required. It is the responsibility of the Contractor to implement the SWPPP. Caltrans' Resident Engineer will ensure compliance with permit requirements and contract specifications, however, the Contractor shall be required to conduct inspections and monitoring in accordance with the following:

A. General

The monitoring program and reports will determine how well the BMP's are working and will evaluate whether additional BMP's are required.

B. Changes

Conceptual Water Pollution Control Plans have been prepared for the temporary construction platform, Contractor's staging areas adjacent to project limits, and for work to be conducted on barges and/or other platforms (Appendix A). The Contractor's SWPPP shall include any additional Water Pollution Control Plans for controlling potential discharges from specific construction activities not included in the Conceptual Water Pollution Control Details in Appendix B. In addition, the Contractor will amend the Water Pollution Control Plans contained herein, providing detailed descriptions and drawings of water pollution control measures to be implemented on the temporary construction platforms and staging areas. The Contractor and the Resident Engineer are responsible for updating the Water Pollution Control Plans to reflect the actual field conditions and reflecting provisions for subsequent years of construction.

All substantive changes, especially those which affect the quantity or quality of discharges, shall be incorporated into the CSWPPP and logged on the amendments sheet provided at the front of this CSWPPP.

The following are SWPPP amendment general instructions and should be discussed in the amendment description as appropriate.

1. Location of proposed change.

   Ex. Relocate concrete washout away from drainage intake at Miller Ave. It is now located on the northeast section of the construction site, see revised map.

2. Describe existing conditions.

   Ex. Water from concrete washout was entering DI.

3. Who requested the amendment?

   Ex. Requested by the Regional Water Board, Caltrans, or the Contractor.

4. What was the original proposal? What BMP was proposed? Briefly describe type and placement of all materials.

5. What is the new proposal? What BMP is now proposed? What work will be done? Briefly describe the type and placement of materials. How is the new proposal an improvement over the original proposal?
6. Make specific references to the SWPPP, as appropriate.
7. Include plans for design changes.
8. A signed copy of the appropriate certification page shall be attached to the amendment.

C. Implementation

The Contractor is responsible for implementation of the SWPPP. Caltrans' Resident Engineer shall ensure compliance with permit requirements and contract specifications.

D. Site Inspection

Inspections shall be conducted before and after storm events and every 24 hours during extended storm events for compliance with the NPDES permit, the Contractor's SWPPP, and this document. In addition, site inspections shall be conducted routinely once a week throughout the project duration. The results of the inspection and assessment must be written, and shall include the date of inspection, the name of the person who performed the inspection, and observations. A tracking or follow-up procedure must follow the inspection to identify and correct deficiencies in the implemented BMPs. See Table 3 of Section XI for inspection commitments, and Section XVI, Part B for record keeping.

Inspections relating to the discharge of water from piles and cofferdams are to take place in accordance with the NPDES Contract Special Provisions. The Contractor shall conduct a daily inspection of the dewatering equipment when in use to ensure that all components are functional and routinely maintained to prevent leakage prior to removal of suspended solids. Any component of the apparatus that is found to be damaged or to affect the performance of the apparatus shall be either immediately repaired or replaced.

The Contractor shall visually monitor both the discharge and the receiving water body. The observations made during monitoring shall include the color, size of affected area, presence of suspended material, presence of water fowl or aquatic wildlife, wind direction and velocity, tidal condition, atmospheric condition, time, and date. In addition, the Contractor shall supplement the observations with photographs. The Contractor shall conduct monitoring, at a minimum, one hour prior to discharge, during the first ten minutes of initiating discharge, every four hours during discharge, and upon cessation of discharge. The observations shall be recorded daily in a tabular format using the inspection forms provided in Appendix E of this document. The monitoring report, including photographs, shall be provided weekly to the Resident Engineer, or as directed by the Resident Engineer.

Observations which indicate that the discharge is of a visible purity such that turbidity and apparent color are beyond the present natural background levels shall be immediately reported to the Resident Engineer. The discharge activity shall immediately cease, so that corrective actions are undertaken to repair, modify, or replace the equipment. The commencement of discharge activities shall be allowed upon approval by the Resident Engineer.

E. Compliance Certification

Based on the site inspections described in Section D above, a certificate of compliance shall be filed annually. The Contractor shall certify to the Resident Engineer that the construction operation (both the Contractor's activity and construction activity) is in compliance with the requirements of NPDES Permit No. CAS029998, this CSWPPP, and the Contractor's SWPPP before July 1 of each year.

XVI. RECORD KEEPING AND REPORTS

A. Noncompliance Reporting

Advance notice of noncompliance shall be given to the Regional Water Quality Control Board, the NPDES Construction Coordinator, and the local stormwater management agency of any planned changes of activities which may result in noncompliance with the NPDES permit. This notice must include the type(s) of noncompliance expected, actions identified to bring the project into compliance, and a time schedule to achieve compliance.

For unanticipated incidences of noncompliance, the Contractor shall report any noncompliance at the time of discovery to the Resident Engineer. A report shall be submitted containing a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; corrective actions, including the expected time of ending the noncompliance; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

B. Monitoring Records

All monitoring of this SWPPP shall be recorded in the project construction files at the Resident Engineer's office in accordance with the following criteria:

20.00 SWPPP

- 20.1 SWPPP and Amendments
- 20.2 Diaries (Field Reports)
- 20.3 Letters to the Contractor
- 20.4 Letters from the Contractor
- 20.5 Correspondence with the RWQCB
- 20.6 Certification and Other Correspondences

C. Contract Plans

All contract documents (plans, specifications, and special provisions) are available for review at the Office of the Resident Engineer.

D. During Construction (Amendments)

During the course of construction, unanticipated changes may occur (such as schedule changes, phasing changes, and staging area modifications). These changes must be made known and the SWPPP revised accordingly (see Section XV. Monitoring Program and Reports, B. Changes). Revisions to the SWPPP are also required when the properly installed BMP system is ineffective.

Significant changes shall be recorded on the Amendment Summary Sheet found at the beginning of the SWPPP, and narration, details, and other modifications shall be attached to the SWPPP.

E. Other Agencies

The project is located within the limits of Contra Costa and Marin Counties. However, the project is wholly funded by the State of California and is being conducted solely under the oversight of Caltrans.

The following is a list of agencies involved in the funding, design or permitting of this project:

- California Department of Transportation
- San Francisco Bay Conservation and Development Commission (BCDC)
- US Army Corps of Engineers (ACOE)
- Regional Water Quality Control Board (RWQCB)
- Federal Highway Administration (FHWA)
- US Coast Guard
- US Fish and Wildlife Service (FWS)

Copies of Contractors' SWPPPs shall be submitted to the Regional Water Quality Control Board by Caltrans Environmental Engineering Branch. Implementation of an SWPPP includes site inspection, certification, BMPs monitoring, record keeping and SWPPP review and modifications.

The Contractor shall uphold the water quality standards dictated by the above agencies.

F. Yearly Certificate of Compliance

The Resident Engineer will maintain the yearly certificate of compliance at the construction site. Also, the yearly certificate of compliance shall be submitted to the Regional Water Quality Control Board via Caltrans Toll Bridge Program.

G. Final Disposition

After the construction is completed, all records shall be transferred to the Caltrans District 04 Office located in Oakland, California. The custodian for this record will be with the Division of Construction.

All records shall be maintained for three years after the completion of the construction activity by the Division of Construction.