Dist-County-Route: 04-SCl-85; 101

Post Mile Limits: 0.0/24.1; 23.1/28.6 & 47.9/52.0

Project Type: Express Lanes Project

Project ID (or EA): (04-4A7900)

Program Identification: HB-5

Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): San Francisco Bay (2)

Is the Project required to consider Treatment BMPs? Yes ☒ No ☐

If yes, can Treatment BMPs be incorporated into the project? Yes ☒ No ☐

If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date:_____

Total Disturbed Soil Area: 75.4 acres Risk Level: 2

Estimated: Construction Start Date: 01/31/2014 Construction Completion Date: 01/07/2015

Notification of Construction (NOC) Date to be submitted: 12/31/2013

Erosivity Waiver	Yes ☐	Date:_____	No ☒
Notification of ADL reuse (if Yes, provide date)	Yes ☐	Date:_____	No ☒
Separate Dewatering Permit (if yes, permit number)	Yes ☐	Permit # TBD	No ☐

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Analette Ochoa 7/10/13

[Analette Ochoa], P.E., Registered Project Engineer Date

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

[Fariba Zohoury], Project Manager *Date*

[Bob Braga], Designated Maintenance Representative *Date*

[David Yam], Designated Landscape Architect Representative *Date*

[Stamp Required for PS&E only)

[Norman Gonsalves], District/Regional Design SW Coordinator or Designee *Date*

STORM WATER DATA INFORMATION

1. Project Description

The State Route (SR) 85 Express Lane Project ("project" hereafter), proposes to convert the existing High-Occupancy Vehicle (HOV) lanes on State Route (SR) 85 to High-Occupancy Toll (HOT) lanes (hereafter known as express lanes). The express lanes would allow HOVs to continue to use the lanes without cost and eligible single-occupant vehicles (SOVs) to pay a toll. The express lanes would be implemented on northbound and southbound SR 85 from U.S. Highway 101 (US 101) in southern San Jose to US 101 in Mountain View in Santa Clara County (see Figure 1). The express lanes would continue for 3.3 miles of a 5.5-mile segment on US 101 in southern San Jose. Express lane advance notification signage would also be added in a 4.1-mile segment of US 101 in Mountain View, for a total project length of 33.7 miles. The project extends from post mile (PM) 0.0 to PM 24.1 along SR 85, PM 23.1 to PM 28.6 along US 101 (south of SR 85), and PM 47.9 to PM 52.0 along US 101 (north of SR 85). SR 85 will be widened to accommodate a second express lane from PM 5.9 (Station 940+57) to PM 17.8 (Station 1576+35). Typical sections for the project are included in the attachments of this report.

The purpose of the project is to manage traffic congestion in the most congested HOV segments of the freeway between SR 87 and Interstate 280 (I-280) and maintain consistency with provisions defined in Assembly Bill 2032 (2004) and Assembly Bill 574 (2007) to implement express lanes in an HOV lane system in Santa Clara County.

The total disturbed soil area (DSA) is 75.4 acres within Santa Clara County. The DSA includes the proposed total construction area, including staging areas. Areas of overlay were not included in the calculations. This includes any soil that will be exposed through the removal of pavement. The net additional impervious area (AIA) is 40.1 acres. The AIA was calculated by subtracting the total existing impervious area intended to be removed from the total new impervious area. The reworked impervious area is 27.4 acres. The reworked impervious area is from PM 5.9 (Station 940+57) to PM 17.8 (Station 1576+35).

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

The project is located within the jurisdictions of Caltrans District 4 and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).

Hydrologic Units

The project is located within the Santa Clara hydrologic unit and is divided into two hydrologic sub areas (HSAs): Guadalupe River (HSA 205.40) and Palo Alto (HSA 205.50). The project area between SR 85 PM 0.0 and PM 10.0, plus US 101 adjacent to the south end of SR 85, lies within the Guadalupe River HSA, and the project area between SR 85 PM 10.824 and PM 24.059, plus US 101 adjacent to the north end of the SR 85, lies within the Palo Alto hydrologic area.

Receiving Water Bodies

There are a total of 21 waterway crossings, which comprise 18 different creeks: Matadero Creek, Adobe Creek, Permanente Creek, Permanente Diversion, Stevens Creek, Regnart Creek, Calabazas Creek, Rodeo Creek, Saratoga Creek, Vasona Creek, San Tomas Aquino Creek, Smith Creek, Smith Creek (East Channel), Los Gatos Creek, Ross Creek, Guadalupe River, Canoas Creek and Coyote Creek. These water bodies discharge into the San Francisco Bay and eventually to the Pacific Ocean.

Table 1 lists the direct receiving water bodies for the project and the approximate station and post mile location where they cross the project.

Clean Water Act 303(d) List

The 2010 Integrated Report (Clean Water Act Section 303[d] List / 305[b] Report) lists Matadero Creek, Permanente Creek, Stevens Creek, Calabazas Creek, Saratoga Creek, Los Gatos Creek, Guadalupe River, Coyote Creek and San Francisco Bay South as impaired water bodies. Table 2 lists the impaired water bodies, pollutants, sources and proposed or approved U.S. Environmental Protection Agency (EPA) total maximum daily load (TMDL) dates.

The Guadalupe River TMDL for mercury was approved by the U.S. EPA on June 1, 2010. The San Francisco Bay TMDL for mercury was approved by the U.S. EPA on February 12, 2008, and for PCBs on March 29, 2010. The TMDL for diazinon and pesticide related toxicity in urban creeks within the SFBRWQCB jurisdiction was approved by the U.S. EPA on May 16, 2007.

Beneficial Uses

Beneficial uses obtained from the SFBRWQCB Basin Plan for the water bodies within the project limits are listed in Table 3.

Table 1. Drainage Facilities at Major Crossings

Waterway	Alignment	Station at Crossing	Post Mile at Crossing	Drainage Facility
Matadero Creek	US 101	1947+30	51.37	81 ft long by 133 ft wide single span concrete bridge
Adobe Creek	US 101	1909+80	50.66	65 ft long by 133 ft wide single span concrete bridge
Permanente Creek	US 101	1832+30	-	12 ft x 12 ft reinforced concrete box culvert
Stevens Creek	US 101	1771+50	48.04	50 ft long by 201 ft wide dual span concrete bridge
	SR 85	1850+67	R(1)22.95	122 ft long by 151 ft wide triple span concrete bridge
	SR 85	1743+50	R20.96	35 ft long by 125 ft wide single span concrete bridge
	SR 85	1695+73	R20.02	121 ft long by 163 feet wide triple span concrete bridge
Permanente Diversion	SR 85	1731+00	-	10 ft x 10 ft reinforced concrete box culvert
Regnart Creek	SR 85	1570+00	16.65	12 ft x 7 ft reinforced concrete box culvert
Calabazas Creek	SR 85	1459+50	R15.40	156 ft long dual span concrete bridges
Rodeo Creek	SR 85	1431+50	15.06	11 ft x 7 ft reinforced concrete box culvert
Saratoga Creek	SR 85	1370+67	R13.91	100 ft long single span concrete bridge
Vasona Creek	SR 85	1310+50	12.72	Double 12 ft x 12 ft reinforced concrete box culvert
San Tomas Aquino Creek	SR 85	1305+50	R12.68	105 ft long single span concrete bridges
Smith Creek	SR 85	1263+00	11.82	60” reinforced concrete pipe culvert
Smith Creek East Channel	SR 85	1236+92	11.34	Unknown culvert size
Los Gatos Creek	SR 85	1210+25	R10.80	178 ft long dual span concrete bridges
Ross Creek	SR 85	1061+54	8.15	Double 10 ft x 12 ft reinforced concrete box culvert
Guadalupe River	SR 85	935+15	5.59	1,620 ft long 10-span concrete bridges
Canoas Creek	SR 85	855+29	4.28	124 ft long single span concrete bridges
Coyote Creek	US 101	615+50	R26.47, R26.60	475 ft long triple span concrete bridges 474 ft long triple span concrete bridges 474 ft long triple span concrete bridges 773 ft long four span concrete bridges

Note:
(1). “R” in post mile refers to realigned routes.

Table 2. Receiving Water Bodies on 303(d) List

Stream Name	303(d) Listed Pollutant	Potential Source	TMDL Completion Date
Matadero Creek	Diazinon	Urban Runoff/Storm Sewers	2007
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
Permanente Creek	Diazinon	Urban Runoff/Storm Sewers	2007
	Selenium, Total	Source Unknown	2021
	Toxicity	Source Unknown	2021
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
Stevens Creek	Diazinon	Urban Runoff/Storm Sewers	2007
	Temperature, water	Channelization, Habitat Modification, Removal of Riparian Vegetation	2021
	Toxicity	Source Unknown	2019
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
Calabazas Creek	Diazinon	Urban Runoff/Storm Sewers	2007
Saratoga Creek	Diazinon	Urban Runoff/Storm Sewers	2007
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
Los Gatos Creek	Diazinon	Urban Runoff/Storm Sewers	2007
Guadalupe River	Diazinon	Urban Runoff/Storm Sewers	2007
	Mercury	Mine Tailings	2008
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
Coyote Creek	Diazinon	Source Unknown	2007
	Trash	Illegal dumping, Urban Runoff/Storm Sewers	2021
San Francisco Bay South	Chlordane	Nonpoint Source	2013
	DDT (Dichlorodiphenyltrichloroethane)	Nonpoint Source	2013
	Dieldrin	Nonpoint Source	2013
	Dioxin compounds (including 2,3,7,8-TCDD)	Atmospheric Deposition	2019
	Furan Compounds	Atmospheric Deposition	2019
	Invasive Species	Ballast Water	2019
	Mercury	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Nonpoint Source, Resource Extraction	2008
	PCBs (Polychlorinated biphenyls)	Unknown Nonpoint Source	2008
	PCBs (Polychlorinated biphenyls) (dioxin-like)	Unknown Nonpoint Source	2008
	Selenium	Domestic Use of Ground	2019

Table 3. Beneficial Uses for Receiving Water Bodies

Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
Matadero Creek									E			E	E	E	E	E	E	E	
Adobe Creek									E						E	E	E	E	
Permanente Creek				E					E				E	E	E	E	E	E	
Stevens Creek			E	E					E			E	E	E	E	E	E	E	
Permanente Creek				E					E				E	E	E	E	E	E	
Calabazas Creek	E			E					E						E	E	E	E	
Saratoga Creek	E		E	E					E						E	E	E	E	
San Tomas Aquino									E				E		E	E	E	E	
Smith Creek		E	E						E					E	E	E	E	E	
Los Gatos Creek		E	E	E					E			P	E	P	E	E	E	P	
Ross Creek				E											E	E	E	E	
Guadalupe River				E					E			E	E	E	E	E	E	E	
Canoas Creek															E	E	E	E	
Coyote Creek				E			E		E			E	E	E	E	E	E	E	

Notes:

AGR—Agricultural Supply
COLD—Cold Freshwater Habitat
COMM—Commercial and Sport Fishing
EST—Estuarine Habitat
FRSH—Freshwater Replenishment
GWR—Ground water Recharge
IND—Industrial Service Supply
MAR—Marine Habitat
MIGR—Migration of Aquatic Organisms
MUN—Municipal and Domestic Supply
NAV—Navigation
PROC—Industrial Process Supply
RARE—Rare, Threatened, or Endangered Species
REC-1—Water Contact Recreation
REC-2—Non-contact Water Recreation
SHELL—Shellfish Harvesting
SPWN—Spawning, Reproduction, and/or Early Development
WARM—Warm Freshwater Habitat
WILD—Wildlife Habitat
E-Existing Beneficial Uses
P-Potential Beneficial Uses

CWA Section 401 Water Quality Certification

The project proposes to widen the SR 85 bridges over Saratoga Creek and San Tomas Aquino Creek. The widening would close the gap between the northbound and southbound bridges. Construction would be conducted from the bridge decks and creek banks, in the riparian zone but above the ordinary high water mark. Construction activities would be avoided in the channel. Bridge widening is not proposed over the other water bodies. Because work in the creeks would be avoided during the construction of the project, a CWA 401 Water Quality Certification would not be required from the SFBRWQCB. The SFBRWQCB joint Application for 401 Water Quality Certification and/or Report of Waste Discharge would be submitted because the project is subject to waste discharge requirements under the Porter-Cologne Water Quality Control Act.

Local Agency Requirements/Concerns

The creeks crossing the SR 85 Express Lanes Project alignment are within the jurisdiction of the Santa Clara Valley Water District (SCVWD), a local government agency that provides water resource management within the project limits. The project is in Santa Clara County, which is subject to a Regionwide Municipal Regional Permit (MRP) for discharging stormwater to San Francisco Bay and tributary creeks. The agencies in Santa Clara County have formed a countywide program known as the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), which has its own National Pollutant Discharge Elimination System (NPDES) permit requirements for local projects outside of Caltrans' right-of-way (R/W). The project is covered under the Santa Clara County Phase I Municipal Separate Storm Sewer System (MS4) under the MRP.

Climate

The climate in this area is characterized as a Mediterranean semi-arid climate. The climate is temperate year-round, with warm and dry weather lasting from late spring through early fall, mild winters, mild summers, small daily and seasonal temperature ranges and high relative humidity. Based on statistical data from the Weather Channel for the cities that the SR 85 corridor crosses, extreme temperatures range from an average low of 41 degrees Fahrenheit (^{o}F) in December and January to an average high of 84^{o}F in July and August. Average monthly precipitation varies from less than 0.1 inch to 3 inches in the months of July and January, respectively. Annual precipitation ranges from less than 16 inches in the valley to more than 28 inches in the upland areas.

Topography

The SR 85 Express Lanes Project is located in the Santa Clara Valley, which encompasses 1,300 square miles at the southern end of the San Francisco Bay. The valley is bordered on the west by the Santa Cruz Mountains and on the east by the Diablo Range. The two ranges converge near the community of Coyote, which is located near the southern end of the project alignment.

Throughout the 27 miles of project alignment, existing slopes are generally 2:1 (H:V), and in special cases 1.5:1 (H:V). In the southernmost project segment, along US 101 between Metcalf Road and SR 85, the northbound roadway is generally positioned in well-vegetated cuts, while the southbound roadway is located in both fills and well-vegetated cuts. A concrete barrier wall is located in the US 101 median; the ground surface on the west side of the median typically is well-vegetated, whereas the east side is typically paved. Typically there is a differential height of several feet of the ground surface along this median wall.

Along SR 85, between US 101 and Almaden Expressway, the roadway surface is close to original grade. Only a few retaining walls are present and are located mostly at the interchanges. Along SR 85, between Almaden Expressway and I-280, the roadway is located in deep cuts retained by concrete retaining walls. Vegetated sloped soil toes are present at the base of the retaining walls. Along SR 85, from I-280 to US 101, the roadway is positioned on embankment fill, with numerous sound walls near the hinge points. Where present, cut faces vary considerably in height, and slopes are well-vegetated.

The northernmost project segment, along US 101 between SR 85 and Oregon Expressway, is level because the area is located in relatively flat topography. Consequently, cuts and fills are small.

Table 4 lists the identified floodplains within the project limits. Zone AE represents areas with a 1 percent annual chance of flooding (100-year flood), where base flood elevations have been determined through detailed methods of analysis. Zone AO represents a 1 percent or greater chance of shallow flooding each year, with an average depth ranging from 1 foot to 3 feet. Zone A represents areas with a 1 percent annual chance of flooding, where the floodplain has been analyzed by approximate methods and base flood elevations have not been determined.

Table 4. Floodplain Information

Route	Begin Post Mile	End Post Mile	Creek(s)	Flood Hazard Zone
US 101	52.18	49.61	Matadero Creek, Adobe Creek,	AE
US 101	49.52	49.42	Permanente Creek	AO
US 101	48.05	48.03	Stevens Creek	A
SR 85	23.15	23.13	Stevens Creek	A
SR 85	21.14	21.10	Stevens Creek	A
SR 85	20.87	20.86	Permanente Diversion	A
SR 85	20.22	20.18	Stevens Creek	A
SR 85	--	--	Regnart Creek	None
SR 85	15.80	15.70	Calabazas Creek	AE
SR 85	15.20	15.20	Rodeo Creek	A
SR 85	14.06	14.03	Saratoga Creek	A
SR 85	12.92	12.90	Vasona Creek	A
SR 85	12.84	12.80	San Tomas Aquino Creek	A
SR 85	--	--	Smith Creek	None
SR 85	11.02	10.99	Los Gatos Creek	AE
SR 85	8.20	8.17	Ross Creek	A
SR 85	5.87	5.64	Guadalupe River	A
SR 85	4.32	4.26	Canoas Creek	A
US 101	27.24	27.83	Coyote Creek	AO
US 101	26.12	25.82	Coyote Creek	AE
US 101	25.50	25.21	Coyote Creek	AE
US 101	24.73	24.55	Coyote Creek	AE
US 101	23.16	22.92	Coyote Creek	AE

Soil Characteristics

General information about the soils in the project area indicates that the soils are rich in alluvial deposits, originating from the erosion of the Diablo Range and the Santa Cruz Mountains. The alluvial and sedimentary soil deposits consist of alternating layers of loam, clay, gravel, sand and mixtures of these elements.

The Natural Resources Conservation Service (NRCS) has classified 20 soil associations for Santa Clara County alone (Silva, undated), and each soil association is composed of up to five or six different individual soils. The soils were grouped based on physiographic land divisions, a parameter that takes into account both the topography and the origin of landforms. The five major types of landforms found in the basin include alluvial fans, basin land, low terrace land, high terrace land, and uplands (Weir and Storie 1947). Native soils within the study area are alluvial and fluvial deposits consisting predominantly of soft to very stiff lean clay overlying interlayers and discontinuous lenses of medium dense to very dense, silty and clayey sand and gravel, and firm to very stiff, lean clay and sandy clay. The soils are classified as Xerorthents-Urban land-Botella and are composed of poorly drained clays and urban fill soils with poor permeability (URS 2011). The soil information showing hydrologic soil groups and percentage composition is included in the attachments of this report.

Hazardous Waste Material

According to the Initial Site Assessment (ISA) Report prepared for the project (URS, 2011), five potential hazardous materials sites have been identified within the study area but outside the project area: 1) Teledyne Semiconductors, 2) Intel Corporation, 3) Conoco Phillips (Union 76 gas station), 4) Caltrans Maintenance Yard (at the intersection of Bernal Road and SR 85), and 5) PG&E Substation (at the intersection of Metcalf Road and US 101). Further detailed studies to determine the levels of contamination and efforts to mitigate or avoid these hazardous waste materials will be specified during the design phase. Figures of potential hazardous materials sites are included in the attachments of this report.

If hazardous waste levels are above allowable concentrations, then coordination with the Department Stormwater Coordinator and the Hazardous Waste Branch will take place to ensure that runoff during construction and placement of infiltration type treatment Best Management Practices (BMPs) will not further impact downstream water bodies or the groundwater.

Aerially Deposited Lead (ADL)

The ISA Report (URS, 2011) determined that the soils within the project area are likely contaminated with aerially deposited lead (ADL). Investigation of soils for ADL is recommended throughout most of the project corridor in unpaved areas where utility trenching or other soil disturbance is planned. ADL investigation is not recommended for the segment of SR 85 between I-280 and US-101 in South San Jose except at interchanges.

Groundwater Information

URS conducted a groundwater study within the SR 85 corridor based on historical boring data, as-built information, and current topography and geologic information. Per the Preliminary Geotechnical Report, groundwater was encountered from 23 feet to 78 feet below ground surface at elevations of 119 feet to 196 feet. Table 5 summarizes groundwater information from the Preliminary Geotechnical Report, including ground level and groundwater elevation information, where available. Maps identifying the approximate locations of historical boreholes and detailed groundwater discussion at each borehole are included in the Preliminary Geotechnical Report.

Slope Failures

Because the proposed express lanes are planned in the median and will not create any new slopes, slope failures are not anticipated for this project.

Erosion Potential

The erosion potential is low for the valley floor soils (Schaaf and Wheeler, 2009). Soils in the foothills have a greater potential for erosion. Most of project is highly urbanized and classified as having Xerorthents – well disturbed and highly variable soils.

Table 5. Groundwater Information

Bridge/Structure	Groundwater Condition
Coyote Creek	Encountered between Elevation 196 ft and Elevation 186 ft during 1988 explorations, is controlled primarily by water levels in the creek. Historic records indicate groundwater levels have been as high as a few ft below ground surface.
Bernal Road UC	Encountered at depths of 50 to 75 ft (Elevation 157 ft to Elevation 143 ft). Historic groundwater levels are as shallow as about 15 to 20 ft below ground surface.
Perimeter Road Undercrossing	Encountered at depths of 75 to 72 ft (Elevation 119 ft to Elevation 123 ft). Historic groundwater levels are as shallow as 10 to 15 ft below ground surface.
Almaden Expressway Interchange	Not encountered within the maximum 100 ft depth of exploration during summer of 1988. Groundwater levels are expected to be primarily controlled by water levels in the adjacent Guadalupe River. Historic records indicate groundwater levels have been as high as 15 ft below ground surface.
Ross Creek	Encountered at depths of between 18 and 24 ft (Eleva. 192-185 ft) in 1988 exploration. Water levels are expected to follow water levels in the Ross Creek, which was dry in 1988 explorations. Groundwater levels have been as shallow as present ground surface after periods of heavy rainfall.
Russo Drive POC & Dent Avenue POC	Not encountered within the maximum depth of exploration (64 to 84 ft) during summer of 1988. Historic records indicate groundwater levels as high as 20 ft below ground surface.
Camden Avenue Interchange	Encountered at depths of 18 to 43 ft (Elevations 192 ft to 166 ft) at the time of drilling in 1988. Historic groundwater levels in the area have been as high as present ground surface or a few ft below ground surface, after heavy rainfall.
Leigh Ave. /Union Ave. Interchanges, & Samaritan/ White Oaks POC	Not encountered within the maximum 100 ft depth of exploration during summer of 1988. Historic records indicate groundwater levels in the area have been as high as 15 to 25 ft below ground surface.
Los Gatos Creek/Bascom Ave.	Varied from 9 ft at Los Gatos Creek to about 76 ft near Bascom Ave. in 1988 explorations.
Winchester Boulevard to Quito Road	Minimum depth encountered during 1988 explorations was about 20 ft. Historic (1958) explorations near Pollard Road revealed groundwater as shallow as 1.5 ft deep.
Quito Road to Rodeo Creek	During 1988 explorations, groundwater depths varied from 8 ft near Calabazas Creek to over 100 ft near Saratoga-Sunnyvale Road. The majority of hollow stem auger borings drilled in 1988 revealed dry conditions to the maximum depth of exploration.
Homestead Road OC	Not encountered to terminal depth of 48 ft in rotary wash during 1960 explorations.
Dalles POC	Not encountered to terminal depth of 28 ft in boring during 1963 explorations.
Fremont Avenue UC	Not encountered to terminal depth of 25 ft in sample borings in 1959 explorations.
Stevens Creek Bridge	Not encountered to terminal depths of 48 to 80 ft in sampler borings during 1959 explorations, but water level in Stevens Creek ranged from elevation 183.7 to 184.1.
Route Sep., El Camino Real	Not encountered to terminal depths of 70-75 ft in rotary wash borings in 1960 explorations.
Stevens Creek NW Connector	Encountered in boring at a depth of 43 ft below ground surface (Elev. 67.3) in 1960 explorations.
Mountain View Overhead	Encountered in boring at depth of 46.8 ft below ground surface (Elev. 42.5) in 1960 explorations.
Stevens Creek Bridge	Not encountered in 1960 rotary wash borings, but groundwater was encountered in cone penetration test at a depth of 60 ft (Elev. 12.2 ft).
Middlefield Road OC	Not encountered in 1962 rotary wash boring, but groundwater was encountered in cone penetration test at a depth of 49 ft (Elevation 15.4 ft).
Moffett Boulevard UC	Was not encountered in 1959 rotary wash borings to terminal depths of 67 to 93 ft.
SR 85/US 101 Separation	Not encountered in 1959 rotary wash borings to terminal depths of 60 to 80 ft below ground surface, but measured in cone penetration tests at depths of 23.5 ft, 25.1 ft, and 26.2 ft (Elev. 13.8, 11.8, and 11.3, respectively).
North Shoreline Boulevard	Encountered in auger borings ranged from 3 to 28 ft below ground surface. Groundwater levels may very considerable with seasonal rainfall or with tidal cycles.

Risk Assessment

Due to the length of the project, risk assessments were completed based on the planning watersheds within the project. Table 6 lists the planning watersheds and risk factors used to determine the risk levels for the project. A map of the planning watersheds within the project area and figures identifying the factors used for the risk assessment are included in the attachments of this report.

Table 6. Risk Assessment by Planning Watershed (along SR 85 alignment)

Planning Watershed	R	K	LS	R x K x LS	Sediment Risk	Receiving Water Risk	Risk Level
Lower Silver Creek	35.44	0.32	5.42	61	Medium	High	2
Yuerba Buena Creek							
Undefined 1			0.81	9	Low		
Undefined 2			0.36	4			

The sediment risk factor is determined from the product of the rainfall runoff erosivity factor (R), the soil erodibility factor (K), and the length-slope factor (LS). The R factor was determined from the U.S. EPA "Stormwater Phase II Final Rule Construction Rainfall Erosivity Waiver" Fact Sheet 3.1 (EPA 833-F-00-014, Revised March 2012). The K and LS factors were determined from Caltrans Stormwater Design Application website. To be conservative, the maximum K and LS values within each planning watershed were used to determine the sediment risk. The sediment risk is classified as low when the product of the R, K, and LS factors is less than 15, medium when the product is between 15 and 75, and high when the value is greater than 75.

The receiving water risk can be classified as low or high. The Caltrans Stormwater Design Application website identifies the entire Project as being within watersheds classified as having a high receiving water risk.

Based on the combined sediment and receiving water risk, the risk level for all the project planning watersheds is Risk Level 2. The requirements for Risk Level 2 projects are presented in Attachment D of the Construction General Permit (Order No. 2009-0009-DWQ) and are summarized in Section 6 of this report.

The project risk level(s) will be further evaluated and verified during the project design phase. Stormwater sampling is required at all discharge locations for this project.

Measures for Avoiding or Reducing Potential Stormwater Impacts

Measures would be employed to prevent any construction material from getting into the receiving water bodies. No work is currently planned in creeks and waterways. Maintenance pullouts will be considered for the project, and side slopes will be specified to

be as flat as possible, for easy maintenance. Concentrated flows will be collected into stabilized drains and channels.

To avoid storm water impacts, the project should be phased to minimize soil-disturbing work during an anticipated rain event. Permanent design pollution prevention and treatment BMPs should be installed early in the construction process when feasible in order to provide stabilization of disturbed soil and prevent construction stormwater impacts to receiving waters. The order of work specification should be modified during the design phase to reflect the installation of permanent and temporary stormwater controls, especially prior to soil disturbing work during an anticipated rain event.

There are no known existing treatment BMPs within the project limits.

Right-of-Way (R/W) Requirements

R/W certification will be discussed during the design phase of the project.

3. Regional Water Quality Control Board Agreements

No negotiated understandings and/or agreements are in place with the SFBRWQCB at this time. Communication with the SFBRWQCB will be coordinated through the Regional Storm Water Coordinator. Under Section 401 of the federal CWA, projects involving impacts to waters of the U.S., including wetlands, require certification from the SFBRWQCB. This project's goal is to avoid impacts to these environmentally sensitive areas (ESAs). The project proposes to widen the bridges over Saratoga Creek and San Tomas Aquino Creek. However, the widening will only involve closing the gap in the median between the northbound and southbound bridges. Work in the creek would be avoided and would not have any impacts to waters of the U.S., including wetlands. No other bridges will be widened over water bodies. No other impacts are anticipated to the waters of the U.S. (Natural Environment Study, URS, 2013). The project will not require a CWA 401 Water Quality Certification; however, a SFBRWQCB joint Application for 401 Water Quality Certification and/or Report of Waste Discharge would be submitted because the project is subject to waste discharge requirements under the Porter-Cologne Water Quality Control Act.

Minimal impacts will occur to waters of the State at San Tomas Aquino and Saratoga creeks. Compensatory mitigation for minimal impacts to waters of the State will be provided through payment of an in-lieu fee to the Santa Clara Valley Habitat Conservation Plan/ Natural Community Conservation Plan (HCP/NCCP). If mitigation through the HCP/NCCP is not feasible for impacts to waters of the State, off-site mitigation will be implemented in coordination with the SFBRWQCB, as described in the Natural Environment Study (NES; URS 2013). In addition, a Lake and Streambed Alteration Agreement from the California Department of Fish and Wildlife pursuant to Section 1600 of the Fish and Game Code (Section 1602 permit) will be required for work within the banks of San Tomas Aquino and Saratoga creeks. The project would implement any general Waste Discharge Requirements (WDRs) issued by the SFBRWQCB.

Hydromodification

As a result of the *Memorandum of California Department of Transportation Post-Construction Stormwater and Hydromodification Standards* (July 2008) from the SFBRWQCB, Caltrans District 4, has been tasked to study hydrograph modification (hydromodification) impacts from projects that need a 401 Certification/ WDR and that lie within the boundaries of a municipality subject to hydromodification requirements (as stated in the municipality's NPDES Permit and Hydromodification Management Plan [HMP]). The project is within Santa Clara County, which is subject to a Regionwide MRP for discharging stormwater to San Francisco Bay and tributary creeks.

A 401 Certification is not expected to be required for this project; however, a SFBRWQCB joint Application for 401 Water Quality Certification and/or Report of Waste Discharge would be submitted because the project is subject to waste discharge requirements under the Porter-Cologne Water Quality Control Act. Hydromodification mitigation is considered because the project would result in the increase of impervious areas by one acre or more. In addition, this Project may be subject to the treatment and hydromodification conditions presented in the recently adopted Caltrans NPDES permit; this NPDES Permit is scheduled to become effective on July 1, 2013. Measures would be implemented to mitigate the impacts by metering the post-project flows to meet the hydromodification requirements for the project. An increase in impervious surface area can be evaluated using computer modeling, such as the Bay Area Hydrology Model, and by evaluating a watershed for cumulative effects from impervious surface and pollutant runoff. Design of the mitigation measures would be included during the design phase of the project. Potential measures to address hydromodification are discussed in Section 4 of this report.

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

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

The project will result in an increase in impervious surface. Additional impervious areas proposed for the project may increase the volume and velocity of the stormwater discharge. With an increase in impervious area from widening the existing roadway, there would also be an increase in the volume of downstream flow from the roadway. In order to prevent downstream erosion, various measures such as sediment control or design pollution prevention BMPs would be implemented to mitigate potential velocity increases, stabilize slopes, and minimize erosion potential.

The net additional impervious area for the project is 40.1 acres. Based on the Hydromodification Plan maps (SCVURPPP), the project lies in an area subject to hydromodification impacts. In general, the susceptibility of the receiving waterways and outfalls depend on several factors: channel lining, channel slope, watershed size, watershed composition, and proximity to a tidal water body. The project should consider hydromodification mitigation measures for the channels that are unlined, are not in tidally influenced areas and receive runoff from additional impervious area created due to the project. The channels of Matadero Creek, Adobe Creek, Permanente Creek, Stevens Creek

(all four crossings), Canoas Creek and Coyote Creek would have no added impervious areas and thus are not subject to any hydromodification impacts. The Smith Creek and Ross Creek crossings are concrete lined. It is anticipated that channel erosion, gullying, and scour of these channels would not be caused by the increase in runoff. Therefore, these channels are considered exempt from the hydromodification susceptibility. The channels that would qualify for the hydromodification mitigation criteria for this project are Calabazas Creek, Regnart Creek, Rodeo Creek, Saratoga Creek, Vasona Creek, Los Gatos Creek and Guadalupe River.

The project would incorporate BMPs to maintain or restore pre-project hydrology to the levels that would satisfy hydromodification requirements per the SCVURPPP. The proposed measures to address hydromodification impacts can include structural measures, such as underground detention, and non-structural measures, through the modification of proposed treatment BMPs to accommodate flow and volume control. The proposed measures must be designed to show that runoff discharge rates and durations match the pre-project discharge rates and durations, from 10% of the pre-project 2-year peak flows up through the pre-project 10-year peak flows. The post-project discharge rates should not exceed the pre-project rates by more than 10% for more than 10% of the record duration. For the outfalls susceptible to hydromodification impacts, an increase in impervious surface area can be evaluated using computer modeling, such as the Bay Area Hydrology Model (BAHM), and by evaluating a watershed for cumulative effects from impervious surface and pollutant runoff. This computer modeling would be performed during the project design phase when detailed survey information becomes available.

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

Areas of cut and fill are required throughout the project to satisfy the proposed project geometry. Cut and fill areas for the project will be developed further during the design phase and will be shown on the contract plans.

Existing slopes are described in the Preliminary Geotechnical Report (PGR) (URS, 2011) as well-vegetated or paved with Portland cement concrete along the project alignment. The slope in general is 2 to 1 (horizontal to vertical), and in some cases it is 1.5 to 1. According to the PGR, the project segment with the proposed median widening is located in deep cuts with retaining walls. The slopes in this section contain numerous shrubs with limited grass cover. The median consists of exposed soil with metal barrier. The natural slopes are covered by varied thicknesses of soil and colluvium, with light to heavy growth of grasses, scattered oak trees and bushes. Because the proposed express lanes are planned in the median and will not create any new slopes, only a slight change of rate of erosion is expected from the project. Permanent erosion control measures such as hydroseeding would be applied on disturbed slopes that would remain unpaved, and linear barriers would be placed on slopes to prevent erosion. These BMP types and locations would be detailed during the design phase.

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

Concentrated flow conveyance systems, such as ditches, berms, swales, flared end sections and outlet protection and velocity dissipation devices would be considered for this project. Overside drains may also be used for conveying runoff to the BMPs designed at the ramp locations with a drop. Outlet protection and velocity dissipation BMPs would be placed at all outlets of drainage systems that discharge into earth-lined ditches/basins. The existing roadway drainage design would either be modified to fit with new drainage systems or be removed and replaced by new systems. The change in drainage would result in changes in the interception of surface runoff. The drainage facilities would be developed during the design phase and shown on the plans.

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

When feasible, existing vegetation would be preserved. Existing vegetation in the project area primarily consists of landscaped trees, shrubs or ground cover, riparian and wetlands (URS, 2013). According to the Natural Environment Study (URS, 2013), no impacts to the wetlands or other waters are anticipated. The existing vegetation would be preserved to the maximum extent possible, and in the areas where existing vegetation cannot be preserved, appropriate measures would be incorporated to avoid and minimize impacts to existing vegetation. The measures would be detailed during the PS&E phase of the project.

In accordance with Caltrans policy, landscaping and irrigation that is damaged or removed during project construction would be replaced in kind. In the 1.1-mile auxiliary lane segment of northbound SR 85, replacement landscaping and irrigation would be considered between the existing retaining walls and sound walls in areas where landscaping is now either sparse or absent. Detailed landscape and irrigation replacement plans would be developed during final project design.

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

Treatment BMP Strategy, Checklist T-1

The project is required to consider treatment BMPs because it involves major reconstruction with direct discharges to surface water bodies and the creation of more than one acre of impervious area. The Caltrans District 4 Stormwater Coordinator (Caltrans' Project Planning and Design Guide) has indicated that infiltration or retention devices are the preferred treatment alternatives. Infiltration devices have been determined infeasible for the majority of the project area due to the Hydrologic Soil Group (HSG) C and D soils. These are soils that have low to very low rates of infiltration. The detailed review of geotechnical studies is being conducted to determine the feasibility of infiltration devices. At this phase, retention devices have been identified as the preferred treatment type. Treatment of stormwater runoff from impervious areas would be provided by biofiltration swales that incorporate design measures to promote infiltration of stormwater. This project should attempt to provide permanent stormwater treatment for 100 percent of the net added and reworked impervious area, equal to 67.5 acres. Plans of these potential BMP locations can be found

in the Supplemental Attachment of this report. The detailed evaluation, selection of the BMPs, BMP locations and treatment areas will be further refined during the PS&E phase.

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

Biofiltration devices are proposed throughout the project to provide permanent stormwater treatment. Due to the presence of steep slopes and limited space in some locations, these devices are proposed at the interchange locations. Table 7 lists the locations of the proposed biofiltration devices and the impervious watershed received by the devices. The amount of treated impervious area for each device would be calculated during the design phase based on the "California Stormwater BMP Handbook Approach." Details for the proposed biofiltration devices would be developed during the design phase.

Table 7. Treatment BMP Summary

BMP ID	Proposed Preferred Treatment BMP Type	Watershed Limits		Tributary Area (sq ft)	Tributary Area (ac)
		Station from	Station to		
BMP-1	Biofiltration Device	732+46	746+95	110,000	2.5
BMP-2	Biofiltration Device	821+88	854+12	592,000	13.6
BMP-3	Biofiltration Device	894+40	925+35	615,000	14.1
BMP-4	Biofiltration Device	945+11	962+02	346,000	7.9
BMP-5	Biofiltration Device	1053+00	1057+50	60,000	1.4
BMP-6	Biofiltration Device	1126+72	1166+21	219,000	5.0
BMP-7	Biofiltration Device	1166+21	1207+11	646,000	14.8
BMP-8	Biofiltration Device	1484+19	1497+19	220,000	5.1
BMP-9	Biofiltration Device	1607+42	1612+23	133,000	3.1
Total-->				2,657,611	**67.5**

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

This project has a disturbed soil area of 75.4 acres and will require a Storm Water Pollution Prevention Plan (SWPPP). The overall site risk level has been estimated to be Level 2. The risk level would be confirmed during the design phase. This section presents the temporary construction site BMP strategy to be implemented for this project to meet current Caltrans' criteria.

Storm Water Pollution Prevention Plan

A SWPPP must be prepared and certified by a Qualified SWPPP Developer (QSD) prior to the start of construction for Risk Level 2 projects. The SWPPP includes the development of a Construction Site Monitoring Program that presents procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, pH, and receiving waters.

Rain Event Action Plan

Rain Event Action Plans are also required for Risk Level 2 projects. These plans should be developed prior to an anticipated rain event. The quantities for these plans would be developed during the design phase based on a National Oceanic and Atmospheric Administration station located in San Jose.

Monitoring and Reporting

This project is required to perform stormwater sampling at all discharge locations. Numeric Action Levels (NALs) are applicable to this project because it is Risk Level 2. If discharge from the project exceeds the NAL for pH and/or turbidity set forth in the CGP, exceedance reporting and BMP modifications will potentially be required.

Construction Site BMP Strategy

At this phase of the project, the minimum lump sum costs for stormwater BMPs were calculated using the "Percent of Total Project Cost Method" per Appendix F of the *Project Planning and Design Guide* (PPDG) and were increased or modified based on the anticipated BMP needs for this project. The planning level lump sum estimates presented in this report are summarized from the *Project Report* (PR) prepared for the project. Individual line item BMPs, unit costs and lump sum items using the "Unit Costs" method per Appendix F of the PPDG will be developed during the design phase.

The Temporary Construction Site BMP strategy for this project consists of the following:

- Soil Stabilization Measures
- Sediment Control Measures
- Tracking Control
- Non-stormwater Management Measures
- General Construction Site Management
- Stormwater Sampling and Analysis

Soil stabilization and sediment control consists of placing linear sediment barriers such as silt fence at the toe of all excavation and embankment slopes. Slope interruption devices such as fiber rolls will be installed, and soil stabilizer will be hydraulically applied. Wherever possible, early implementation of permanent erosion control seeding or landscape planting will be performed.

Temporary drainage inlet protection should be deployed throughout the project area.

It is not anticipated that active treatment systems are necessary for this project. Further consideration would be made during the design phase.

There is a potential for wind erosion, and several areas will need stabilized construction entrances and scheduled street sweeping to avoid off-site tracking of sediment.

This project does not include work within a perennial waterway or excavation below the groundwater table; therefore, dewatering operations are not anticipated for this project.

Concrete work is anticipated for this project and shall be managed through the use of temporary concrete washout bins.

Various waste management, materials handling, and other housekeeping BMPs shall be used throughout the duration of the project. Stockpiles of various kinds are anticipated and shall be maintained with the appropriate BMPs.

The construction site BMPs and associated checklists will be completed and submitted with the PS&E version of this report. Concurrence of the temporary BMPs and strategy will be sought from the Caltrans Construction Stormwater Coordinator at the design phase.

In addition to the temporary BMPs listed above, the project would incorporate applicable measures specified in Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan HCP/NCCP (CSC 2012). The BMPs list is included in the NES (URS, 2013)

Storm Water Sampling and Analysis

This project is required to perform stormwater sampling at all discharge locations. Numeric Action Levels are applicable to this project because it is Risk Level 2. The required specifications will be prepared during the design phase and will be included in the project Special Provisions.

7. Maintenance BMPs (Drain Inlet Stenciling)

Drain inlet markers are not required for this project because all work is located along the SR 85 and US 101 mainlines and ramps where pedestrian or bike access is prohibited. Other types of maintenance BMPs, including placement of maintenance vehicle pullouts, will be considered during the design phase and coordinated with the Caltrans Maintenance Area Manager.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation

Supplemental Attachments

- Storm Water BMP Cost Summary
- Climatographical Information from National Climate Data Center (NCDC)
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklists T-1, Parts 1–2 (Treatment BMPs)
- Soil Information
- Typical Sections
- Potential Hazardous Materials Sites Figures
- BMP Maps

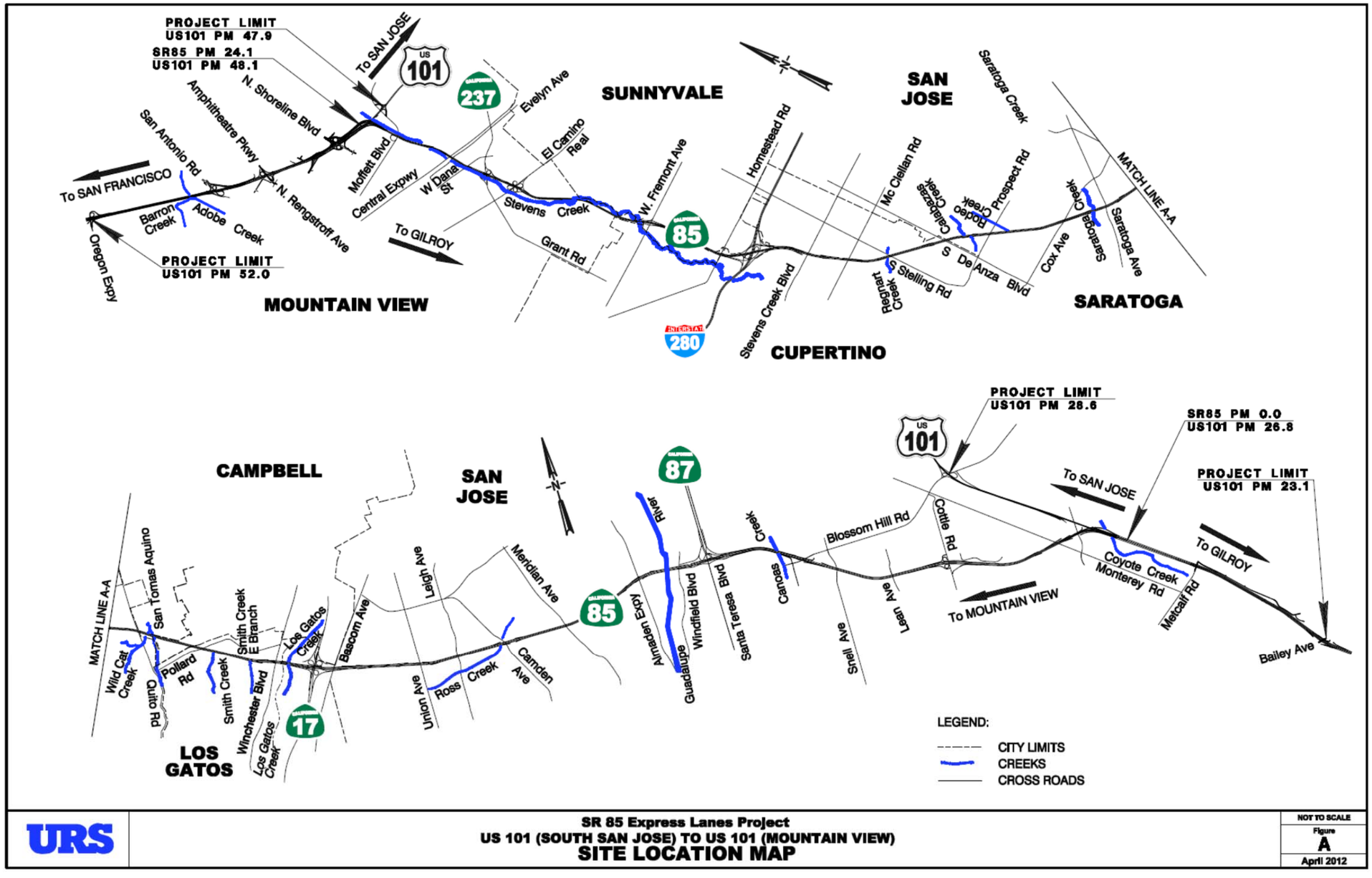


Figure 1. Vicinity Map and Waterway Crossings

Source: URS, 2012

DATE: July 2013

Project ID (or EA): (04-4A7900)

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2
2.	Is this an emergency project?		✓	If **Yes**, go to 10. If **No**, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	✓		If **Yes**, contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 9 or 4. _____ *(Dist./Reg. SW Coordinator initials)* If **No**, continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	✓		If **Yes**. *(Santa Clara County)*, go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If **Yes**, continue to 6. If **No**, go to 10.
6.	Is it a new facility or major reconstruction?	✓		If **Yes**, continue to 8. If **No**, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?			If **Yes**, continue to 8. If **No**, go to 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	✓		If **Yes**, continue to 9. If **No**, go to 10. *40.1 acres (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.	✓	See Sections 2.4 and either Section 5.5or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
10.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. Design SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*		Document for Project Files by completing this form, and attaching it to the SWDR.	

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

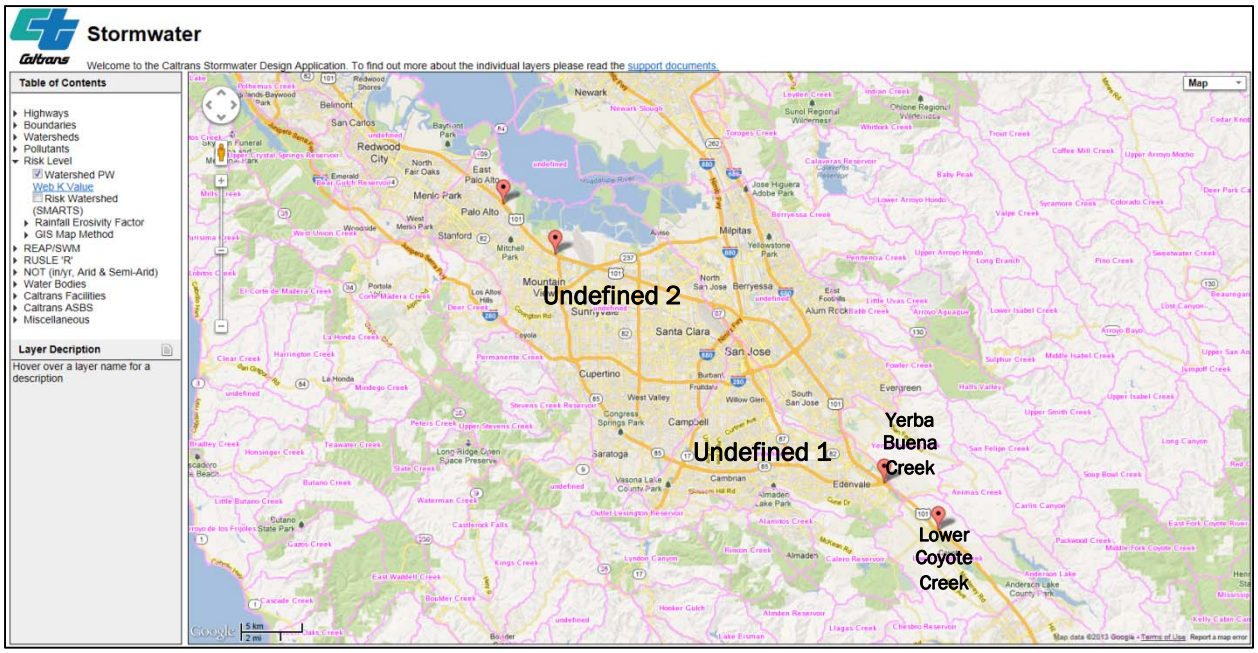


Figure 2. Planning Watershed Map Source: Caltrans

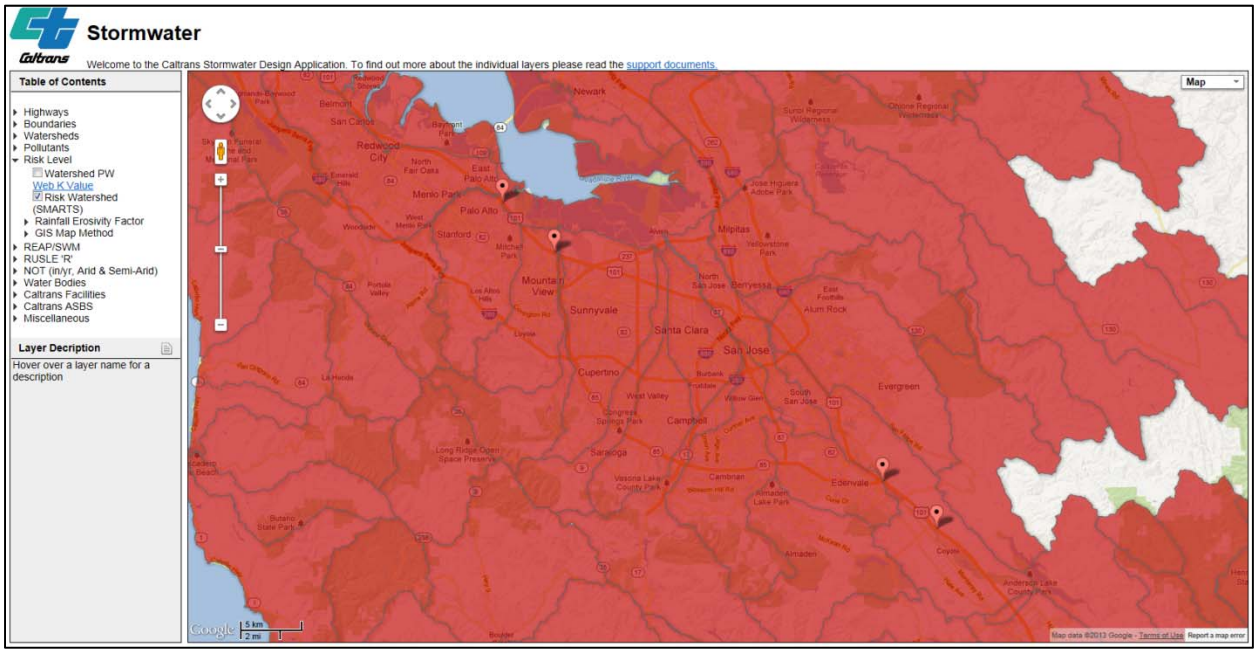


Figure 3. Receiving Water Risk Map Source: Caltrans

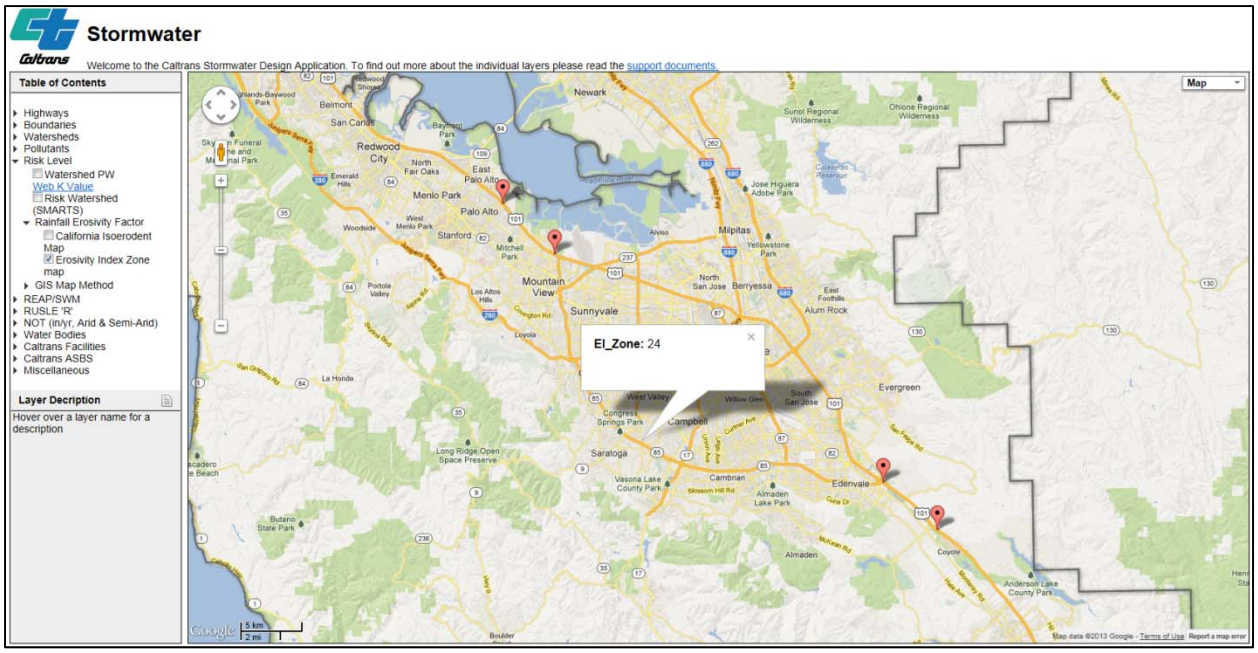


Figure 4. Erosivity Index Zone Source: Caltrans

Table 1. Erosivity Index (%EI Values extracted from USDA Manual 703)

All values are at the end of the day listed below - Linear interpolation between dates is acceptable.
EI as a percentage of Average Annual R Value Computed for Geographic Areas Shown in Figure 1

Month	Jan	Jan	Jan	Feb	Mar	Mar	Mar	Apr	Apr	May	May	Jun	Jun	Jul	Jul	Aug	Aug	Sept	Sept	Oct	Oct	Nov	Nov	Dec	Dec
Day	1	16	31	15	1	16	31	15	30	15	30	14	29	14	29	13	28	12	27	12	27	11	26	11	31
EI Zone																									
1	0	4.3	8.3	12.8	17.3	21.6	25.1	28	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53	56	60.8	66.8	71	75.7	82	89.1	95.2	100
2	0	4.3	8.3	12.8	17.3	21.6	25.1	28.0	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53.0	56.0	60.8	66.8	71.0	75.7	82.0	89.1	95.2	100
3	0	7.4	13.8	20.9	26.5	31.8	35.3	38.5	40.2	41.6	42.5	43.6	44.5	45.1	45.7	46.4	47.7	49.4	52.8	57.0	64.5	73.1	83.3	92.3	100
4	0	3.9	7.9	12.6	17.4	21.6	25.2	28.7	31.9	35.1	38.2	42.0	44.9	46.7	48.2	50.1	53.1	56.6	62.2	67.9	75.2	83.5	90.5	96.0	100
5	0	2.3	3.6	4.7	6.0	7.7	10.7	13.9	17.8	21.2	24.5	28.1	31.1	33.1	35.3	38.2	43.2	48.7	57.3	67.8	77.9	86.0	91.3	96.9	100
6	0	0.0	0.0	0.5	2.0	4.1	8.1	12.6	17.6	21.6	25.5	29.6	34.5	40.0	45.7	50.7	55.6	60.2	66.5	75.5	85.6	95.9	99.5	99.9	100
7	0	0.0	0.0	0.0	0.0	1.2	4.9	8.5	13.9	19.0	26.0	35.4	43.9	48.8	53.9	64.5	73.4	77.5	80.4	84.8	89.9	96.6	99.2	99.7	100
8	0	0.0	0.0	0.0	0.0	0.9	3.6	7.8	15.0	20.2	27.4	38.1	49.8	57.9	65.0	75.6	82.7	86.8	89.4	93.4	96.3	99.1	100.0	100.0	100
9	0	0.8	3.1	4.7	7.4	11.7	17.8	22.5	27.0	31.4	36.0	41.6	46.4	50.1	53.4	57.4	61.7	64.9	69.7	79.0	89.6	97.4	100.0	100.0	100
10	0	0.3	0.5	0.9	2.0	4.3	9.2	13.1	18.0	22.7	29.2	39.5	46.3	48.8	51.1	57.2	64.4	67.7	71.1	77.2	85.1	92.5	96.5	99.0	100
11	0	5.4	11.3	18.8	26.3	33.2	37.4	40.7	42.5	44.3	45.4	46.5	47.1	47.4	47.8	48.3	49.4	50.7	53.6	57.5	65.5	76.2	87.4	94.8	100
12	0	3.5	7.8	14.0	21.1	27.4	31.5	35.0	37.3	39.8	41.9	44.3	45.6	46.3	46.8	47.9	50.0	52.9	57.9	62.3	69.3	81.3	91.5	96.7	100
13	0	0.0	0.0	1.8	7.2	11.9	16.7	19.7	24.0	31.2	42.4	55.0	60.0	60.8	61.2	62.6	65.3	67.6	71.6	76.1	83.1	93.3	98.2	99.6	100
14	0	0.7	1.8	3.3	6.9	16.5	26.6	29.9	32.0	35.4	40.2	45.1	51.9	61.1	67.5	70.7	72.8	75.4	78.6	81.9	86.4	93.6	97.7	99.3	100
15	0	0.0	0.0	0.5	2.0	4.4	8.7	12.0	16.6	21.4	29.7	44.5	56.0	60.8	63.9	69.1	74.5	79.1	83.1	87.0	90.9	96.6	99.1	99.8	100
16	0	0.0	0.0	0.5	2.0	5.5	12.3	16.2	20.9	26.4	35.2	48.1	58.1	63.1	66.5	71.9	77.0	81.6	85.1	88.4	91.5	96.3	98.7	99.6	100
17	0	0.0	0.0	0.7	2.8	6.1	10.7	12.9	16.1	21.9	32.8	45.9	55.5	60.3	64.0	71.2	77.2	80.3	83.1	87.7	92.6	97.2	99.1	99.8	100
18	0	0.0	0.0	0.6	2.5	6.2	12.4	16.4	20.2	23.9	29.3	37.7	45.6	49.8	53.3	58.4	64.3	69.0	75.0	86.6	93.9	96.6	98.0	100.0	100
19	0	1.0	2.6	7.4	16.4	23.5	28.0	31.0	33.5	37.0	41.7	48.1	51.1	52.0	52.5	53.6	55.7	57.6	61.1	65.8	74.7	88.0	95.8	98.7	100
20	0	9.8	18.5	25.4	30.2	35.6	38.9	41.5	42.9	44.0	45.2	48.2	50.8	51.7	52.5	54.6	57.4	58.5	60.1	63.2	69.6	76.7	85.4	92.4	100
21	0	7.5	13.6	18.1	21.1	24.4	27.0	29.4	31.7	34.6	37.3	39.6	41.6	43.4	45.4	48.1	51.3	53.3	56.6	62.4	72.4	81.3	88.9	94.7	100
22	0	1.2	1.6	1.6	1.6	1.6	1.6	2.2	3.9	4.6	6.4	14.2	32.8	47.2	58.8	69.1	76.0	82.0	87.1	96.7	99.9	99.9	99.9	99.9	100
24	0	12.2	23.6	33.0	39.7	47.1	51.7	55.9	57.7	58.6	58.9	59.1	59.1	59.2	59.2	59.3	59.5	60.0	61.4	63.0	66.5	71.8	81.3	89.6	100

Estimated Construction Start: January 31, 2014
Estimated Construction Completion: January 7, 2015 Source: U.S. EPA
EI Percentage = (100 – 23.6)% + 12.2% = 88.6%

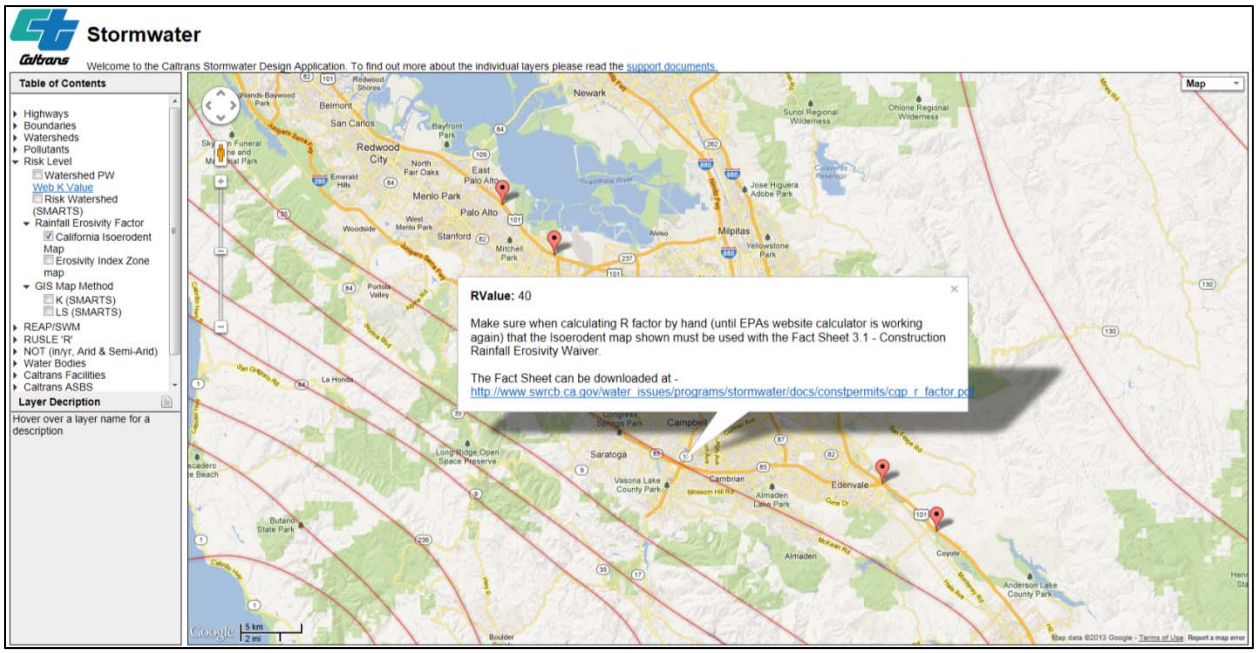


Figure 5. Annual Erosion Index from Isoerodent Map Source: Caltrans

R Factor = 40 x 88.6% = 35.44

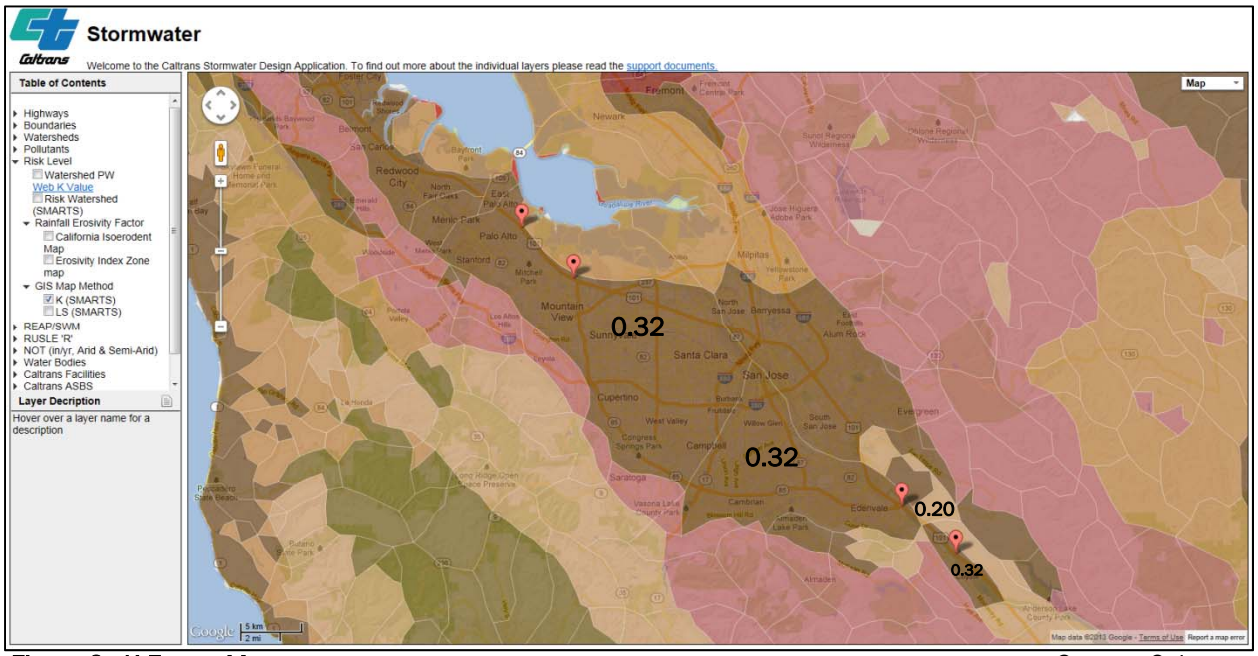


Figure 6. K Factor Map Source: Caltrans

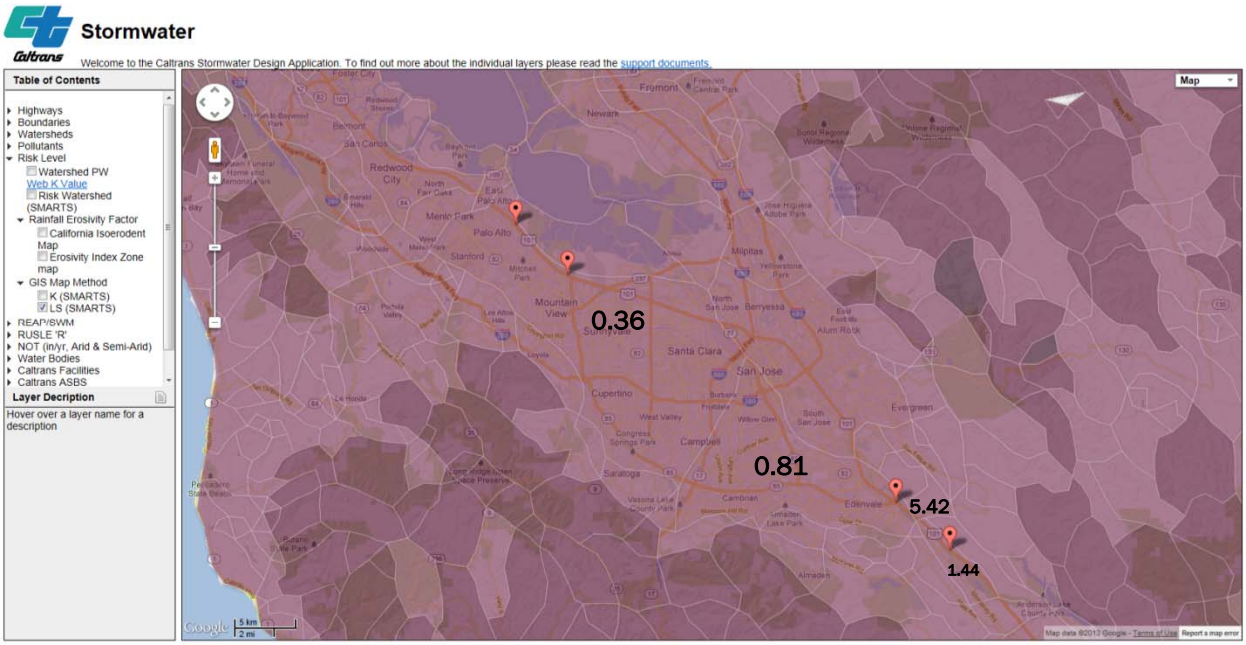


Figure 7. LS Factor Map Source: Caltrans

Project Name:	SR-85 Express Lanes			
District:	04			
County:	SCI			
Route:	85, 101			
Postmile Limits:	0.0/24.1, 23.1/28.6 & 47.9/52.0			
Project ID (or EA):	EA 04-4A7900			
1.0 DPP BMPs				
Total Construction Cost	1% Total Construction Cost			
$181,182,778	1.00%	SUBTOTAL	$	1,811,828
2.0 Treatment BMPs				
Total Construction Cost	2% Total Construction Cost			
$181,182,778	2.00%	SUBTOTAL	$	3,623,656
3.0 Prepare SWPPP (or WCPC)				
Total Construction Cost	Cost per Table F-6			
$181,182,778	$50,000	SUBTOTAL	$	50,000
RQM Value (if SWPPP is required):	$44,000			
4.0 Construction Site BMPs				
Total Construction Cost	1.25% per Table F-3			
$181,182,778	1.25%	SUBTOTAL	$	2,264,785
5.0 Stormwater Monitoring				
Project Risk Level	SWM Cost (PPDG Appen F)			
2 and 3	$241,100	SUBTOTAL	$	241,100
	TOTAL COST FOR STORM WATER BMPs			$ 7,991,368

Routine Quarterly Monitoring

18	months	/	3	+	1	7	inspections
62	discharges	+	4	additional discharges		66	discharges
						$ 100	/hour
					Total	$ 46,200	

Prepare Storm Water Pollution Prevention Plan

Prepare SWPPP Base Cost	$	6,000
Routine Quarterly Monitoring Cost	$	46,200
Total	$	52,200

Prepare Storm Water Pollution Prevention Plan

Prepare WPCP Cost	$	-

Storm Water Annual Report

2	years	2 SWA Reports

REAP (Storms Generating ≥ 0.10 inches)

35.4	rainy days/year	x	1	years		35	days
35.4	rainy days/year	x	9	subsequent months	÷ 12 subsequent months/year	27	days
						62	days
						62	REAPs

Storm Water Monitoring Cost

M Value						3	
25.9	rainy days/year	x	1	years		26	days
25.9	rainy days/year	x	6	subsequent months	÷ 12 subsequent months/year	13	days
						39	days
Daily Cost to perform sampling and analysis						$ 1,000	
Equipment Maintenance Cost						$ 2,300	
						$ 123,900	

No.	Item Code	Description	Quantity	Unit	Unit Price	Cost
1	074019	Prepare Storm Water Pollution Prevention Plan	1	LS	$ 52,200.00	$ 52,200.00
2	074056	Rain Event Action Plan	62	EA	$ 500.00	$ 31,000.00
3	074057	Storm Water Annual Report	2	EA	$ 2,000.00	$ 4,000.00
4	074058	Storm Water Sampling and Analysis Day	39	EA	$ 3,176.92	$ 123,900.00
5		Receiving Water Bioassessment	1	LS	$ 30,000.00	$ 30,000.00
Subtotal						$ 241,100.00

No.	Item Code	Supplemental Work	Quantity	Unit	Unit Price	Cost
1	066596	Additional Water Pollution Control	1	LS	$ 6,000.00	$ 6,000.00
2	066597	Storm Water Sampling and Analysis	1	LS	$ 6,000.00	$ 6,000.00
Subtotal						$ 12,000.00

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

Climatography of the United States No. 20 1971-2000

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

Station: SAN JOSE, CA **COOP ID: 047821**

Climate Division: CA 4 **NWS Call Sign:** **Elevation: 67 Feet** **Lat: 37°22N** **Lon: 121°54W**

Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	3.03	2.46	3.60	1968	30	8.66	1995	.17	1984
Feb	2.84	2.16	2.23	1998	3	10.23	1998	.14	1997
Mar	2.69	2.52	1.91	1995	9	6.85	1995	.06	1988
Apr	1.02	.70	1.46	1983	28	3.90	1983	.03	1977
May	.44	.14	1.62	1990	27	2.38	1990	.00+	1992
Jun	.10	.01	.79	1995	16	.84	1995	.00+	1998
Jul	.06	.00	.75	1980	2	.75	1980	.00+	2000
Aug	.07	.00	1.92	1968	21	.71	1976	.00+	1999
Sep	.23	.04	2.00	1959	18	1.04	1982	.00+	1997
Oct	.87	.74	3.22	1962	13	2.22	1973	.00+	1995
Nov	1.73	1.36	2.42	1970	29	5.48	1972	.05+	1995
Dec	2.00	1.92	1.90	1955	22	4.71	1995	.04	1989
Ann	15.08	13.57	3.60	Jan 1968	30	10.23	Feb 1998	.00+	Jul 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.2	6.6	1.9	.7
Feb	9.7	6.1	2.1	.4
Mar	10.3	6.6	1.7	.3
Apr	5.4	2.8	.5	@
May	3.0	1.2	.1	.1
Jun	.9	.3	@	.0
Jul	.3	.2	@	.0
Aug	.5	.2	.1	.0
Sep	1.5	.7	.1	.0
Oct	3.6	2.0	.5	.1
Nov	7.4	4.0	1.1	.2
Dec	8.9	4.7	1.4	.1
Ann	61.7	35.4	9.5	1.9

Precipitation Probabilities (1)

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

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

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.26	.46	.87	1.29	1.75	2.27	2.90	3.69	4.78	6.60	8.39
Feb	.23	.42	.79	1.19	1.62	2.12	2.71	3.46	4.49	6.22	7.93
Mar	.22	.40	.76	1.13	1.54	2.01	2.57	3.27	4.24	5.87	7.47
Apr	.06	.12	.25	.39	.54	.73	.95	1.23	1.63	2.30	2.98
May	.00	.00	.00	.00	.05	.14	.26	.46	.75	1.31	1.90
Jun	.00	.00	.00	.00	.00	.00	.03	.08	.16	.31	.47
Jul	.00	.00	.00	.00	.00	.00	.00	.00	.06	.20	.34
Aug	.00	.00	.00	.00	.00	.00	.00	.00	.01	.15	.39
Sep	.00	.00	.00	.00	.02	.06	.12	.22	.38	.69	1.01
Oct	.00	.00	.18	.33	.48	.64	.84	1.09	1.41	1.97	2.50
Nov	.06	.14	.32	.54	.80	1.13	1.53	2.06	2.81	4.12	5.45
Dec	.24	.39	.68	.95	1.25	1.58	1.97	2.45	3.09	4.16	5.20
Ann	6.93	8.25	10.08	11.56	12.94	14.32	15.80	17.49	19.61	22.82	25.72

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

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1948-2001
(3) Derived from 1971-2000 serially complete daily data
Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

201-B

Checklist SW-1, Site Data Sources

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

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

DATA CATEGORY/SOURCES	Date
Topographic	
• United States Geological Survey. (2001). California: Seamless U.S.G.S. Topographic Maps [CDROM, Version 2.6.8, 2001, Part Number: 113-100-004]. National Geographic Holdings, Inc.	Access Date: August 31, 2011
Hydraulic	
• Federal Emergency Management Agency. Flood Insurance Study, Santa Clara County, California and Incorporated Areas, Volumes 1-4 (Flood Insurance Study Number 06085CV001A, 06085CV002A, 06085CV003A, 06085CV004A).	2009
• Santa Clara Valley Water District. Available on website at: http://www.valleywater.org/	Access Date: September 2011
Soils	
• Santa Clara Valley Water District. Available on website at: http://www.valleywater.org/	Access Date: September 2011
• Preliminary Geotechnical Report by URS	March 2011
• Supplement to Preliminary Geotechnical Report by URS	February 2013
Climatic	
• Santa Clara Valley Water District. Available on website at: http://www.valleywater.org/	Access Date: September 2011
• Preliminary Geotechnical Report by URS	March 2011
Water Quality	
• California State University Sacramento, Office of Water Programs, Water Quality Planning Tool. Available on website at: http://www.water-programs.com/wqpt.htm	Access Date: July 2013
• State Water Resources Control Board. *2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report*. <http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml>	Access Date: July 2013
• California Regional Water Quality Control Board, San Francisco Bay Region. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*.	Amended December 31, 2011

• State Water Resources Control Board. *NPDES General Permit for Storm Water Discharges associated with Construction and Land Disturbance Activities.* Order No. 200-0009-DWQ, NPDES No. CAS000002.	Effective: July 1, 2010
Other Data Categories	
• URS Corporation. (2012). Natural Environment Study: State Route 85 Express Lanes Project.	July 2012
• URS Corporation. (2011). Initial Site Assessment: State Route 85 Express Lanes Project.	March 2011
• URS Corporation. (2011). Preliminary Geotechnical Study Report: State Route 85 Express Lanes Project.	November 2011
• Caltrans. Storm Water Quality Handbooks Project Planning and Design Guide. CTSW-RT-10-254.03	July 2010
• Caltrans. Storm Water Quality Handbooks Construction Site Best Management Practices (BMPs) Manual	March 2003
• Caltrans. Storm Water Quality Handbooks Storm Water Pollution Prevention Plan (SWPPP) / Water Pollution Control Program (WPCP) Preparation Manual. CTSW-RT-10-255.08.01	March 2011
• Caltrans. Erosion Prediction Procedure Manual	September 2008
• California Regional Water Quality Control Board, San Francisco Bay Region. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*.	Amended December 31, 2011

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

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

1.	Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation).	☒Complete	☐NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	☒Complete	☐NA
3.	Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. Consider appropriate spill contamination and spill prevention control measures for these new areas.	☐Complete	☒NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.	☒Complete	☐NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	☐Complete	☒NA
6.	Determine if a 401 certification will be required.	☒Complete	☐NA
7.	List rainy season dates.	☒Complete	☐NA
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	☒Complete	☐NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	☒Complete	☐NA
10.	Determine contaminated soils within the project area.	☒Complete	☐NA
11.	Determine the total disturbed soil area of the project.	☒Complete	☐NA
12.	Describe the topography of the project site.	☒Complete	☐NA
13.	List any areas outside of the Caltrans right-of-way that will be included in the project (e.g. contractor's staging yard, work from barges, easements for staging, etc.).	☒Complete	☐NA
14.	Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much?	☒Complete	☐NA
15.	Determine if a right-of-way certification is required.	☒Complete	☐NA
16.	Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches.	☒Complete	☐NA
17.	Determine if project area has any slope stabilization concerns.	☒Complete	☐NA
18.	Describe the local land use within the project area and adjacent areas.	☒Complete	☐NA
19.	Evaluate the presence of dry weather flow.	☐Complete	☒NA

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

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

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

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

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 1

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Consideration of Design Pollution Prevention BMPs

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

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

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

Slope/Surface Protection Systems

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

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

Concentrated Flow Conveyance Systems

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

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

Preservation of Existing Vegetation

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

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Downstream Effects Related to Potentially Increased Flow

Note: will be completed during the design phases.

1.	Review total paved area and reduce to the maximum extent practicable.	☒ Complete
2.	Review channel lining materials and design for stream bank erosion control.	☐ Complete
	(a) See Chapters 860 and 870 of the HDM.	☐ Complete
	(b) Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	☐ Complete
3.	Include, where appropriate, energy dissipation devices at culvert outlets.	☐ Complete
4.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	☐ Complete
5.	Include, if appropriate, peak flow attenuation basins or devices to reduce peak discharges.	
6.	Calculate the water quality volume infiltrated by DPP BMPs within the project limits. Include the percentage of the water quality volume for each BMP and subwatershed, as appropriate, for site conditions. These calculations will be used later in the T-1 checklist.	☐ Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 3

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Slope / Surface Protection Systems

Note: will be completed during the design phases.

1.	What are the proposed areas of cut and fill? (attach plan or map)	☐Complete	
2.	Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows?	☐Yes	☐No
3.	Were slopes rounded and/or shaped to reduce concentrated flow?	☐Yes	☐No
4.	Were concentrated flows collected in stabilized drains or channels?	☐Yes	☐No
5.	Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)?	☐Yes	☐No
	If Yes, District Landscape Architect must prepare or approve an erosion control plan, at the District's discretion.		
6.	Are new or disturbed slopes > 2:1 (h:v)?	☐Yes	☐No
	If Yes, Geotechnical Services must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Storm Water Coordinator for slopes steeper than 2:1 (h:v).		
7.	Estimate the net new impervious area that will result from this project. 40.1acres	☒Complete	

VEGETATED SURFACES

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

HARD SURFACES

1.	Are hard surfaces required?	☒Yes	☐No
	If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations.	☐Complete	

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Concentrated Flow Conveyance Systems

Note: will be completed during the design phases.

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, and 835, and Chapter 860 of the HDM. ☐ Complete
2. Evaluate risks due to erosion, overtopping, flow backups or washout. ☒ Complete
3. Consider outlet protection where localized scour is anticipated. ☐ Complete
4. Examine the site for run-on from off-site sources. ☐ Complete
5. Consider channel lining when velocities exceed scour velocity for soil. ☐ Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. ☐ Complete
2. Consider paved spillways for side slopes flatter than 4:1 h:v. ☐ Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. ☐ Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. ☐ Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. ☐ Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 5

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Preservation of Existing Vegetation

Note: will be completed during the design phases.

1.	Review Preservation of Property, (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation.	☒Complete
2.	Has all vegetation to be retained been coordinated with Environmental, and identified and defined in the contract plans?	☐Yes ☐No
3.	Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling?	☒Complete
4.	Have impacts to preserved vegetation been considered while work is occurring in disturbed areas?	☐Yes ☐No
5.	Are all areas to be preserved delineated on the plans?	☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 1

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watershed within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan or does the project have a dual purpose facility requirement (e.g. flood control and water quality treatment or Design Pollution Prevention BMPs that provide infiltration and treatment)? ☒Yes ☐No

   If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

   (a) Are dry weather flows generated by Caltrans anticipated to be persistent? ☐Yes ☒No

   (b) Is a sanitary sewer located on or near the site? ☐Yes ☐No

   If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

   (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices? ☐Yes ☐No

   (d) Is the domestic wastewater treatment authority willing to accept flow? ☐Yes ☐No

   If Yes was answered to all of these questions consider ***Dry Weather Flow Diversion***, complete and attach **Part 3** of this checklist.

3. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash? ☒Yes ☐No

If Yes, consider ***Gross Solids Removal Devices (GSRDs)***. Complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is the project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? ☐Yes ☒No

   If Yes, consider ***Traction Sand Traps*** Complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales

   Objectives:

   1) Quantify infiltration from biofiltration alone

   2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.

   3) Identify whether amendments can substantially improve infiltration.

   (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR. ☐Yes ☒No

   (b) Based on existing site conditions, estimate what percentage of the WQV[1] can be infiltrated. When calculating the WQV, use a drawdown time appropriate for the site conditions..

   ☐Complete

   To be confirmed at PS&E

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

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

   If No, Continue to 5 (d).

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

(d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments?. ☒Yes ☐No

If Yes, consider including soil amendments (increasing the infiltration ranking of strips and swales shows performance comparable to other BMPs). Record the new infiltration estimate below. If No, continue to 5 (e).

Note: Calculations to be completed during design.

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

☐Complete

(e) Is infiltration greater than 90 percent? If Yes, skip to question 13. If No, continue to 5 (f). ☐Yes ☐No

(f) Is infiltration greater than 50 percent and is biofiltration preferred? If yes to both, skip to question 13. ☐Yes ☐No

6. Biofiltration in Rural Areas

Is the project in a rural area (outside of urban areas that is covered under an NPDES Municipal Stormwater Permit[2])? If Yes, proceed to question 13. ☐Yes ☒No

7. Estimating Infiltration for BMP Combinations

Objectives:

1) Identify high-infiltration biofiltration or biofiltration and infiltration BMP combinations and skip further BMP consideration.

2) If high infiltration is infeasible, then identify the infiltration level of all feasible BMP combinations for use in the subsequent BMP selection matrices.

(a) Has concentrated infiltration (i.e., via earthen basins) been prohibited? Consult your District/Regional Storm Water Coordinator and/or environmental documents. ☐Yes ☒No

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

[2] See pages 39 and 40 of the Fact Sheets for the CGP.
http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf

(b) Can the infiltration ranking be increased by infiltrating the un-infiltrated remaining WQV from question 5, with an infiltration BMP[1]? If yes, record the new infiltration estimate below. If no, proceed to 7(c). ☒Yes ☐No

Note: Calculations to be completed during design.

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

Is at least 90 percent infiltration estimated? If Yes, proceed to 13. If No, proceed to 7(c). ☐Yes ☐No

(c) Assess infiltration of biofiltration combined with an approved earthen BMP. This assessment will be used in subsequent BMP selection matrices.

Note: Calculations to be completed during design.

Earthen Detention Basin

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

☐Complete

Continue to Question 8

8. Identifying BMPs based on the Target Design Constituents

(a) Does the project discharge to a 303(d) impaired water body or a water body that has a TMDL adopted? If "No," use Matrix A to select BMPs, consider designing to treat 100% of the WQV, then skip to question 12. ☒Yes ☐No

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

☐ sediments
☐ phosphorus
☐ nitrogen
☒ copper (dissolved or total)
☒ lead (dissolved or total)
☒ zinc (dissolved or total)
☐ general metals (dissolved or total)[2]

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

[1] Assess the combined infiltration of the WQV by both biofiltration and infiltration BMPs. As site constraints allow, size the infiltration BMP up to the un-infiltrated WQV remaining after the biofiltration BMP.

[2] General metals is a designation used by Regional Water Boards when specific metals have not yet been identified as causing the impairment.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale MCTT Wet basin	Austin filter (concrete) Delaware filter MCTT Wet basin
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

9. Treating both Metals and Nutrients.

   Is copper, lead, zinc, or general metals *AND* nitrogen or phosphorous a TDC? If Yes, use Matrix D to select BMPs, then skip to question 12. Otherwise, proceed to question 10. ☐Yes ☒No

10. Treating Only Metals.

    Are copper, lead, zinc, or general metals listed TDCs? If Yes, use Matrix B below to select BMPs, and skip to question 12. Otherwise, proceed to question 11. ☒Yes ☐No

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	MCTT Wet basin Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Biofiltration Strip Biofiltration Swale Wet basin
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

11. Treating Only Nutrients.

Are nitrogen and/or phosphorus listed TDCs? If "Yes," use Matrix C to select BMPs. If "No", please check your answer to 8(a). At this point one of the matrices should have been used for BMP selection for the TDC in question, unless no BMPs are feasible. ☐Yes ☐No

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter**	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches*	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Wet basin Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale Wet basin	Austin filter (concrete) Delaware filter Wet basin
* Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			
** Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Wet basin* Austin filter (earthen) Austin filter (concrete) Delaware filter**	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches***	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches*** Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
* The wet basin should only be considered for phosphorus			
** In cases where earthen BMPs can infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			
*** Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

12. Does the project discharge to a 303(d) waterbody that is listed for mercury or low dissolved oxygen? ☒Yes ☐No

    If Yes, contact the District/Regional NPDES Storm Water Coordinator to determine if standing water in a Delaware filter, wet basin, or MCTT would be a risk to downstream water quality.

13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project) ☒Complete

    __X_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
    ____ Dry Weather Diversion: Checklist T-1, Part 3
    ____ Infiltration Devices: Checklist T-1, Part 4
    ____ Detention Devices: Checklist T-1, Part 5
    ____ GSRDs: Checklist T-1, Part 6
    ____ Traction Sand Traps: Checklist T-1, Part 7
    ____ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
    ____ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    ____ Wet Basins: Checklist T-1, Part 10

14. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) or WQF (depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s): ____100_____%* ☒Complete

15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be infiltrated by the preferred treatment BMP(s): _____100____%** ☒Complete

16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval. ☐Complete

Note: To be completed during design.

*Note: The amount of treatment should be calculated for each BMP and each subwatershed, unless all BMPs within a project are the same. Document in SWDR.

**Note: The Water Quality Volume infiltrated should be documented for the entire project and also for each subwatershed. Document in SWDR.

Treatment BMPs

Checklist T-1, Part 2

Prepared by: WRECO Date: 07/10/13 District-Co-Route: 04-SCl-85; 101

PM : 0.0/24.1; 23.1/28.6, 47.9/52.0 Project ID (or EA): (04-4A7900) RWQCB: San Francisco Bay (2)

Biofiltration Swales / Biofiltration Strips

Note: will be completed during the design phases.

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No
2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☐Yes ☐No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.
3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.
4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.
5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres ☐Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

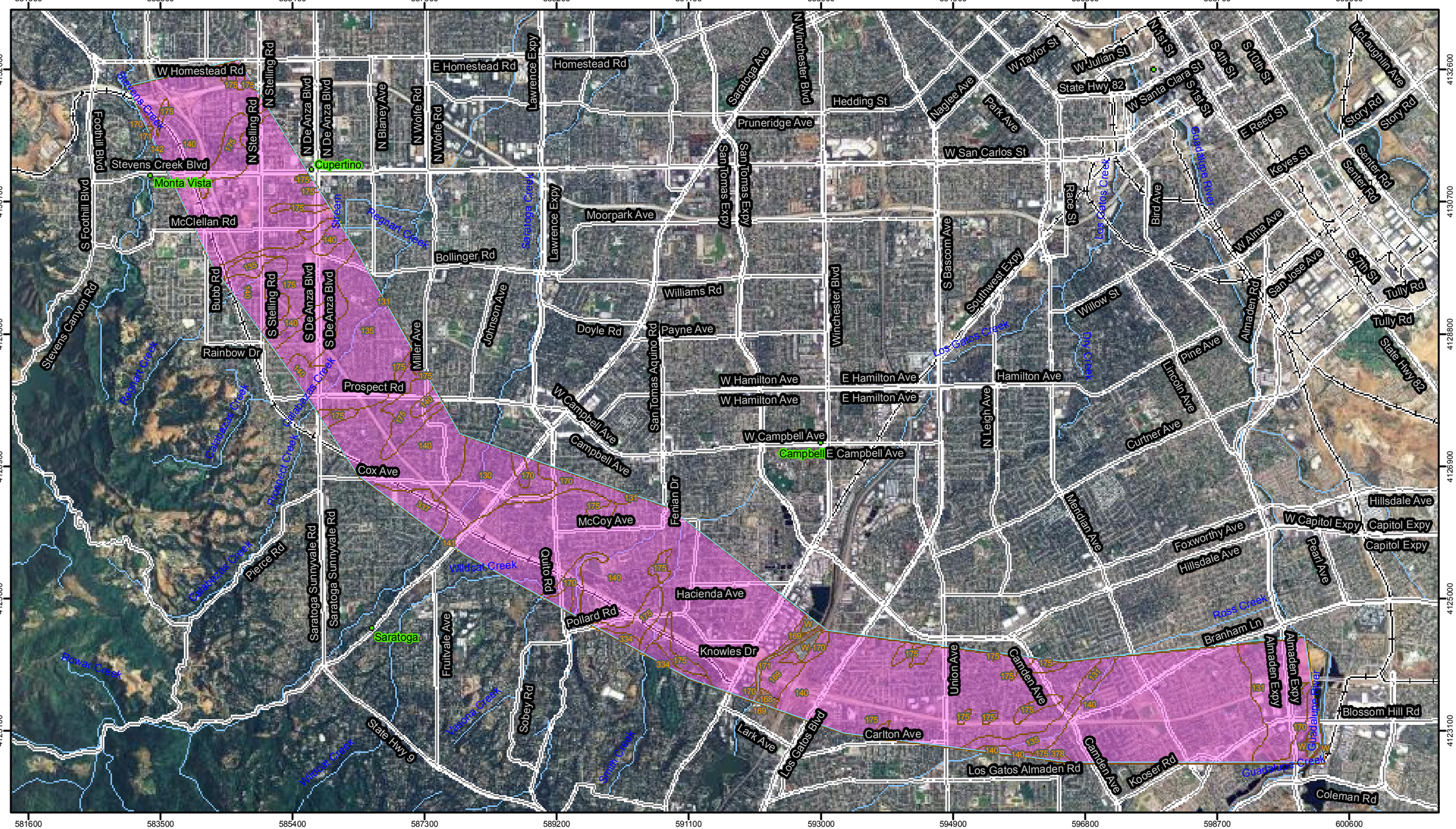
1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☐Yes ☐No

2.	Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.)	☐Yes	☐No
3.	Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)*	☐Yes	☐No
4.	Is the maximum length of a biofiltration strip ≤ 100 ft? Strips > 100 ft. may still be considered as long as potential erosion issues have been addressed.**	☐Yes	☐No
5.	Has the minimum width (perpendicular to flow) of the invert of the biofiltration swale received the concurrence of Maintenance? *	☐Yes	☐No
6.	Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? **	☐Yes	☐No
7.	Has the infiltration rate of the bio-filtration device been calculated and maximized through amendments where appropriate. **	☐Yes	☐No
8.	Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? **	☐Yes	☐No

122° 4' 53" 121° 50' 59"
37° 20' 39" 37° 20' 31"
37° 14' 25" 37° 14' 17"

581600 583500 585400 587300 589200 591100 593000 594900 596800 598700 600600

4132600 4130700 4128800 4126900 4125000 4123100



Map Scale: 1:56,700 if printed on B size (11" x 17") sheet.

N

0 500 1,000 2,000 3,000 Meters

0 3,500 7,000 14,000 21,000 Feet

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:56,700 if printed on B size (11" × 17") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Santa Clara Area, California, Western Part
Survey Area Data: Version 1, Jul 27, 2010

Date(s) aerial images were photographed: 6/13/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Santa Clara Area, California, Western Part (CA641)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
130	Urban land-Still complex, 0 to 2 percent slopes	D	270.6	3.3%
131	Urban land-Elpaloalto complex, 0 to 2 percent slopes	D	344.8	4.2%
135	Urban land-Stevenscreek complex, 0 to 2 percent slopes	D	577.1	7.0%
140	Urban land-Flaskan complex, 0 to 2 percent slopes	D	5,601.7	68.1%
141	Urban land-Flaskan complex, 2 to 9 percent slopes	D	0.2	0.0%
142	Flaskan sandy loam, 15 to 30 percent slopes	C	0.5	0.0%
168	Elder fine sandy loam, protected, 0 to 2 percent slopes	A	12.1	0.1%
169	Urbanland-Elder complex, 0 to 2 percent slopes, protected	D	70.4	0.9%
170	Urbanland-Landelspark complex, 0 to 2 percent slopes	D	252.1	3.1%
171	Elder fine sandy loam, 0 to 2 percent slopes, rarely flooded	A	27.6	0.3%
175	Urbanland-Botella complex, 0 to 2 percent slopes	D	891.8	10.8%
334	Urban Land-Montavista-Togasara complex, 9 to 15 percent slopes	D	47.9	0.6%
337	Urban Land-Togasara-Montavista complex, 2 to 9 percent slopes	D	80.5	1.0%
378	Urbanland-Alumrock-Zeppelin complex, 9 to 15 percent slopes	D	3.3	0.0%
W	Water		49.4	0.6%
Totals for Area of Interest			**8,230.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

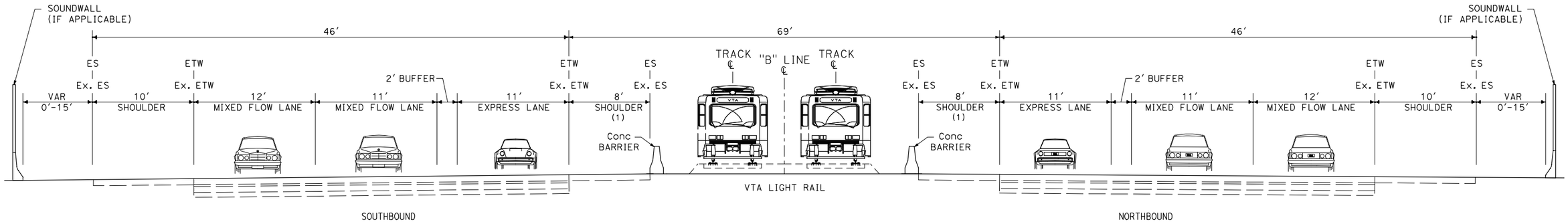
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

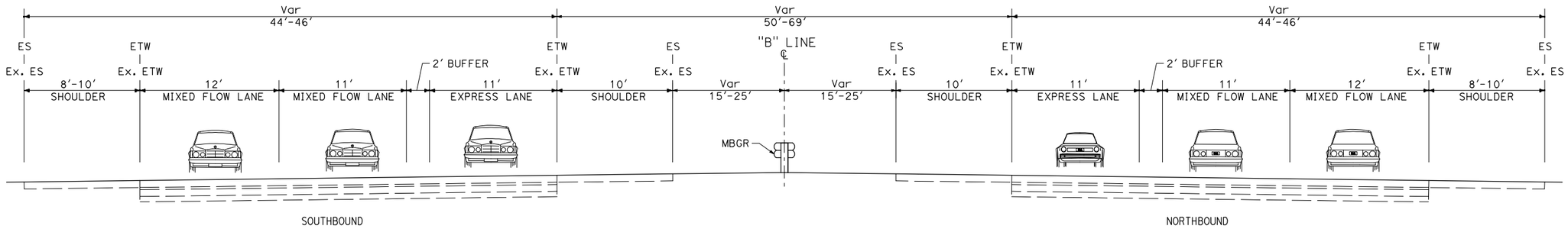
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



TYPICAL SECTION WITH 2' BUFFER (WITH LIGHT RAIL IN MEDIAN)

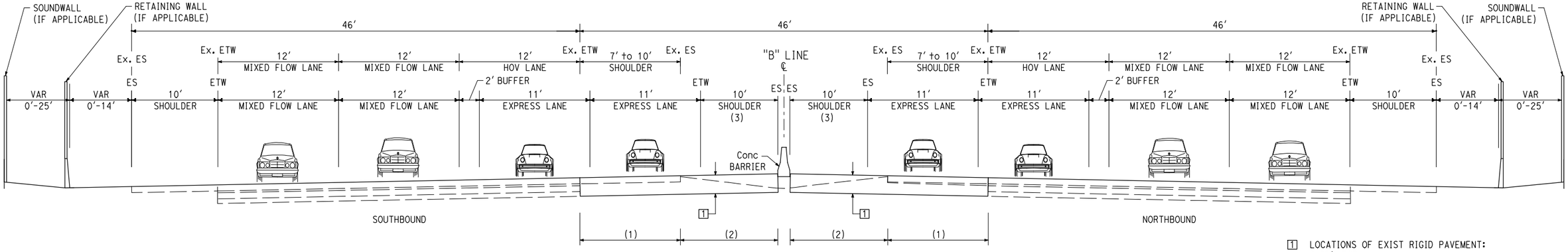


TYPICAL SECTION WITH 2' BUFFER (WITHOUT LIGHT RAIL IN MEDIAN)

NOT TO SCALE DIMENSIONS IN FEET

Notes:
(1) Refer to the Mandatory Design Exceptions Fact Sheet for further detail on shoulder widths.

$FREQUEST$



TYPICAL SECTION WITH 2' BUFFER

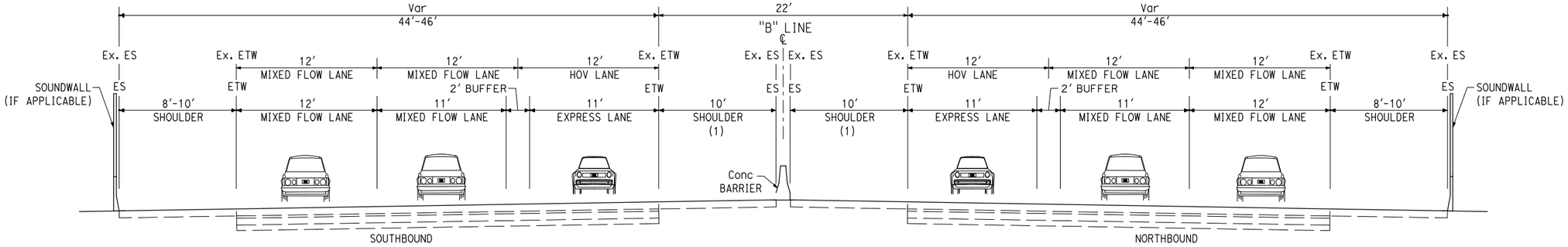
[1] LOCATIONS OF EXIST RIGID PAVEMENT:
0.80′ JPCP
0.25′ HMA-A
0.60′ CI 4 AS
SEG (CI B1)

LOCATIONS OF EXIST RIGID FLEXIBLE PAVEMENT:
0.15′ RHMA-G
0.35′ HMA-A
0.85′ CI 3 AB
0.75′ CI 4 AS
SEG (CI B1)

Notes:
(1) Replace existing inside shoulder with full-depth structural section.
(2) Widen inside median.
(3) Refer to the Mandatory Design Exceptions Fact Sheet for further detail on shoulder widths.

NOT TO SCALE DIMENSIONS IN FEET

$FREQUEST$



TYPICAL SECTION WITH 2' BUFFER

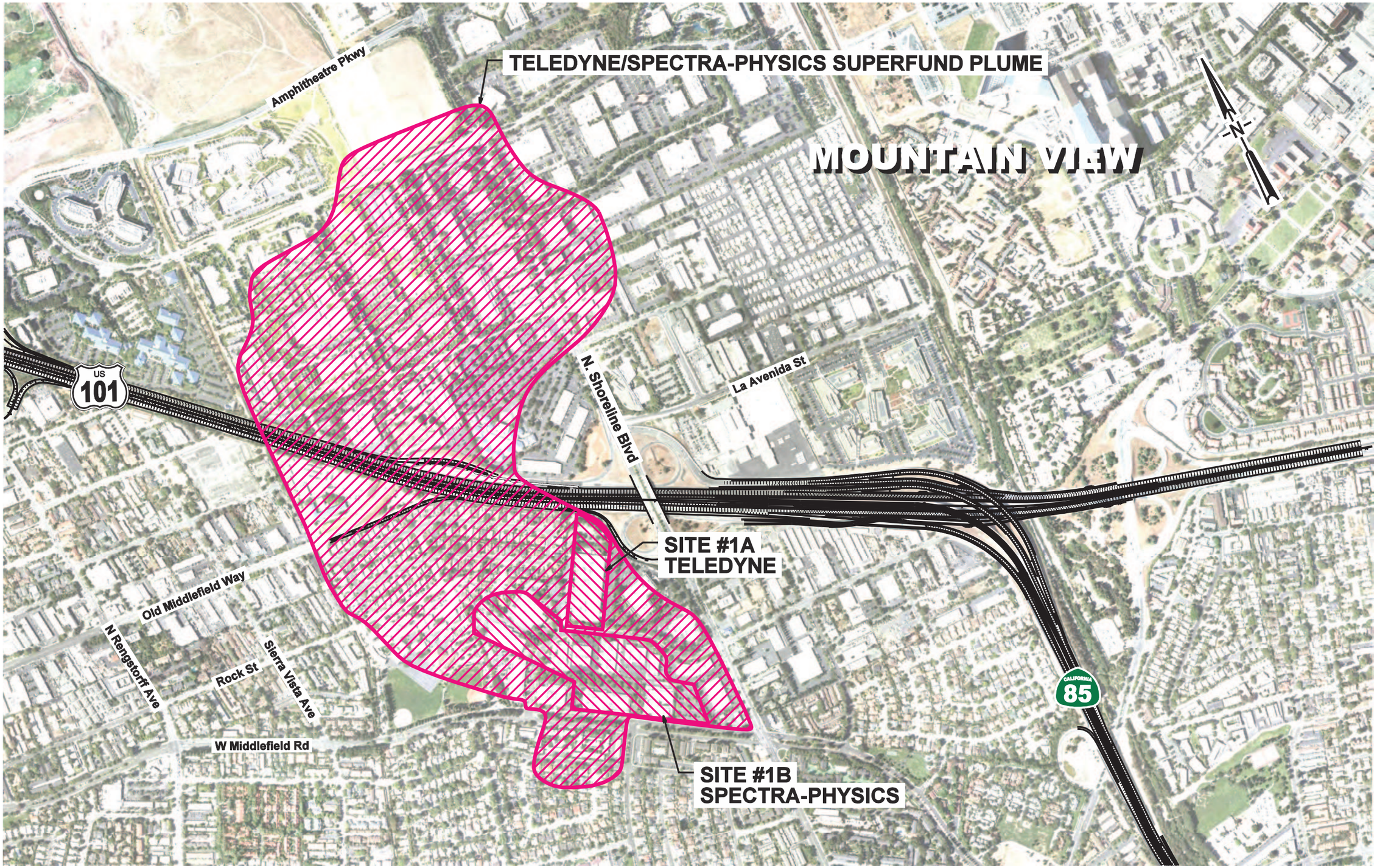
Notes:
(1) Refer to the Mandatory Design Exceptions Fact Sheet for further detail on shoulder widths.

NOT TO SCALE DIMENSIONS IN FEET

$FREQUEST$

VTA Santa Clara Valley Transportation Authority / URS	**SR 85 Express Lanes Project**	**I-280 to US 101 (North)**

Figure
X-3
March 2013



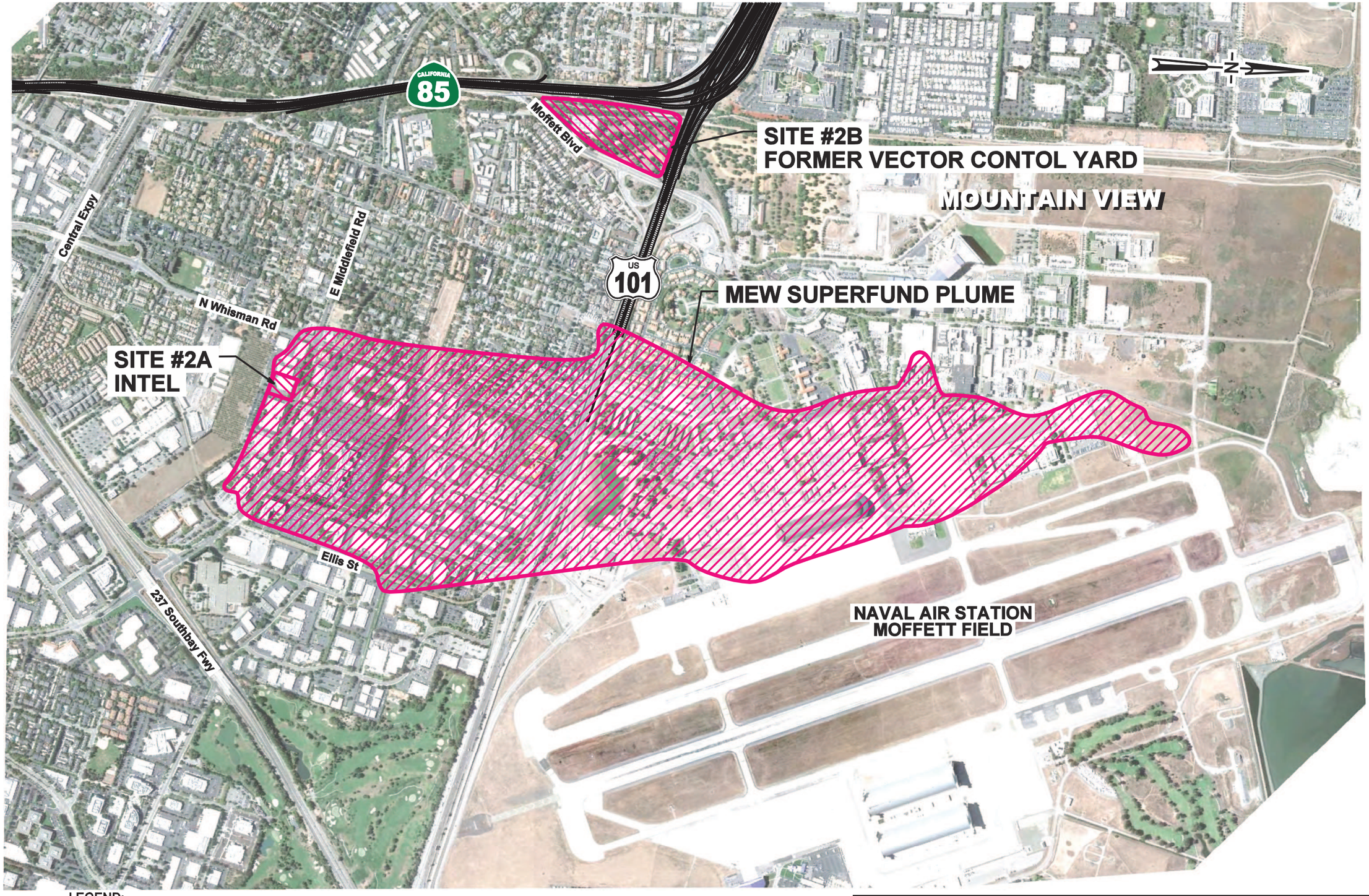
LEGEND:

APPROXIMATE PLUME LIMITS

APPROXIMATE SITE BOUNDARY

Scale: 1" = 750'

URS	SR 85 EXPRESS LANES PROJECT	POTENTIAL HAZARDOUS MATERIALS SITES	Figure 2
			Feburary 2011



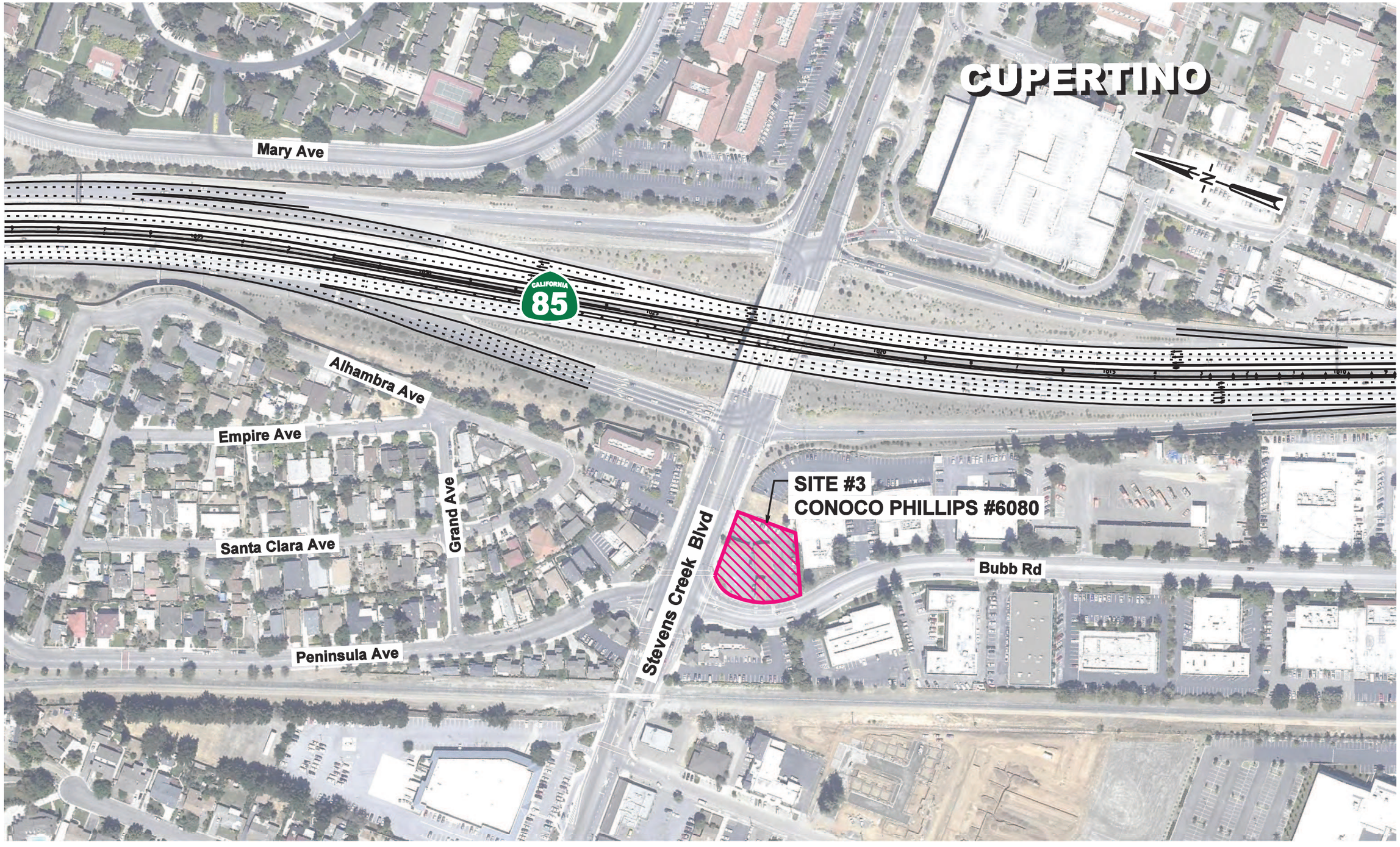
LEGEND:

APPROXIMATE PLUME LIMITS

APPROXIMATE SITE BOUNDARY

Scale: 1" =1100'

URS	SR 85 EXPRESS LANES PROJECT	POTENTIAL HAZARDOUS MATERIALS SITES	Figure 3 Feburary 2011

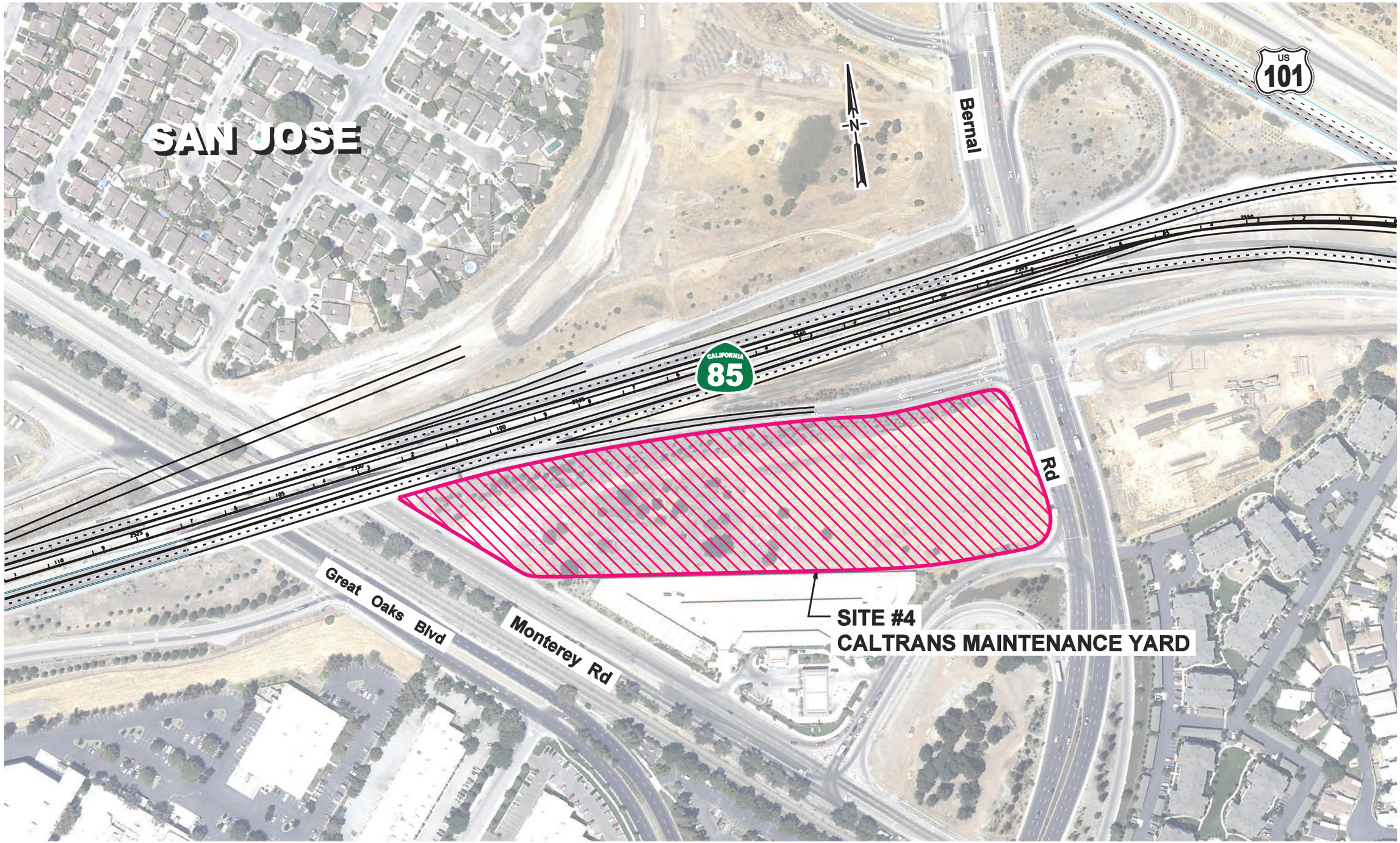


LEGEND:

APPROXIMATE SITE LIMITS

Scale: 1" = 200'

URS	SR 85 EXPRESS LANES PROJECT	POTENTIAL HAZARDOUS MATERIALS SITES	Figure 4
			Feburary 2011

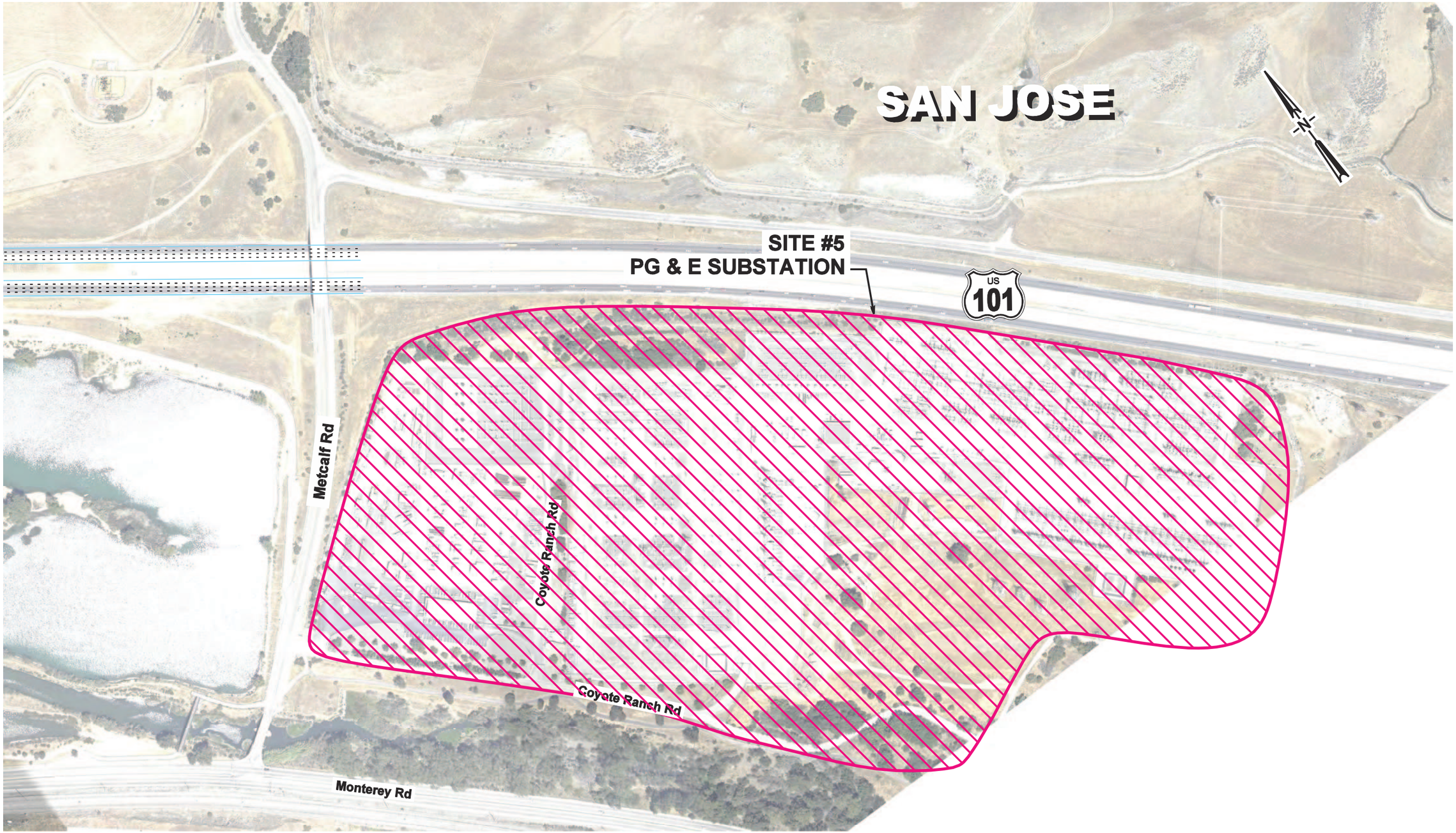


LEGEND:

APPROXIMATE SITE LIMITS

Scale: 1" = 200'

URS	SR 85 EXPRESS LANES PROJECT	POTENTIAL HAZARDOUS MATERIALS SITES	Figure 5
			Feburary 2011



LEGEND:

APPROXIMATE SITE LIMITS

Scale: 1" = 300'

URS

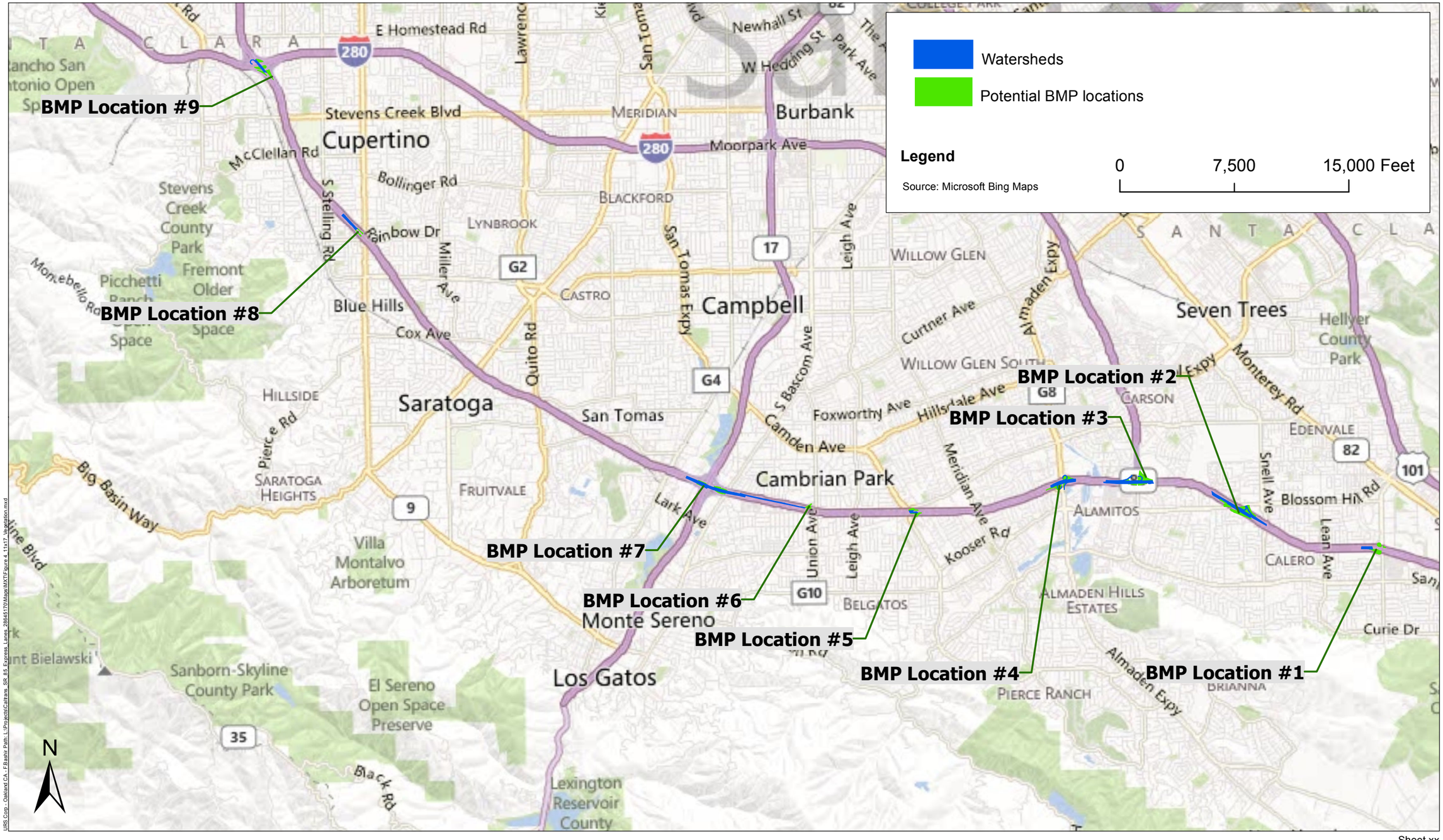
SR 85 EXPRESS LANES PROJECT

POTENTIAL HAZARDOUS MATERIALS SITES

Figure 6

Feburary 2011

Potential Best Management Practices(BMP) Location Map



URS Corp - Oakland CA - P:\Bashir Path: I:\Projects\Caltrans_SR 85 Express Lanes_28645170\Maps\MXT\Figure 4 11x17 Vegetation.mxd

Caltrans
State Route 85 Express Lanes

,Sheet xx
Potential Best Management Practices Locations

WRECO

Major Watersheds in the Project Vicinity of SR-85

0 425 850 1,700 Feet

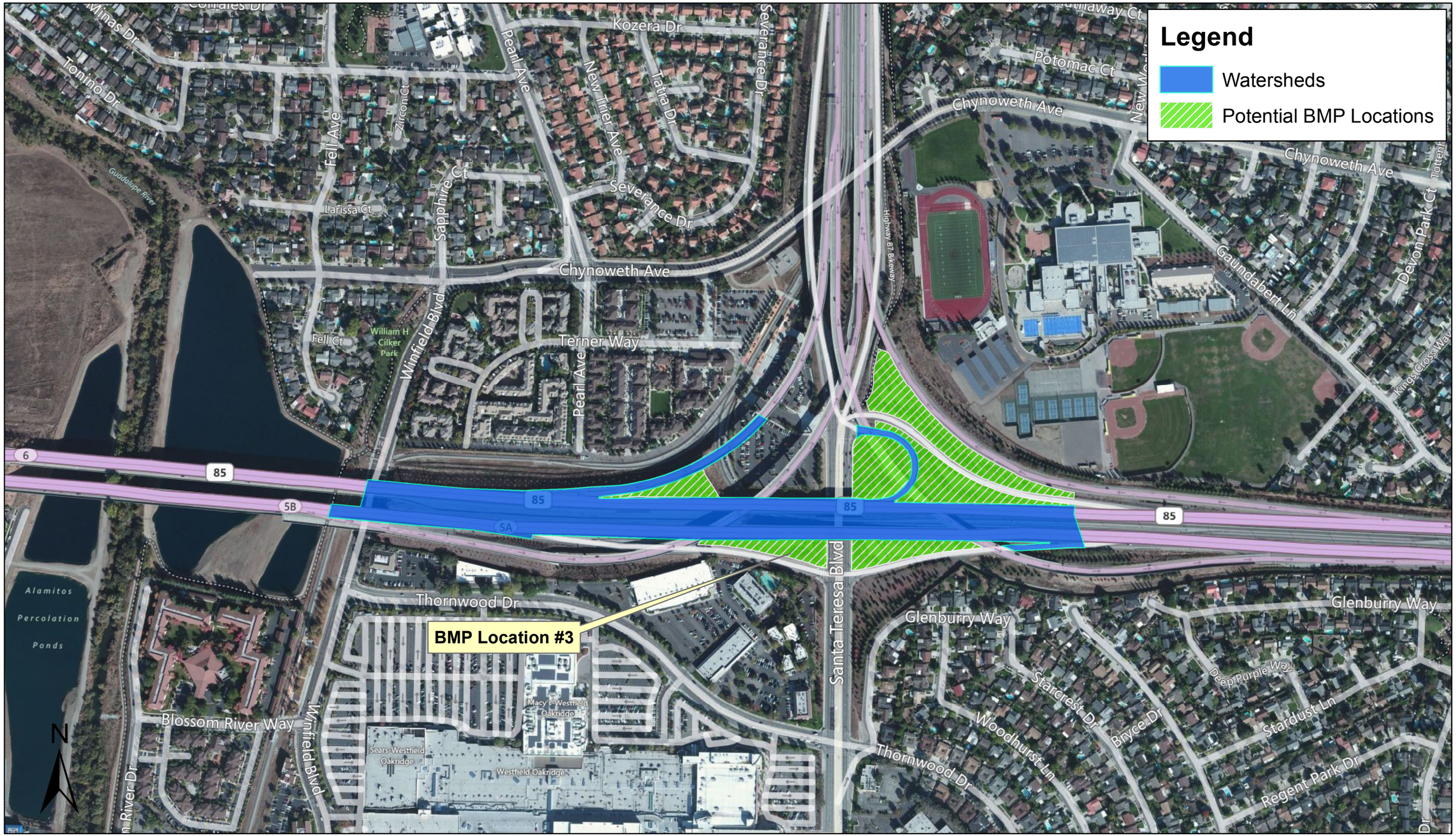
WRECO

Major Watersheds in the Project Vicinity of SR-85

0 625 1,250 2,500 Feet

WRECO

Major Watersheds in the Project Vicinity of SR-85



0 625 1,250 2,500 Feet

WRECO

Major Watersheds in the Project Vicinity of SR-85

WRECO

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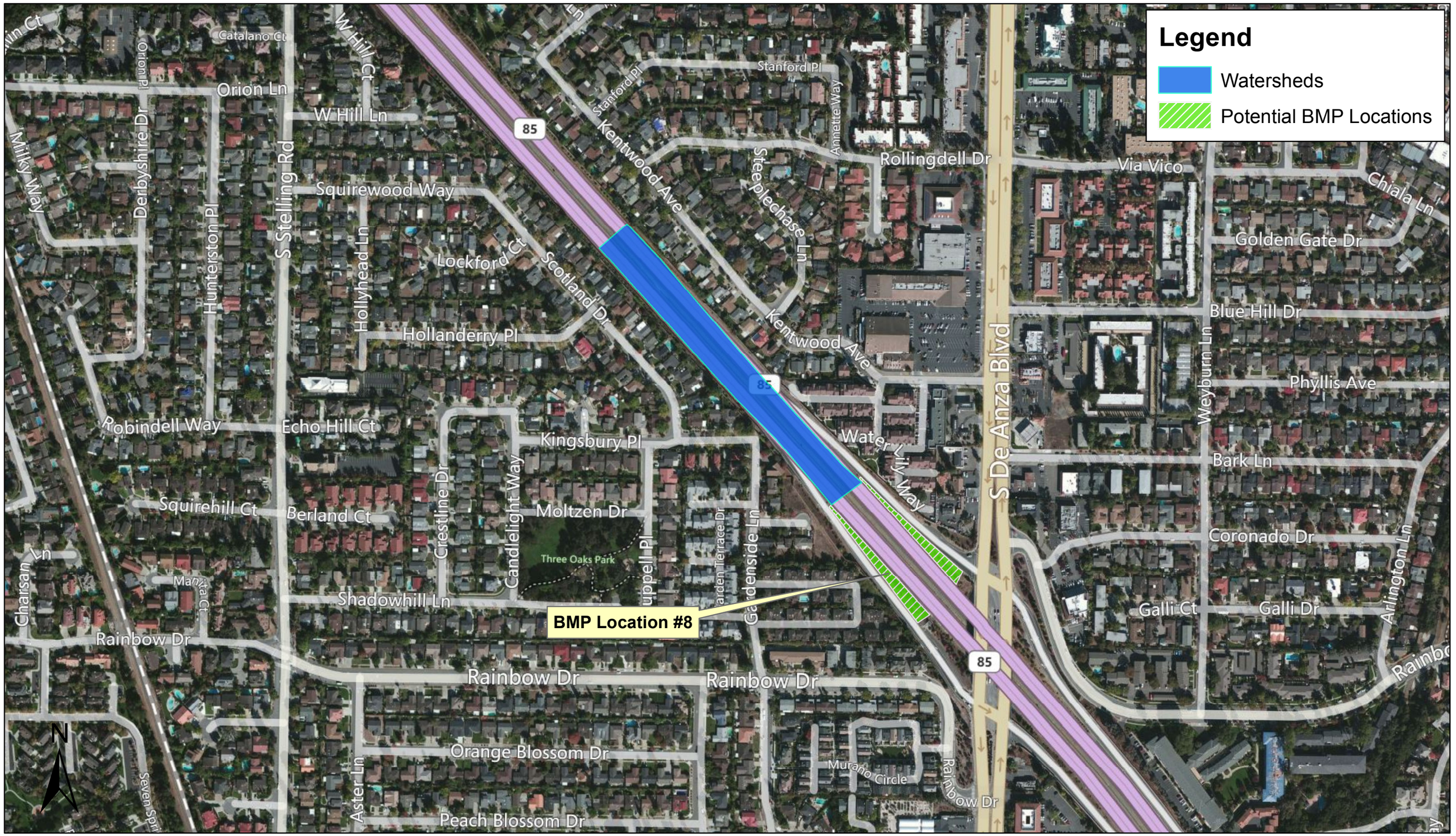

Major Watersheds in the Project Vicinity of SR-85