Supplemental Attachment 2

STORM WATER DATA REPORT (SWDR)

Dist-County-Route: 04-SF/SM-101/I-280

Post Mile Limits: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26

Type of Work: Freeway Corridor Widening / Managed Lanes

project ID (EA): 04-3J100K

Program Identification: NA

Phase: ☒ PID ☐ PA/ED ☐ PS&E

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

Total Disturbed Soil Area: 32.98 ac (Alt 1); 4.62 ac (Alt 2)

PCTA: 22.8 ac (Alt 1); 10.30 ac (Alt 1)

Alternative Compliance (acres): TBD at PA/ED

ATA 2 (50% Rule)? Yes ☐ No ☒

Estimated Const. Start Date: Spring 2023

Estimated Const. Completion Date: Winter 2024

Risk Level: RL 1 ☐ RL 2 ☒ RL 3 ☐ WPCP ☐ Other: _____

Is MWELO applicable? Yes ☐ No ☐

TBD at PA/ED

Is the project within a TMDL watershed? Yes ☒ No ☐

TMDL Compliance Units (acres): TBD at PA/ED

Notification of ADL reuse (if yes, provide date): Yes ☒ Date: TBD at PS&E 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 only.

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:

Nidal Tuqan, Project Manager — *Date*

Amrinder Jhajj, Designated Maintenance Representative — *Date*

Alex McDonald, Designated Landscape Architect Representative — *Date*

[Stamp Required at PS&E only]

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

STORMWATER DATA INFORMATION

1. Project Description

The purpose of the project is to alleviate traffic congestion by providing a managed facility in each direction of U.S. Route 101 and Interstate 280 (I-280) from the terminus of the San Mateo 101 Express Lanes project at I-380 and the I-280 terminus at 5th and King Streets in San Francisco for a distance of approximately 11 miles. The project limits were divided up into six segments which are described in Table 1 and depicted in Figure 1.

Table 1. Project Limit Segment

Segment	Description
1	On U.S. Route 101 from one mile south of the U.S. Route 101/I-380 Separation to the Colma Creek Bridge.
2	On U.S. Route 101 from Colma Creek Bridge to 0.5 miles north of the Sierra Point Overhead
3	On U.S. Route 101 from 0.5 miles north of the Sierra Point Overhead to 0.3 miles south of the Bayshore Boulevard Overcrossing
4	On U.S. Route 101 from 0.3 miles south of the Bayshore Boulevard Overcrossing to the south end of the double deck viaduct connector between U.S. Route 101 and I-280
5	On I-280 from south end of double deck viaduct structure to Islais Creek Bridge
6	On I-280 from Islais Creek Bridge to the terminus of I-280 at 5th and King Streets

In addition to a No-Build Alternative, there are two Build Alternatives. Below is a brief summary of the Build Alternatives.

Alternative 1 (Maximum Geometric Design)

San Mateo County

Alternative 1 would add an additional lane in each direction to U.S. Route 101 which would serve as a managed lane (ML). This would require left shoulder conversion in Segments 1, 2, and 3, and widening U.S. Route 101 to the outside in Segments 2 and 3. Standard lane and shoulder widths will be provided to the extent feasible. Undercrossing structures will be modified and extensive retaining walls constructed to address right-of-way and environmental constraints while accommodating the widening. New and replacement sound walls will be considered. Existing ramp metering and TOS facilities will be modified.

San Francisco County

In the southbound direction, an ML would be provided from near 6th Street on I-280 to the San Mateo / San Francisco County Line on U.S. Route 101 by shoulder conversion in Segments 3, 4, 5, and 6. Outside widening would be provided in Segments 3 and 4.

Three options are proposed in the northbound direction in Segments 4 and 5:

- Alternative 1A would extend the northbound U.S. Route 101 / I-280 connector ramps southward as a barrier-separated collector-distributor (C-D) road to just north of the Bayshore Boulevard Overcrossing. To accommodate the C-D, U.S. Route 101 would be widened eastward, requiring acquisition and widening of a portion of Bayshore Boulevard. The northbound ML would terminate and transition to a General Purpose (GP) lane approximately 1,000 feet south of the Bayshore Boulevard Overcrossing. The ML would then be re-introduced on I-280 from 2,400 feet north of the

U.S. Route 101 / I-280 connector to the I-280 terminus at 5th / King streets by shoulder conversion. There would be a 2.3-mile gap in in the northbound ML for this option.

- Alternative 1B would extend the northbound U.S. Route 101 ML from the San Mateo / San Francisco County Line to just north of the Bayshore Boulevard Overcrossing by converting approximately 1,500 feet of GP lane. The ML would then enter an elevated direct connector structure beginning in the median of U.S. Route 101, then aligning over northbound freeway lanes along a portion of Bayshore Boulevard, and along the right side of the I-280 double-deck viaduct structure before touching down in the median of I-280 near 25th Street. To accommodate the connector structure, widening of Bayshore Boulevard (similar to Alternative 1A) would be required. A continuous northbound ML facility would be provided throughout the project limits for this option.
- Alternative 1C would be similar to Alternative 1B, with the exception of the following:
    - The ML direct-connector structure would serve as a reversible lane facility.
    - A moveable barrier facility would be required at each end of the elevated structure.

A continuous ML facility would be provided throughout the project limits for this option in the peak direction only. The off-peak direction would have a gap in the ML facility within Segments 4 and 5.

Alternative 2 (Minimum Geometric Design)

San Mateo County

Alternative 2 would provide an ML in both directions on U.S. Route 101 within Segments 1, 2, and 3 by converting the left GP lane to an ML. Standard lane and shoulder widths would be provided to the extent feasible. Existing ramp metering and TOS facilities will be modified.

San Francisco County

In the southbound direction, a continuous ML would be provided from near 6th Street on I-280 to the San Mateo / San Francisco County Line on U.S. Route 101 by converting the left GP lane.

Two options are proposed in Segments 4 and 5:

- Alternative 2A would provide a continuous ML in the southbound direction with a shoulder conversion on the I-280 / U.S. Route 101 connector. The northbound ML would terminate and transition to a GP lane approximately 400 feet north of the Bayshore Boulevard Overcrossing. An ML would be re-introduced in the northbound direction from 400 feet north of the 18th Street overcrossing to the I-280 terminus at 5th / King Streets by lane addition. There would be a 3.5-mile gap in in the northbound ML for this option.
- Alternative 2B would provide a continuous ML in the southbound direction in the same manner as Alternative 2A, except that an additional lane would be added to the connector for southbound I-280 to southbound U.S. Route 101 via shoulder conversion. The northbound direction would be identical to Alternative 1B. A continuous ML facility would be provided throughout the project limits for this option in the peak direction only. The off-peak direction would have a gap in the ML facility within Segments 4 and 5.

For Alternative 2 to be viable, State legislation Assembly Bill No. 798, Chapter 474, Section 64112 (b) of Division 3, Title 6.7 of the Government Code, would need to be changed to allow conversion of a GP lane to a managed lane. In addition, Title 23 of US Code, Section 129 (a) (1) (G) states that federal participation shall be permitted on the same basis and in the same manner as construction of toll-free

highways if the number of toll-free non-HOV lanes, excluding auxiliary lanes, after reconstruction, restoration, or rehabilitation, is not less than the number of toll-free non-HOV lanes, excluding auxiliary lanes, before reconstruction, restoration, or rehabilitation.

Both alternatives will need to conform to the planned San Mateo County Express Lanes project (EA 04-1J5600). Just south of I-380, San Mateo County will have one express lane with a 3+ high-occupancy vehicle (HOV) configuration. It is anticipated that remaining express lanes in San Mateo County and in San Francisco County will also need to be for HOV 3+ usage. For purposes of this PSR-PDS, it is assumed that all parties agree to HOV 3+ and that there will be no need for the HOV 3+ to HOV 2+ transition zone in either direction.

Structure Modification

To accommodate the improvements, the structures listed in Table 2 will be modified:

Table 2 Structures Requiring Modification

Structure	Bridge No.	PM	Alt. 1A	Alt. 1B, 1C	Alt. 2A	Alt. 2B
Colma Creek Bridge	35-0118	21.61	W	W	-	-
South SF Belt Railway OH	35-0119	21.69	W	W	-	-
South San Francisco OH	35-0094	21.92	W	W	-	-
Sierra Point Parkway OH	35-0130	23.66	W	W	-	-
3rd Street UC	34-0030	n/a	W	W	-	W
Paul Avenue UC	34-0057	n/a	W	W	-	W
101-280 Managed Lane Connector Ramp Separation	TBD	n/a	-	N	-	N

Notes
W=Widen
N=New

Retaining walls of differing styles, height, and length would be installed in areas where space is restrictive and they can effectively minimize earthwork and right-of-way acquisition required. The types of retaining walls proposed for this project will be determined during the PA&ED phase.

The need for new and replacement sound walls will be determined during the PA&ED phase when a detailed noise study will be performed.

1.1. Study Background

The project would result in work within San Francisco and San Mateo counties within California Department of Transportation (Caltrans) District 4 jurisdiction. The cities of South San Francisco, and Brisbane in San Mateo County, and the City of San Francisco in San Francisco County.

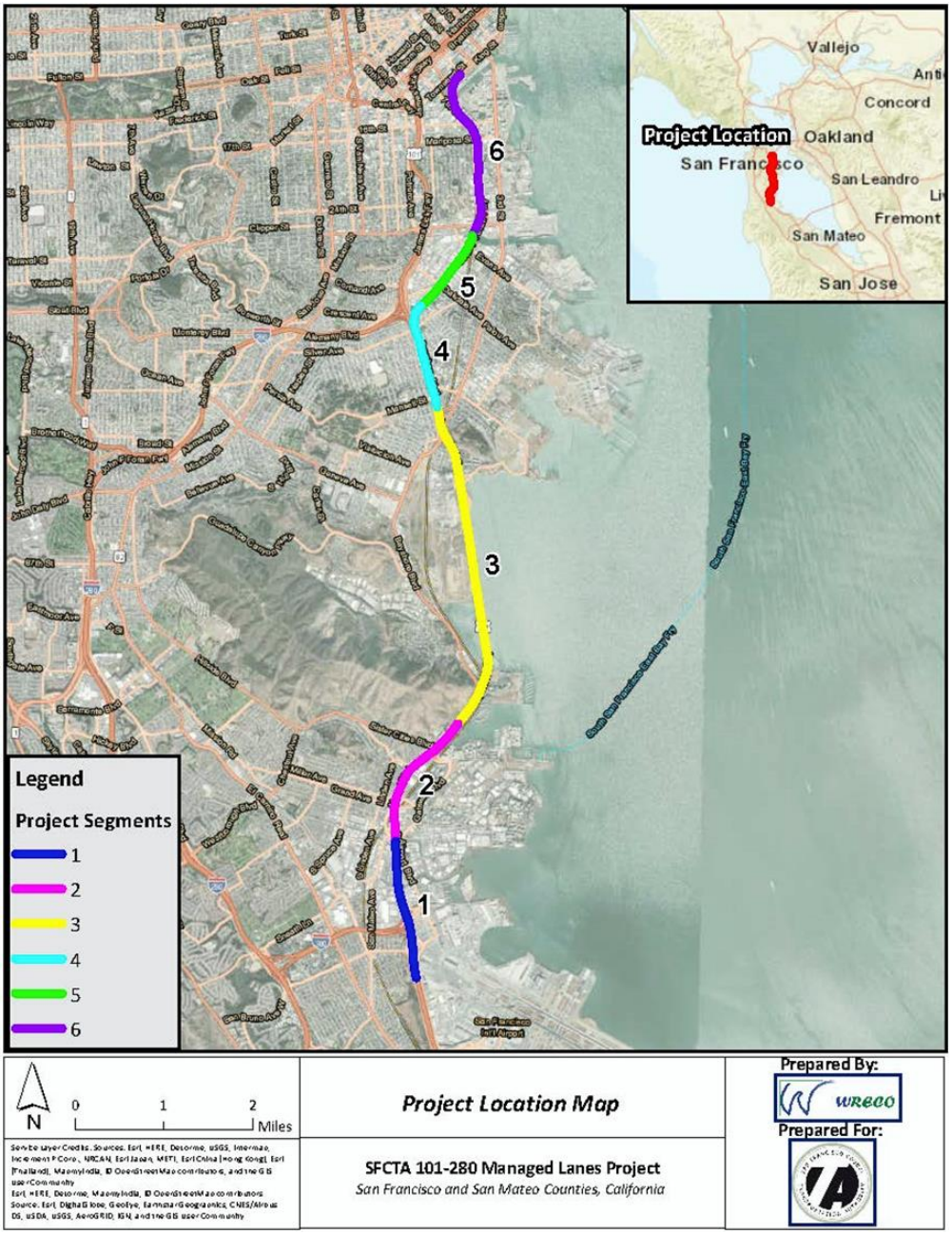


Figure 1. SFCTA 101-280 Managed Lanes project Segments

Source: WMH, 2018

1.2. Disturbed Soil Areas, Added Impervious Areas, and Reworked Impervious Areas

Table 3 summarizes the project disturbed soil areas (DSA), replaced impervious surface areas, and net new mpervious surface areas by build alternative.

Table 3. Project Disturbed Soil Area and Added Impervious Areas

Area (ac)	Build Alternative	
	1	2
Disturbed Soil Area	32.98	4.62
Replaced Impervious Surface Area	11.39	5.68
Net New Impervious Surface Area	11.41	4.62
Existing Impervious Surface Area	276.80	276.80

The DSA was calculated by adding the total existing pervious area, replaced impervious surface area, and net new impervious surface area within the project limits.

2. Site Data and Stormwater Quality Design Issues

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

The project runs through the City of South San Francisco and the City of Brisbane in San Mateo County and the City of San Francisco in San Francisco County. San Mateo County is part of the Phase I National Pollutant Discharge Elimination System (NPDES) General Municipal Separate Storm Sewer Systems (MS4) Permit with the San Francisco Bay SFBRWQCB. The majority of the City and County of San Francisco is part of a combined sewer system and follows guidelines described with in *San Francisco's Water, Sewer, and Stormwater Requirements Manual*, and *San Francisco Stormwater Design Guidelines*. A portion of the project does cross through one of San Francisco's separate sewer system Areas — Mission Bay-SWPS #4 — which is classified as a Phase II MS4 Permittee.

Hydrological Units

The project is entirely within the San Francisco Bay Hydrologic Region and the South Bay Hydrologic Unit (See Table 4). The hydrologic units were determined using the Caltrans Water Quality Planning Tool.

Table 4. Hydrologic Units within the project limits

Post Miles	Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area	Hydrologic Sub-Area Number
101 PM R20.15-19.2, I-280 PM T7.26-R4.51	South Bay	San Mateo Bayside	Undefined	204.4

Source: Caltrans 2017

Receiving Water Bodies and Outfall

Using the Caltrans Water Quality Planning Tool, a few water body crossings were observed within the project area. See Table 5 for the water body crossings and their corresponding post mile limits.

Table 5. Water body Crossings

County	Waterbody Name	Post Mile Crossing
San Mateo	Unnamed Tributary to Lower San Francisco Bay/ San Bruno Channel	U.S. Route 101; 20.653-20.579
	Unnamed Tributary to Colma Creek	U.S. Route 101; 21.135-21.111
	Colma Creek	U.S. Route 101; 21.618-21.604
	Lower San Francisco Bay and Brisbane Lagoon	U.S. Route 101; 23.94-24.637
San Francisco	Islais Creek	I-280; 5.547-5.471
	Mission Creek	I-280; 7.247-7.182

Source: Caltrans Water Quality Tool

All of the water body crossings in San Mateo County are potential receiving water bodies. Neither of the water body crossings In San Francisco County are receiving water bodies because the water will be treated by the combined sewer system and treated at the South Eastern Treatment Plant. The project does run through one of San Francisco's separate sewer MS4 Areas (Mission Bay-SWPS #4), which isn't part of the combined sewer system (see Figure 2). Work done within the Mission Bay separate sewer MS4 area has San Francisco Bay Central as a potential receiving water body. Additional receiving water bodies may exist within the extent of the project and will be analyzed in later phases.

Beneficial Uses of Surface Waters

Beneficial uses are listed Colma Creek, San Francisco Bay Central and Lower, and Brisbane Lagoon. The beneficial uses as described in the RWQCB *Basin Plan* (2017) are listed in Table 6.

Clean Water Act 303[d] List

Lower San Francisco Bay, Colma Creek, and San Francisco Bay Central and Lower are all listed as impaired water bodies in the Clean Water Act Section 303(d) List of Water Quality Limited Segments, issued by the U.S. Environmental Protection Agency (EPA) in October 2016 (see Table 7).

Table 6. Benificial Uses

Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
Colma Creek															E	E	E	E	
San Francisco Bay, Central and unlisted tributaries					E	E	E	E		E		E	E	E		E	E	E	E
San Francisco Bay, Lower and unlisted tributaries					E		E	E		E		E	E	E		E	E	E	E
Brisbane Lagoon										E						E	E	E	

Notes:

AGR – Agricultural Supply
COLD – Cold Freshwater Habitat
COMM – Commercial & Sport Fishing
EST – Estuarine Habitat
FRSH – Freshwater Habitat
GWR – Groundwater Recharge
IND – Industrial service water supply
MAR – Marine Habitat
MIGR – Fish Migration
MUN – Municipal and Domestic Supply
NAV – Navigation
PROC – Industrial Process Supply
RARE – Preservation of Rare and Endangered Species
REC-1 – Water Contact Recreation
REC-2 – Noncontact Water Recreation
SHELL – Shellfish Harvesting
SPWN – Fish Spawning
WARM – Warm Freshwater Habitat
WILD – Wildlife Habitat
E – Existing Beneficial Use

Source: San Francisco Bay RWQCB, 2017

Table 7. Receiving Water Bodies on the 2014/2016 303(d) List

Water Body	Pollutant	Potential Sources	TMDL Completion Date
San Francisco Bay, Central	Chlordane	Unknown	2013
	DDT	Unknown	2013
	Dieldrin	Unknown	2013
	Dioxin Compounds	Unknown	2019
	Furan Compounds	Unknown	2019
	Invasive Species	Unknown	2019
	Mercury	Atmospheric deposition, industrial point sources, municipal point sources, natural sources, nonpoint source, resource extraction	2008
	PCBs	Unknown	2010
	PCBs (Dioxin-like)	Unknown	2010
	Selenium	Unknown	2016
	Trash	Unknown	2021
Colma Creek	Trash	Unknown	2029

Source: SWRCB 2017

Table7. Receiving Water Bodies on the 2014/2016 303(d) List (continued)

Water Body	Pollutant	Potential Sources	TMDL Completion Date
San Francisco Bay, Lower	Chlordane	Unknown	2013
	DDT	Unknown	2013
	Dieldrin	Unknown	2013
	Dioxin compounds	Unknown	2019
	Invasive Species	Unknown	2019
	Mercury	Unknown	2008
	PCBs	Unknown	2010
	PCBs dioxin-like	Unknown	2010
	trash	Unknown	2021
	Furan Compounds	Unknown	2019

Source: SWRCB 2017

Municipal or Domestic Water Supply Reservoirs

The RWQCB *Basin Plan* (2017) did not list any drinking water reservoirs or recharge facilities within the project limits.

Local Agency Special Requirements

All work is expected to occur within Caltrans right-of-way, if work is required outside Caltrans right-of-way, the project would also comply with requirements stated in the local stormwater permit. The City of Brisbane and the City of South San Francisco fall under San Mateo County's Phase I NPDES Municipal General Stormwater MS4 Permit (Order No. R2-2015-0049 NPDES Permit No. CAS612008).

The County of San Francisco has a couple of MS4 areas that aren't part of the combined sewer system. The San Francisco Public Utilities Commission mapping shows that part of I-280 goes through the Mission Bay Separate Sewer Area (SWPS #4). This area, according to the 2009 San Francisco Stormwater Management Plan *Annual Report*, outlets into San Francisco Bay Central. The San Francisco Public Utilities Commission and Port of San Francisco are Traditional Small MS4 Permittees. The project crosses through an MS4 Area — Mission Bay — near Mission Creek (See *Figure 2*).

The City and County of San Francisco will follow the guidelines in *San Francisco's Water, Sewer, and Stormwater Requirements Manual*, and *San Francisco Stormwater Design Guidelines*. While not part of the combined sewer system it is anticipated that San Francisco's MS4 areas will have to follow the same guidelines as the rest of San Francisco County.

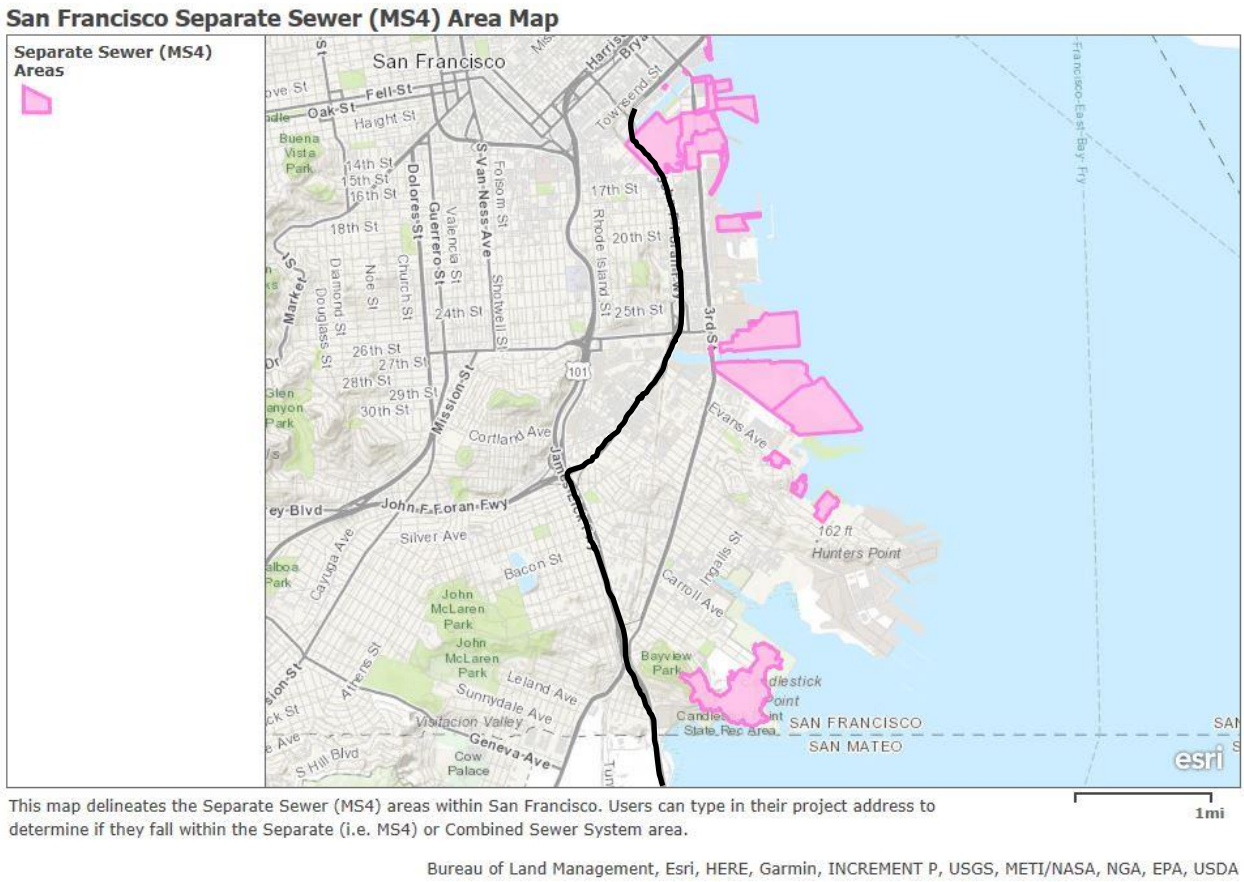


Figure 2. San Francisco MS4 Area Map

Source: Caltrans Water Quality Planning Tool, 2012

401 Water Quality Certification/404 Permit

There are no Areas of Special Biological Significance (ASBS) within or adjacent to the project limits. There are five major water bodies: Mission Creek, Islais Creek, Lower San Francisco Bay, Brisbane Lagoon, and Colma Creek. Smaller water crossings may also be found in the project area and will be addressed in later phases after environmental studies have been conducted.

Alternative 2 isn't anticipated to need a 404 Nationwide Permit from the U.S. Army Corps of Engineers. A 401 Certification from the RWQCB is also not anticipated based on available information at this phase. Alternative 1 may require work within the streambed and dewatering, so the need for a 401 Certification is anticipated. A 404 Nationwide Permit is also anticipated for Alternative 1. The need for environmental permits will be determined during the project Approval/Environmental Document (PA/ED) phase, completed in the Plans, Specifications, & Estimate (PS&E) phase, and obtained before construction.

Topography

The San Francisco Peninsula experiences significant topographic changes throughout the region. The San Bruno Mountains cause a slope toward Guadalupe Valley, San Francisco Bay, and Visitacion Valley. The San Miguel Hills also create a slope to the San Francisco Bay.

Climate

According to the United States Department of Agriculture (USDA) Plant Hardness Zone Map, San Francisco has a temperate climate with winters that are mild and frost-free and summers that are warm to cool. Annual temperatures range from an average high of 65.2 degrees Fahrenheit to an average low of 49.3 degrees Fahrenheit. The highest temperatures occur between June and October and the lowest temperatures occur between December and April. Average yearly rainfall is 19.94 inches, with most rainfall occurring between October and April.

Soil Classification

A detailed geotechnical investigation will be conducted during the PA/ED or PS&E phase, and the findings will be summarized in the PA/ED- or PS&E-phase Stormwater Data Report, as applicable. A cursory assessment of the USDA Web Soil Survey classified most of the project being on Urban Land-Orthents soil with the rest being clay-like soils with D, C, and C/D ratings Hydrologic Soil Group (HSG) ratings.

Slope Stability

The *District 4 Work Plan* (Caltrans 2017) does not identify any areas prone to erosion within the project limits.

Groundwater

The project crosses over multiple ground basins and sub-basins (see Figure 3). These basins are listed in Table 8.Table 8

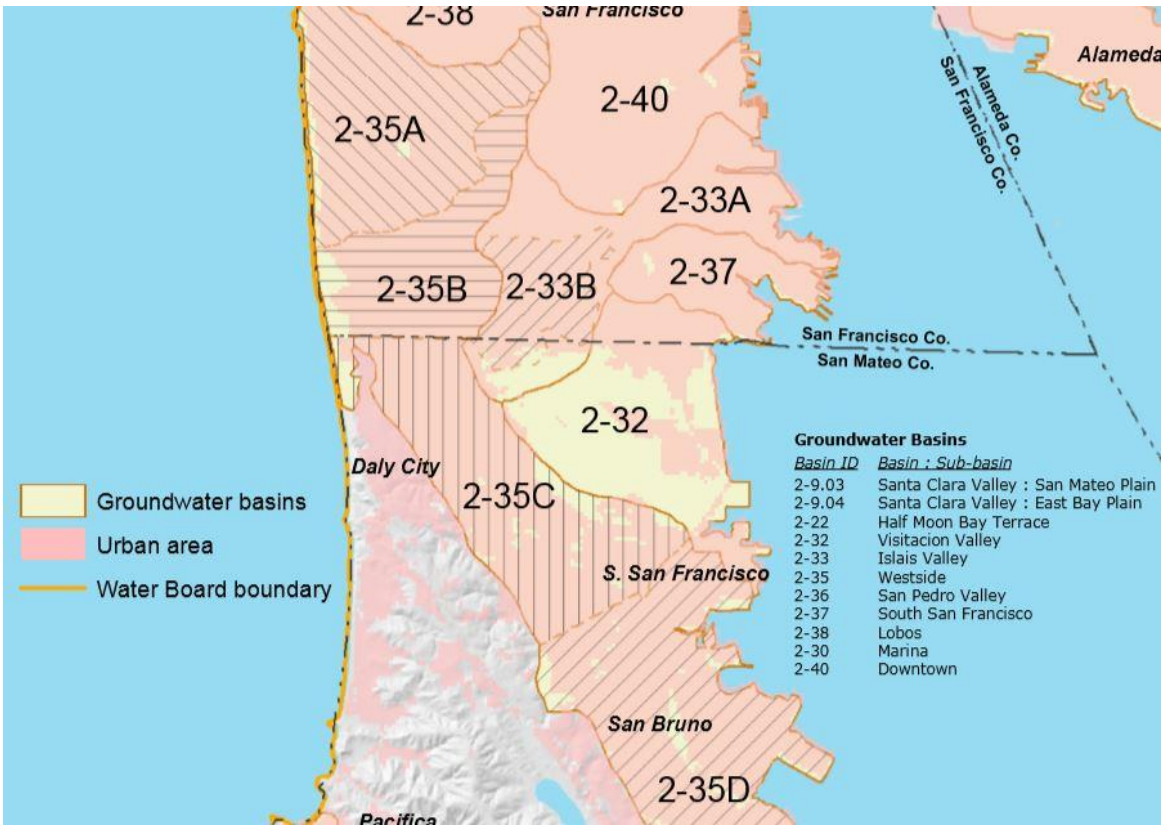


Figure 3. Groundwater Basin Map

(California Department of Water Resources 2017)

Table 8. Groundwater Basin

County	Groundwater Basin	Basin ID
San Mateo	Westside	2-035 D
San Mateo /San Francisco	Visitacion Valley	2-032
San Francisco	South San Francisco	2-037
	Islais Valley	2-033 (A and B)
	Downtown	2-040

(California Department of Water Resources 2017)

According to the San Francisco Bay RWQCB *Basin Plan* (2017), all of these basins have both existing beneficial uses (E) or potential beneficial uses (P). Beneficial uses for the groundwater basins are listed in Table 9.

Table 9. Beneficial Uses of Groundwater Basins

County	Basin	Beneficial Uses				
		MUN	PROC	IND	AGR	FRESH
San Mateo	Westside D	E	E	E	P	--
San Mateo/San Francisco	Visitacion Valley	P	E	E	P	--
San Francisco	South San Francisco	P	E	E	P	
	Islais Valley A	P	E	E	P	--
	Downtown San Francisco	E	P	P	E	--
	Downtown San Francisco	E	P	P	E	--

While studies to determine the groundwater depth have not yet been performed, a cursory assessment of the USDA Web Soil Survey shows the majority of the site having a water table depth of greater than 6 feet. However, given the project's proximity to the bay, the potential for high groundwater is anticipated.

Hazardous Waste

Based on a preliminary study using the California Water Board's Gama Groundwater Information System and the historic industrial landuse, there is a potential for contaminated soil and groundwater within the project area. Hazardous waste studies will be discussed in the PA/ED- and PS&E-phase Stormwater Data Reports. Aerially deposited lead, hazardous waste materials, and potentially contaminated groundwater will be assessed during the PA/ED phase, and the feasibility for ADL reuse within the project limits will be determined during the PS&E phase.

Right-of-Way

This project on U.S. Route 101 and I-280 is within Caltrans Right-of-Way. The project is also located in both the cities of Brisbane and South San Francisco in San Mateo County and the City of San Francisco in San Francisco County. The project is anticipated to stay within Caltrans' Right-of-Way. If work does occur outside of Caltrans Right-of-Way, then local regulation would go into effect.

Land Use

The project is located along parts of U.S. Route 101 and I-280 that are heavily trafficked because they are important roads for people commuting from San Francisco to the Silicon Valley for work. The project goes through the cities of South San Francisco, Brisbane, and San Francisco. According to the land use maps for South San Francisco, Brisbane, and San Francisco, the land around the project is highly developed and consists largely of residential, commercial, and industrial land uses.

Measures for Avoiding or Reducing Potential Stormwater Impacts

Because this project is proposing work along existing U.S. Route 101 and I-280, the project cannot be relocated or realigned. work in creeks and receiving water bodies will be minimized to the extent practicable to avoid or reduce environmental impacts.

Slopes are planned to be no greater than 2:1 (Horizontal:Vertical), compacted as specified in the Caltrans *Standard Specifications*, and stabilized using the permanent erosion control measures to be specified during the PS&E phase. For locations with existing slopes greater than 2:1 (H:V), the existing slopes would be maintained where feasible; proposed slopes would be graded to match the existing condition. Retaining walls would be considered to address Right-of-Way and environmental constraints.

Temporary construction site BMPs would be employed to prevent any construction material from entering the receiving water bodies and are discussed in Section 3 of this *Stormwater Data Report*. The permanent erosion control strategy for this project is discussed further in Section 6 of this *Stormwater Data Report*.

Existing Treatment BMP(s)

There are no known existing treatment BMPs within the project limits; if any are present, they would be avoided during construction, if possible, and will be identified on the plans to be developed during the PS&E phase.

3. Construction Site BMPs to be used on project

Construction site BMPs are temporary project features that minimize and avoid water quality impacts during the construction phase. The project will result in more than 1 acre of DSA and is expected to be required to comply with the CGP. This assessment would be confirmed by the Caltrans District 4 Stormwater Coordinator.

Risk Level Assessment

This project would disturb more than 1 acre of soil and must comply with the NPDES CGP. The risk-level assessment includes the combined receiving water risk and sediment risk; projects are rated as risk levels 1, 2, or 3, with monitoring requirements varying by risk level.

No 303(d)-listed waterbodies listed for sediment are potential receiving water bodies, meaning that no high-risk receiving waterbodies are associated with the project.

The sediment risk factor is determined from the product of the rainfall runoff erosivity factor (R), the K factor, and the length-slope (LS) factor. 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. Due to the size and location of the project, there are multiple R factors, K factors, and LS Factors applicable to the site. The most conservative values were used in order to provide the most conservative value.

Per Caltrans Water Quality Planning Tool, the LS was determined to be 8.17, the K factor is 0.32, and the R factor is 60. Therefore, the project has a watershed erosion estimate of 157 tons/acre, which is classified as having a high sediment risk.

Based on the available information at this phase, the project is classified as a Risk Level 2 project. The risk-level determination documentation is included in the Required Attachments of this *Stormwater Data Report*. The factors used to determine the project risk level would be further refined during the PA/ED and PS&E phases.

Storm Water Pollution Prevention Plan

The project has a DSA of more than 1 acre, thus a *Storm Water Pollution Prevention Plan* (SWPPP) must be prepared by the Contractor and approved by the Caltrans Resident Engineer prior to the start of construction. The SWPPP will include the development of a Construction Site Monitoring Program that presents procedures and methods related to the visual monitoring, sampling, and analysis plans for non-visible pollutants, sediment, turbidity, and pH. Based on the information we have during this phase, the project is a Risk Level 2 project, which requires a SWPPP. Risk Level 3 projects have additional requirements including the preparation of a *Rain Event Action Plan* (REAP), and preparation of annual reports detailing BMP. The SWPPP will be updated in the PA/ED phase.

Construction Site BMP Strategy

Temporary project features that prevent any construction material from getting into receiving water bodies or drainage facilities that discharge to surface waters will be employed. When possible, the scheduling of earth-disturbing construction activities should not be made during anticipated rain events. To minimize potential runoff or run-on within the project area, construction site BMPs should be installed prior to the start of construction or as early as feasibly possible during construction.

Significant parts of the project occur within portions of U.S. Route 101 and I-280 that are elevated. On these elevated portions, the existing drainage will be maintained and captured at low points for treatment.

Measures that are to be considered for this project would be detailed during the design phase. The general construction site BMP strategy for all alternatives of this project consists of the following:

- Soil Stabilization Measures
- Sediment Control Measures
- Tracking Control
- Non-Stormwater Management
- General Construction Site Management

Soil stabilization and sediment control measures include placing linear sediment barriers – such as silt fencing – along embankment slopes to prevent erosion from runoff and run-on sources. At locations where permanent erosion control BMPs can't be immediately placed, slope interruption devices such as fiber rolls should be installed and a soil stabilizer hydraulically applied. These BMP efforts will also address wind erosion concerns.

Temporary drainage inlet protection would be deployed throughout the project at locations where work is proposed. Off-site tracking of sediment would be limited by placing temporary construction site entrances in combination with regular street sweeping.

Various waste-management, materials-handling, and other housekeeping BMPs would be used throughout the duration of the project. Any stockpiles would be maintained with the appropriate

BMPs. These efforts would be covered under the job site management lump sum for the project, which would be included in the cost estimate prepared during the design phase.

Alternative 2 and the No Build Alternative would not involve work within any water body and no dewatering is anticipated. Alternative 1 would possibly involve work within water bodies and dewatering, and thus would require some additional BMPs, which includes the following:

- Dewatering operation
- Turbidity Monitoring

Construction Site BMP strategies will be determined during the PA/ED and PS&E phases.

Dewatering

Alternative 1 may require dewatering. Groundwater extracted from temporary dewatering activities would be managed based on the groundwater quality within the project area. Clean groundwater could be used for dust control, collected on site using desilting basins and/or tanks prior to discharging to receiving waters, or transported to a publicly owned treatment works for clean groundwater. If groundwater is clean, a *Groundwater General Permit* (Order No. R2-2012-0060 NPDES No. CAG912004) should be considered. If the project area contains contaminated groundwater or groundwater that may release contaminated plumes when disturbed, applicable waste discharge requirements or permits — such as a dewatering permit compliant with the *General Waste Discharge Requirements For: Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds* (VOC), *Fuel Leaks and Other Related Wastes* (VOC and Fuel General Permit) (Order No. R2-2012-0012, NPDES No. CAG912002.) — would be obtained during the PS&E phase. An active treatment system may also be necessary to treat contaminated groundwater exposed during excavation activities. Dewatering requirements, cost, and design of the active treatment system would be determined during the PS&E phase.

If dewatering activities occur within Caltrans Right-of-Way, then dewatering operations would follow the guidelines provide in Caltrans *Field Guide to Construction Site Dewatering* (2014). If the dewatering occurs in the County of San Mateo, operations would follow the same guidelines as Caltrans. If dewatering occurs in the County of San Francisco, the operations would follow the guidelines provided in the *San Francisco Public Utilities Commission Construction Best Management Practices Handbook* (2013).

4. Maintenance BMPs

It is anticipated that that there may be drain inlets needing stenciling within Caltrans Right-of-Way. Drain inlet stenciling within Caltrans Right-of-Way would be done in accordance with Caltrans *Standard Plans*. Special provisions, plans, and costs associated with stenciling drainage inlets would be provided in the Contract Documents during the PS&E phase.

5. Other Water Quality Requirements and Agreements

There are currently no negotiated understandings and/or agreements with the San Francisco Bay RWQCB at this time. Communication with the San Francisco Bay RWQCB would be coordinated through the Caltrans District 4 Office of Water Quality. A Section 401 Water Quality Certification and a Section 404 Nationwide Permit Agreement are anticipated for the project.

6. Permanent BMPs

Permanent BMPs are project features that minimize and avoid water quality impacts in the post-construction condition. Permanent BMPs include Design Pollution Prevention and Treatment BMP strategies.

Rapid Stability Assessment

A rapid stability assessment to evaluate potential hydromodification impacts to receiving waters may be required for this project. Based on the criteria outlined in the Caltrans *Hydromodification Requirements Guidance* (2015), a rapid stability assessment is necessary for Alternative 2 because 1) there are surface water crossings and stream crossings classified as Waters of the U.S., 2) the project creates a Net New Impervious (NNI) area of 1 acre or more, and 3) the New Impervious Surface (NIS) area is within the threshold drainage area of the stream crossings.

Alternative 1 is expected to need a 401 Certification, which means the project would have to follow the local hydromodification standards. San Francisco County, as a whole, is exempt from hydromodification because many of the water bodies are tidally influenced and most of the surfaces are impervious. San Mateo County uses the hydromodification management measures described in the San Mateo Countywide Prevention Program's *C.3 Stormwater Technical Guidance*. Based on these guidelines, it is not anticipated that Alternative 1 will require a Rapid Stability Assessment or hydromodification.

If a rapid stability assessment is required it will be completed during the PA/ED or PS&E phase.

Design Pollution Prevention (DPP) BMP Strategy

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

The increase of impervious surface from the pre-project condition could result in an increase to velocity, volume, or potential sediment load of downstream flows. Any increases would be minimized through the implementation of DPP BMPs — such as a mixture of compost and hydroseed — to promote the infiltration and dispersion of runoff. The implementation of erosion control measures along slopes and disturbed soils will also achieve permanent stabilization and vegetation establishment.

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

The project would be constructed to minimize erosion by disturbing slopes only when necessary, minimizing cut and fill areas to reduce slope lengths, and providing concentrated flow conveyance systems consisting of storm drains, ditches, and gutters. Slopes will be constructed at 4:1 (H:V) or flatter or match existing slope steepness. The areas of cut and fill will be developed during the design phase.

Slopes, where feasible, would be constructed at 4:1 (H:V) or flatter, with a maximum allowable steepness of 2:1 (H:V). The grading design and details would be developed during the PS&E phase. Retaining walls are proposed in Alternative 1 where side slopes less than 2:1 (H:V) cannot be used to achieve the desired roadway configuration.

Replacement landscaping and vegetation for slope stabilization should be placed wherever existing landscaping is disturbed. These efforts could include the use of a mixture of hydroseed, hydromulch, compost, and straw; rolled erosion control products should be considered for steeper slopes, unlined ditches and swales, and other areas where there is the potential for increased erosion. Further information on vegetated surfaces would be provided during the design phase.

According to the *District 4 Work Plan* (Caltrans 2017), no areas prone to erosion have been identified within the project limits. The need for hard-surface erosion control measures would be determined during the design phase and would likely include rock slope protection, energy dissipation devices at culvert outlets, and possible vegetation-control lining.

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

Sheet flow would be promoted to the extent practicable to minimize concentrated flows and promote flow over vegetated surfaces. However, because the roadway geometry is constrained by the existing Right-of-Way and the need for retaining walls, runoff from the proposed improvements may also be routed through on-site drainage facilities consisting of inlet and culvert systems, or roadside gutters and ditches, as needed. Every effort would be made to minimize and prevent channelizing, gullying, or scouring of the surrounding slopes. Velocity dissipation devices and flared end sections or headwalls at culvert inlets and outlets would be considered where necessary to prevent erosion. Types and details of the proposed drainage facilities would be developed during the PS&E phase. Risks due to erosion, overtopping, flow backups, or washout would also be further evaluated during the design phase of the project.

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

Existing mature vegetation and landscaping would be protected in place where possible. Areas of clearing and grubbing would be limited to those areas impacted by new construction. Studies to determine environmentally sensitive areas would be developed during the environmental phase. Details of the areas to be preserved would be shown in the project plans to be developed during the design phase.

Treatment BMP Strategy

Treatment BMPs are considered for this project because the proposed improvements involve the creation and/or replacement of more than 1 acre of impervious area for all alternatives. The treatment BMP strategy for this project would comply with the Caltrans NPDES Permit and the San Francisco Bay RWQCB criteria.

The permit states that treatment must be designed according to the following priorities, in the following order of preference:

i. Infiltrate, harvest, and re-use, and/or evapotranspire the stormwater runoff;
ii. Capture and treat the stormwater runoff

Additional treatment BMPs to be considered per the San Francisco Bay RWQCB criteria include bioretention and full-trash-capture devices. The anticipated goal of the project is to provide full treatment for the NIS of the chosen alternative. The project would follow the SMCWPPP's *Stormwater C.3 Guidebook* (2016) for treatment sizing and design criteria within San Mateo County Right-of-Way, and the *San Francisco Stormwater Design Guidelines* within San Francisco County Right-of-Way.

Treatment BMP strategies to be considered for this project to meet both current Caltrans criteria and the requirements presented in the CGP would be determined during the PA/ED and PS&E phases, and conceptual BMP locations would be presented in the PA/ED-phase *Stormwater Data Report*.

Infiltration Devices, Checklist T-1, Parts 1 and 2

Infiltration devices may not be feasible for the project area because the majority of soils are within HSG C or D. The existing soils can be amended or engineered soil media can be used to increase the infiltration potential of proposed treatment BMPs; the design feasibility of infiltration devices should be further evaluated during the PA/ED and PS&E phase once detailed infiltration studies have been conducted and appropriate soil amendments or engineered soil mixes are developed.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 3

Biofiltration devices are feasible for this project because site conditions allow for the establishment of vegetation, and it is expected that adequate area exists within the Right-of-Way to place biofiltration devices. Biofiltration devices can also be designed and constructed to promote infiltration. This is achieved in biofiltration strips by compost amending the soil to increase the porosity of the soil. For biofiltration swales, infiltration can be achieved through the use an engineered soil mix and an underdrain system. Both types of biofiltration devices promote vegetation growth, which contributes to the evapotranspiration of water. The design of biofiltration devices would be investigated during the PA/ED and PS&E phases.

Detention Devices, Checklist T-1, Parts 1 and 4

Detention devices are feasible for this project and could be placed in the ramp loop areas for the purpose of achieving both stormwater treatment and hydromodification management. However, detention devices may not meet the top priorities mentioned in the Caltrans NPDES permit for providing stormwater treatment, particularly in promoting infiltration or noticeable evapotranspiration. Detention devices can possibly be used for harvesting and re-use purposes; this design effort would be further investigated during the PA/ED and PS&E phases.

Gross Solids Removal Devices (GSRDs), Checklist T-1, Parts 1 and 7

This project is subject to Provision E.6 "Region Specific Requirements" of the Caltrans NPDES Permit. Under this provision, projects within the San Francisco Bay RWQCB jurisdiction must meet trash-load-reduction requirements. GSRDs can be used to achieve this permit requirement but would need to be designed in tandem with other treatment BMPs that achieve stormwater treatment through infiltration, harvest, and re-use, or evapotranspiration methods as required under the permit. The design feasibility of GSRDs would be further evaluated during the PA/ED and PS&E phases.

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

Austin sand filters are feasible for this project and could be placed in the ramp loop areas where there is adequate space to place the device with a volume equal to at least the water quality volume with the minimum 2-foot hydraulic head. Similar to detention devices, Austin sand filters do not promote infiltration or evapotranspiration, so Austin sand filters are not a preferred treatment device to provide stormwater treatment. The design feasibility of Austin sand filters would be further investigated during the PA/ED and PS&E phases.

DPP Infiltration Areas, Checklist T-1, Parts 1 and 11

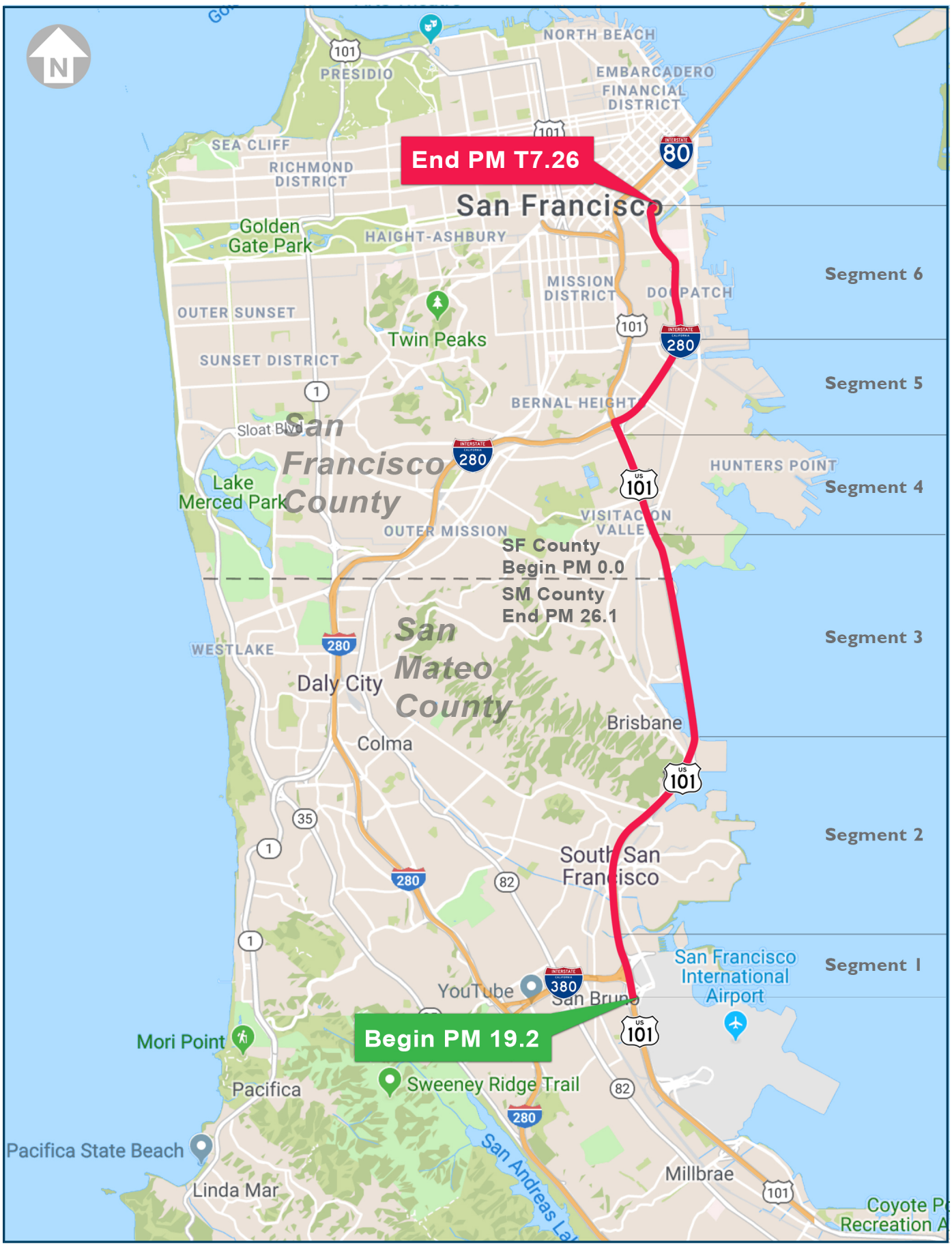
DPP infiltration areas are not considered because typical biofiltration devices or other approved treatment BMPs would be implemented and considered over the use of DPP infiltration areas. The project is also not expected to generate alternative compliance or Total Maximum Daily Load (TMDL) compliance units.

Required Attachments

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

Supplemental Attachments

- Checklist SW-1, Site Data Sources
- Checklist T-1, Part 1 (Treatment BMPs)
- Estimate Support Information for Construction Site, DPP, and/or Treatment BMPs, electronic copies accepted (Costs are for Caltrans internal use only)
- Checklist SW-2, Stormwater Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts
- Checklist DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklist T-1, Part 2–4, 7, 8, 11 (Treatment BMPs)
- Construction Site BMP Consideration Form
- Checklist CS-1, Parts 1–6 (Construction Site BMPs)



WMH

Figure : Project Location Map
US 101/I-280 Managed Lanes Project

DATE: _October 30 2018_____

Project ID (EA): _04-3J00K_____

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to Areas of Special Biological Significance (ASBS), or		✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
	b. discharge to a TMDL watershed where Caltrans is named stakeholder, or	✓		
	c. have other pollution control requirements for surface waters within the project limits?	✓		
5.	Are any existing Treatment BMPs partially or completely removed? (ATA Condition 1, Section 4.4.1)		✓	If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of <u>one acre or more</u> of new impervious surface (NIS)?	✓		If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement 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.		

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		60
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.32
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		8.17
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		157
16	**Site Sediment Risk Factor**		**High**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml	**No**	**Low**

Region 1 Basin Plan

Region 2 Basin Plan

Region 3 Basin Plan

Region 4 Basin Plan

Region 5 Basin Plan

Region 6 Basin Plan

Region 7 Basin Plan

Region 8 Basin Plan

Region 9 Basin Plan

Combined Risk Level Matrix

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

Project Sediment Risk: **High**

Project RW Risk: **Low**

Project Combined Risk: **Level 2**

Checklist SW-1, Site Data Sources

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID (or EA): 04-3J100K

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 available project reports and 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 6.4.3.2. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Water Quality	
• Caltrans. Water Quality Planning Tool. <http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx>	Last accessed: October 31, 2018
• San Francisco Regional Water Quality Board. *San Francisco Bay Basin (Region 2) Water Quality Control Plan* (*Basin Plan*).	May 4, 2017
• San Francisco Public Utilities Commission. San Francisco Stormwater Management Plan Annual Report 2009 (Year 6)	March 30, 2010
• State Water Resources Control Board. 2014/2016 California Integrated Report (Clean Water Act 303(d)/305(b) Report.	October 3, 2017
• City and County of San Francisco. San Francisco Separate Sewer (MS4) Area Map. <https://sfwater.org/index.aspx?page=446>	Last accessed: November 1, 2018
• California Water Board. GAMA Groundwater Information System. https://geotracker.waterboards.ca.gov/gama/gamamap/public/	Last accessed: October 30, 2018
Geotechnical	
• United States Department of Agriculture. Natural Resources Conservation Science. Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>	Last accessed: October 31, 2018
• State Water Resources Control Board. GeoTracker Groundwater Ambient Monitoring and Assessment Application. <http://geotracker.waterboards.ca.gov/gama/gamamap/public/>	Last accessed: October 30, 2018
Topographic	
• United States Geological Survey. Earth Point Topo Map. KMZ File. <http://www.earthpoint.us/TopoMap.aspx >	Last Accessed: October 17, 2018
Hydraulic	
• Caltrans. Water Quality Planning Tool. <http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx>	Last accessed: October 31, 2018
• Caltrans. *Hydromodification Requirements Guidance.*	February 2015
Climatic	

• Western Regional Climate Center. Period of Record Monthly Climate Summary. San Francisco International Airport, California (047769). Period of Record: 07/01/1945 to 06/09/2016. <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7769>	Last accessed: October 17, 2018
• Western Regional Climate Center. Period of Record Monthly Climate Summary. San Francisco Academy of Science California (047765). Period of Record: 07/17/1951 to 07/31/1957. < https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7765>	Last accessed: October 17, 2018
Other Data Categories	
• Caltrans. Storm Water Quality Handbooks, Construction Site Best Management Practices (BMPs) Manual.	May 2017
• Caltrans. Storm Water Quality Handbooks, Project Planning and Design Guide.	July 2017
• Caltrans. Field Guide to Construction Site Dewatering.	June 2014
• Caltrans. *District 4 Work Plan Fiscal Year 2018-2019. CTSW-RT-17-316.11.1*	October 1, 2017
• City of Brisbane. General Plan including updated adopted by city council in October 2017 and January 2018.	January 2018
• City and County of San Francisco Planning Department. Rezoning Options Workbook	2003
• City and County of San Francisco Planning Department. Zoning Map – Zoning Districts	2017
• City of South San Francisco Planning Department. Zoning Map – Zoning Districts	2015

Treatment BMPs
Checklist T-1, Part 1

Prepared by: WRECO Date: November, 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID (or EA): 04-3700K

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 (Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each BMP contributing drainage area 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. This will help to determine if any changes to the BMP strategy are necessary, based on site specific information gathered during later phases. Use the responses to the questions as the basis of developing the narrative in Section 6 of the Stormwater Data Report to document that Treatment BMPs have been appropriately considered and/or incorporated.

Before evaluating an area for treatment capabilities or to incorporate a Treatment BMP, calculate the numeric sizing requirement for each contributing drainage area (WQV from the 85th percentile 24-hour storm event or WQF rate). Soil and geometric information for the project area will be necessary to use this Checklist.

Identify the overall project PCTA, Alternative 1

Refer to Section 4.4 Treatment Areas for more information on defining these areas.

PCTA = NNI + RIS + ATA (1 Impervious) + ATA (2)

NNI = Net New Impervious Area

RIS = Replaced Impervious Surface

ATA (1 Impervious) = Additional Treatment Area required for existing Treatment BMPs that were removed or modified as part of the project

ATA (2) = Additional Treatment Area required when NNI is 50 percent or greater than total project impervious

What is the PCTA for the project? 22.8 **Acres** (A in Table E-1)

The PCTA is the impervious area required to be treated by the project. The PE is to incorporate BMPs until the summation of the treated impervious area of all the BMPs is equivalent to the PCTA for the Project.

Once this area and any ATA 1 (Pervious) has been treated, the project is in compliance with the post construction treatment requirement.

Notes: Due to the developed conditions of the project site, it is assumed that NNI is less then 50% of total impervious area.

Identify the overall project PCTA, Alternative 2

Refer to Section 4.4 Treatment Areas for more information on defining these areas.

PCTA = NNI + RIS + ATA (1 Impervious) + ATA (2)

NNI = Net New Impervious Area

RIS = Replaced Impervious Surface

ATA (1 Impervious) = Additional Treatment Area required for existing Treatment BMPs that were removed or modified as part of the project

ATA (2) = Additional Treatment Area required when NNI is 50 percent or greater than total project impervious

What is the PCTA for the project? 10.3+ATA2 **Acres** (A in Table E-1)

The PCTA is the impervious area required to be treated by the project. The PE is to incorporate BMPs until the summation of the treated impervious area of all the BMPs is equivalent to the PCTA for the Project.

Once this area and any ATA 1 (Pervious) has been treated, the project is in compliance with the post construction treatment requirement.

Notes: Due to the developed conditions of the project site, it is assumed that NNI is less then 50% of total impervious area.

Total Maximum Daily Load (TMDL) Retrofit Projects

If the project is installing Treatment BMPs to only address TMDL requirements, then there is no required PCTA. The Treatment BMPs for a TMDL retrofit project should be designed to treat the impervious and pervious contributing drainage areas, as they are both eligible for compliance unit (CU) credits.

Overall Project Evaluation

Answer all questions, unless otherwise directed.

A. Overall Project Consideration

1. Is the project in a watershed with prescriptive Treatment BMP requirements in an adopted TMDL implementation plan or are there any other requirements for project area (e.g., District, Regional Board, Lawsuit)? ☒ Yes ☐ No

   If Yes, consult the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if there are written agreements related to specific Treatment BMPs. In this case, determine if the rest of this checklist needs to be followed to address other post construction requirements. If not, document BMP(s) in the Individual Treatment BMP Summary Table, provide information on the basis of the BMP requirement and any regulatory coordination in the SWDR narrative, and complete Table E-2. Otherwise, continue.

   If No, continue.

2. Does the receiving water have a TMDL for litter/trash, or is there a region specific requirement related to trash? ☒ Yes ☐ No

   If Yes, first evaluate BMPs that can treat other pollutants and are considered to be full capture devices (GSRDs or other) for litter/trash. If other BMPs cannot be sited, consult with the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if standalone full capture devices (GSRDs or other) are required to be incorporated. If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation".

   If No, continue.

3. Is the project located in an area that uses traction sand more than twice a year? ☐ Yes ☒ No

   If Yes, first consider BMPs that can treat other pollutants and can capture traction sand. If other BMPs cannot be sited, consult the District/Regional Design Stormwater Coordinator to determine if standalone traction sand trap devices should be incorporated.

   If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation". Otherwise, continue with this checklist to identify Treatment BMPs that provide traction sand and other pollutant removal, or to design Treatment BMPs in series.

   If No, continue.

B. Dual Purpose Facilities

   Does the project have (or propose to include) any dual purpose facilities that could meet treatment requirements (e.g., Dry Weather Flow Diversion, flood control basins, etc.)? ☐ Yes ☒ No

   If Yes and 100 percent of the PCTA and ATA 1 (Pervious) will be treated by the dual purpose facility, go to question 6 of "Individual BMP Evaluation".

   If Yes, but 100 percent of the PCTA and ATA 1 (Pervious) has not been addressed, continue.

   If No, continue.

C. Evaluate overall project area for infiltration opportunities using existing and proposed roadside surfaces (DPP Infiltration Areas). Assure the DPP Infiltration Area is stabilized to handle highway drainage design flows, for both sheet and concentrated flows (See HDM Section 800).

   Document DPP Infiltration Areas on the "Individual Treatment BMP Summary Table" located at the end of this checklist.

1. Based on site conditions, do the DPP Infiltration Areas infiltrate 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) for the project? ☐ Yes ☒ No

   Yes, go to question 6 of "Individual BMP Evaluation".

   If No, account for area infiltrated and continue.

2. Can infiltration for these areas be increased by using soil amendments or other means? ☒ Yes ☐ No

   If Yes, and 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is infiltrated, go to question 6 of "Individual BMP Evaluation".

   If Yes, but 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is not infiltrated, continue with this checklist to identify Treatment BMPs that will treat the remaining PCTA and ATA 1 (Pervious).

   If No, continue.

Individual BMP Evaluation

Answer the following questions for each Treatment BMP location being considered. The following process must be followed until the PCTA and ATA 1 (Pervious) or desired treatment area (Alternative Compliance or TMDL CUs) has been achieved; for TMDL CUs, consider both impervious and pervious contributing drainage areas. Use the Individual Treatment BMP Summary Table at the end of the checklist to summarize the selected BMP(s) based on the findings of the following questions for each BMP contributing drainage area.

1. Infiltration Devices (Infiltration Basin, Trench, or other device)

   a. Can 100 percent of the BMP contributing drainage area WQV (or remaining WQV, if in series with a DPP Infiltration Area or other BMP) be infiltrated? ☐ Yes ☒ No

      If Yes, go to question 6.

      If No, continue.

2. Biofiltration Devices (Biofiltration Strips and Swales)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☒ Yes ☐ No

      If Yes, when designing the biofiltration device, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage areas. Consider using existing or amended soils:

      i. If infiltration is >50 percent, continue to b.

      ii. If infiltration is ≤50 percent, go to question 3.

      If No, continue to b.

   b. Can biofiltration devices be designed to: ☒ Yes ☐ No

      i. Treat 100 percent of the WQF/WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

      ii. Meet the siting and design criteria of the Caltrans biofiltration device design guidance.

      If Yes, continue to c.

      If No, go to question 3.

   c. Biofiltration devices are considered to be an effective method of treatment, go to question 6.

3. Earthen type BMPs (Detention Devices, Media Filters, or other devices)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☒ Yes ☐ No

   If Yes, when designing the earthen type BMP, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage area. Consider using existing or amended soils:

   i. If infiltration is >50 percent, continue to b.

   ii. If infiltration is ≤50 percent, go to question 4.

   If No, continue to b.

   b. Can earthen type BMPs (standalone or in series with other approved Treatment BMPs) be designed to: ☒ Yes ☐ No

   iii. Treat 100 percent of the WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

   iv. Meet the criteria of the Caltrans design guidance for the treatment device being considered.

   If Yes, continue to c.

   If No, go to question 4.

   c. Earthen type BMPs are considered to be an effective method of treatment, go to question 6.

4. Targeted Design Constituent (TDC)

   This approach will compare the effectiveness of individual BMPs and allow the PE to use judgment when evaluating BMP feasibility (site constraints, safety, maintenance requirements, life-cycle costs, etc.).

   a. Does the project discharge to a 303(d) impaired receiving water or a receiving water in a TMDL watershed where Caltrans is a named stakeholder? ☒ Yes ☐ No

      If Yes, is the identified pollutant(s) considered to be a TDC (check all that apply below)? Continue to b. ☐ Yes ☒ No

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

      If No or if no TDC is identified, use Matrix A to select BMPs and go to question 5.

   b. Treating Only Sediment. Is sediment a TDC? ☐ Yes ☐ No

      If Yes, use Matrix A to select BMPs and go to question 5.

      If No, continue to c.

   c. Treating Only Metals. Are copper, lead, zinc, or general metals listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix B to select BMPs, and go to question 5.

      If No, continue to d.

   d. Treating Only Nutrients. Are nitrogen and/or phosphorus listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix C to select BMPs, and go to question 5.

      If No, continue e.

   e. Treating both Metals and Nutrients. Is copper, lead, zinc, or general metals AND nitrogen or phosphorous a TDC? ☐ Yes ☐ No

      If yes, use Matrix D to select BMPs, and go to question 5.

      If No, continue.

[1] 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 BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate 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. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration 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	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	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate 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. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration 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	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) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC

Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate 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. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration 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	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*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 BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate 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. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration 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	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*In cases where earthen BMPs also 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.			

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

   If Yes, contact the District/Regional NPDES Coordinator to determine if standing water in a Delaware Media Filter or Wet Basin would be a risk to downstream water quality. Continue to question 6.

   If No, continue to question 6.

6. Identify the Treatment BMPs being considered and complete the Individual Treatment BMP Summary Table and Overall Project Treatment Summary Table on the following pages. Refer to Appendix B of the PPDG and review the checklists identified below for every Treatment BMP under consideration. ☐ Complete

   Document the basis of design in the SWDR narrative and complete Table E-2.

   ____ DPP Infiltration Areas: Checklist T-1, Part 11

   ____ Infiltration Devices: Checklist T-1, Part 2

   ____ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 3

   ____ Detention Devices: Checklist T-1, Part 4

   ____ Traction Sand Traps: Checklist T-1, Part 5

   ____ Dry Weather Diversion: Checklist T-1, Part 6

   ____ GSRDs: Checklist T-1, Part 7

   ____ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8

   Note:

   Multi-Chamber Treatment Train (MCTT) is not listed here because Caltrans has found that other approved BMPs are equally effective and more sustainable due to lower life cycle costs.

   Wet Basins are not listed here due to feasibility issues due to site feasibility and issues with long term operation and maintenance.

   MCTT and Wet Basins may be considered or implemented upon the recommendation of the District/Regional Design Stormwater Coordinator.

7. Prepare cost estimate, including right-of-way, and identify any pertinent site specific determination of feasibility for selected Treatment BMPs and include in the SWDR for approval. ☐ Complete

Individual Treatment BMP Summary Table

☐ Complete

List the selected BMPs based on the findings of this checklist and the treated areas associated with each BMP in Table E-2. For projects with multiple BMPs, add rows (if needed), or attach a separate sheet displaying the following information.

Each BMP must be tracked in Table E-2. Districts may use a modified table based upon their needs. See Section 6.6 for additional information.

Table E-2. Individual Treatment BMP Summary Table[1]

BMP Identifier-Number	BMP Type	Treated Impervious Area (CT RW) (ac)	Treated Impervious Area (Outside CT RW) (ac)	Treated Pervious Area (CT RW) (ac)	Treated Pervious Area (Outside CT RW) (ac)	Treated WQV/WQF (%)
Total Area to be Treated (acre)		(B in Table E-1)	(C in Table E-1)			

[1] The treated areas identified in this table are a product of the BMP CDA and Treated WQV/WQF (%).

PROJECT

101-280 MANAGED LANES

	1A-Option 1 San Francisco Escalated Cost	*1A-Option 2* San Francisco Escalated Cost	*1B* San Francisco Escalated Cost	*1C* San Francisco Escalated Cost	*1D* San Francisco Escalated Cost	*1E* San Francisco Escalated Cost	*2A* San Francisco Escalated Cost	*2B* San Francisco Escalated Cost
TOTAL ROADWAY COST	$ 72,055,108	$ 72,055,108	$ 88,659,661	$ 88,660,483	$ 74,013,239	$ 83,130,355	$ 30,262,034	$ 60,614,361
TOTAL STRUCTURES COST	$ 10,219,248	$ 10,219,248	$ 207,387,765	$ 207,387,765	$ 133,669,173	$ 207,995,892	$ -	$ 204,520,105
SUBTOTAL CONSTRUCTION COST	$ 82,274,356	$ 82,274,356	$ 296,047,426	$ 296,048,248	$ 207,682,412	$ 291,126,247	$ 30,262,034	$ 265,134,466
TOTAL RIGHT OF WAY COST	$ 12,359,181	$ 12,359,181	$ 15,116,097	$ 15,116,097	$ 128,770,099	$ 111,564,849	$ -	$ 15,116,097
TOTAL CAPITAL OUTLAY COSTS	**$ 94,634,000**	**$ 94,634,000**	**$ 311,164,000**	**$ 311,165,000**	**$ 336,453,000**	**$ 402,692,000**	**$ 30,263,000**	**$ 280,251,000**
SUBTOTAL PROJECT COST	**$ 94,700,000**	**$ 94,700,000**	**$ 312,000,000**	**$ 312,000,000**	**$ 337,000,000**	**$ 403,000,000**	**$ 30,300,000**	**$ 281,000,000**

	1A-Option 1 San Mateo Escalated Cost	*1A-Option 2* San Mateo Escalated Cost	*1B* San Mateo Escalated Cost	*1C* San Mateo Escalated Cost	*1D* San Mateo Escalated Cost	*1E* San Mateo Escalated Cost	*2A* San Mateo Escalated Cost	*2B* San Mateo Escalated Cost
TOTAL ROADWAY COST	$ 99,457,735	$ 87,032,212	$ 99,457,735	$ 99,457,735	$ 99,457,735	$ 99,457,735	$ 56,237,051	$ 56,237,051
TOTAL STRUCTURES COST	$ 38,503,944	$ 30,192,865	$ 38,503,944	$ 38,503,944	$ 38,503,944	$ 38,503,944	$ 7,838,090	$ 7,838,090
SUBTOTAL CONSTRUCTION COST	$ 137,961,678	$ 117,225,077	$ 137,961,678	$ 137,961,678	$ 137,961,678	$ 137,961,678	$ 64,075,142	$ 64,075,142
TOTAL RIGHT OF WAY COST	$ 12,163,172	$ 477,896	$ 12,163,172	$ 12,163,172	$ 12,163,172	$ 12,163,172	$ -	$ -
TOTAL CAPITAL OUTLAY COSTS	**$ 150,125,000**	**$ 117,703,000**	**$ 150,125,000**	**$ 150,125,000**	**$ 150,125,000**	**$ 150,125,000**	**$ 64,076,000**	**$ 64,076,000**
SUBTOTAL PROJECT COST	**$ 151,000,000**	**$ 118,000,000**	**$ 151,000,000**	**$ 151,000,000**	**$ 151,000,000**	**$ 151,000,000**	**$ 64,100,000**	**$ 64,100,000**
TOTAL PROJECT COST	**$ 245,700,000**	**$ 212,700,000**	**$ 463,000,000**	**$ 463,000,000**	**$ 488,000,000**	**$ 554,000,000**	**$ 94,400,000**	**$ 345,100,000**

Checklist SW-2, Stormwater Quality Issues Summary

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J100K

RWQCB: San Francisco Bay (2)

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Consult other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Design Stormwater Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

1.	Determine the receiving waters for the project	☒ 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, as shown by DWP.	☒ 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.	Identify rainy season.	☒ Complete	☐ NA
8.	If applicable, 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).	☒ 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 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
16.	Determine if project area has any slope stabilization concerns.	☒ Complete	☐ NA
17.	Describe the local land use within the project area and adjacent areas.	☒ Complete	☐ NA
18.	Evaluate the presence of dry weather flow.	☐ Complete	☒ NA

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

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J100K

RWQCB: San Francisco Bay (2)

The PE should 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; do not discuss items identified as not applicable.

To be completed in PA/ED and PS&E

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 stormwater 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 stormwater impacts?	☐Yes	☐No	☐NA

Design Pollution Prevention BMPs

Checklist DPP-1, Part 1

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

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 the project increase velocity or volume of downstream flow?	☒Yes	☐No	☐NA
Will the project discharge to unlined channels?	☒Yes	☐No	☐NA
Will the 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 Checklist DPP-1, Part 2.

Notes: Question three is yes for Alternative one and no for alternative two.

Slope/Surface Protection Systems

Will the 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 Checklist DPP-1, Part 3.

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 Checklist DPP-1, Part 4.

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

It is the goal of the Stormwater Program to maximize the protection of desirable existing vegetation, soils, and stream buffer areas to provide erosion and sediment control benefits on all projects. ☒Complete

Consider ***Preservation of Existing Vegetation, soils, and stream buffer areas***, complete the Checklist DPP-1, Part 5.

Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

TO BE COMPLETED DURING PA/ED AND PS&E

Downstream Effects Related to Potentially Increased Flow

1. Review total paved area and reduce to the maximum extent practicable. ☒Complete
2. Review channel lining materials and design for stream bank erosion control. ☐Complete
   (a) See Chapters 860 and 870 of the HDM. ☐Complete
   (b) Consider channel erosion control measures within the construction limits as well as downstream. Consider scour velocity. If erosion control measures are required downstream of construction limits obtain the appropriate permits and right of way documents to include work within the construction limits. ☐Complete
3. Include, where appropriate, energy dissipation devices at culvert outlets. ☐Complete
4. Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. ☐Complete
5. Include, if appropriate, peak flow attenuation basins or devices to reduce peak discharges. ☐Complete
6. Calculate the water quality volume infiltrated within the project limits. These calculations will be used in the Checklist T-1, Part 1. ☐Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

TO BE COMPLETED DURING PA/ED AND PS&E

Slope / Surface Protection Systems

1. What are the proposed areas of cut and fill? (attach plan or map) ☐Complete
2. Were benches or terraces provided on high cut and fill slopes to shorten slope length? ☐Yes ☐No
3. Were concentrated flows collected in stabilized drains or channels? ☐Yes ☐No
4. Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)? ☒Yes ☐No

   If Yes, District Landscape Architect is responsible for an erosion control strategy and may prepare an erosion control plan.
5. Are new or disturbed slopes > 2:1 (h:v)? ☐Yes ☐No

   If Yes, DES Geotechnical Design unit 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 Stormwater Coordinator for slopes steeper than 2:1 (h:v).

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. Plan transition BMPs from construction to permanent establishment. ☐Complete
5. Have vegetated areas and supporting permanent irrigation systems been designed to comply with the Model Water Efficient Landscape Ordinance (MWELO)? ☐Yes ☐No
6. Minimize overland and concentrated flow depths and velocities. ☐Complete

HARD SURFACES

1. Are hard surfaces minimized? ☒Yes ☐No

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

TO BE COMPLETED DURING PA/ED AND PS&E

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, 835, and Chapter 860 of the HDM. ☒Complete
2. Review existing and proposed conditions to remove any dike not required for slope stability, erosion control, and water conveyance. ☐Complete
3. Evaluate risks due to erosion, overtopping, flow backups or washout. ☐Complete
4. Consider outlet protection where localized scour is anticipated. ☐Complete
5. Examine the site for run-on from off-site sources. ☐Complete
6. Consider permissible shear and velocity when selecting lining material (See Table 865.2 in the HDM). ☐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:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

TO BE COMPLETED DURING PA/ED AND PS&E

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

1. Review Preservation of Property, (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation, soils, and stream buffer areas. ☐Complete
2. Has all vegetation, soils, and stream buffer areas 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, soils, and stream buffer areas 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 2

Prepared by: WRECO Date: November, 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

RWQCB: San Francisco Bay (2)

To be completed in PA/ED and PS&E

Infiltration Devices

Feasibility

1. Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality? ☐Yes ☒No
2. Does infiltration at the site compromise the integrity of any slopes in the area? ☒Yes ☐No
3. Is site located over a previously identified contaminated groundwater plume? ☒Yes ☐No

   If "Yes" to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.

4. At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 0.5 inches/hr? ☒Yes ☐No

   If "Yes", the location can only be considered if vector control has been addressed (e.g., underground).

5. (a) Does site have groundwater within 5 ft of basin invert? ☐Yes ☒No

   (b) Does site investigation indicate that the infiltration rate is significantly greater than 2.5 inches/hr? ☐Yes ☐No

   If "Yes" to either part of Question 5, adequate groundwater information must be available or contact RWQCB for concurrence before approving the site for infiltration.

6. Does adequate area exist within the RW to place Infiltration Device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements sections. If "No", continue to Question 7.
7. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Infiltration Devices and how much RW would be needed to treat WQV, or a portion thereof? _____ acres ☐Yes ☐No

   If Yes, continue to Design Elements section.

   If No, continue to Question 8.

8. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

Design Elements – Infiltration Basin

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 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 an investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) * ☐Yes ☐No
2. Has an upstream bypass or overflow spillway with scour protection been provided? * ☐Yes ☐No
3. Is the Infiltration Basin size sufficient to capture the WQV, or portion thereof, with a maximum 96-hour drawdown time? Longer drawdown times may be allowable if vector controls have been implemented (e.g., underground chamber with flap gates) and coordinated with the District/Regional Design Stormwater Coordinator.* ☐Yes ☐No
4. Can access be provided to the invert of the Infiltration Basin? * ☐Yes ☐No
5. Can the Infiltration Basin accommodate the freeboard above the overflow event elevation (reference Appendix B.1.5.1)? * ☐Yes ☐No
6. Can the Infiltration Basin be designed with interior side slopes no steeper than 4:1 (h:v) (may be 3:1 [h:v] with approval by District Maintenance)? * ☐Yes ☐No
7. Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? If No, consider rock or similar protective system. Note: Infiltration Basins may be lined, in which case no vegetation would be required for lined areas.** ☐Yes ☐No
8. Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? ** ☐Yes ☐No
9. Can a gravity-fed maintenance drain be placed? ** ☐Yes ☐No

Design Elements – Infiltration Trench

1. Has an investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) * ☐Yes ☐No
2. Is the surrounding soil within Hydrologic Soil Groups (HSG) Types A, B, and C while preserving an acceptable infiltration rate? * ☐Yes ☐No
3. Is the Infiltration Trench size sufficient to capture the WQV, or portion thereof, with a maximum 96-hour drawdown time? Longer drawdown times may be allowable, coordinate with the District/Regional Design Stormwater Coordinator.* ☐Yes ☐No
4. Is the depth of the Infiltration Trench ≤ 13 ft? * ☐Yes ☐No
5. Can an observation well be placed in the trench? ** ☐Yes ☐No
6. Can access be provided to the Infiltration Trench? * ☐Yes ☐No
7. Can pretreatment be provided to capture sediment in the runoff (such as using vegetation or a flow splitter with a sump)? ** ☐Yes ☐No
8. Can flow diversion be designed, constructed, and maintained to bypass flows exceeding the Water Quality event? ** ☐Yes ☐No
9. Does a perimeter curb or similar device need to be provided (to limit wheel loads upon the trench)? ** ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 3

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J100K

RWQCB: San Francisco Bay (2)

Biofiltration Swales / Biofiltration Strips

To be completed in PA/ED and PS&E

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No

   If "No", evaluate other BMPs.

2. Can biofiltration swale be designed with a slope between 0.25 and 6 percent (with 1 to 2 percent preferred)? ☒Yes ☐No

   If "No", Biofiltration Swales are not feasible.

3. Can biofiltration strips be designed with a maximum slope of 2H:1V (with 4H:1V or flatter preferred)? ☒Yes ☐No

   If "No", Biofiltration Strips are not feasible.

4. Are Biofiltration device(s) proposed at sites where known contaminated soils exist? ☐Yes ☐No

   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

5. Does adequate area exist within the RW to place Biofiltration device(s)? ☒Yes ☐No

   If "Yes", continue to Design Elements section. If "No", continue to Question 6.

6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Biofiltration devices and how much RW would be needed to treat WQF? ☐Yes ☐No
   _____ acres

   If "Yes", continue to Design Elements section. If "No", continue to Question 7.

7. If adequate area cannot be obtained, document in Section 6 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 6 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) ☐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.4.3)* ☐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 District 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 or pretreatment? ** ☐Yes ☐No

   If "Yes", document the amount of runoff treated (WQV/WQF).
9. Has the lining material been selected based on the permissible shear and velocity (refer to HDM Chapter 860 and Table 865.2)?* ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 4

Prepared by: WECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

RWQCB: San Francisco Bay (2)

Detention Devices

To be completed in PA/ED and PS&E

Feasibility

1. Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems? ☐Yes ☐No

2. Is basin invert ≥ 5 ft above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.) ☒Yes ☐No

   If No to any question above, then Detention Devices are not feasible.

3. If the Detention Device is being used to capture traction sand, is the total volume of the device at least equal to the WQV designed to be treated plus the anticipated volume of traction sand, while maintaining a minimum 12-inch freeboard (1 ft)? ☐Yes ☐No

   If No, then Detention Devices are not feasible.

4. Does adequate area exist within the RW to place Detention Device? ☒Yes ☐No

   If Yes, continue to the Design Elements section. If No, continue to Question 5.

5. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Detention Device and how much RW would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section. If No, continue to Question 6.

6. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 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 location of the Detention Device been evaluated for any effects to the adjacent roadway and subgrade? * ☐Yes ☐No
2. Can a minimum freeboard of 12 inches be provided above the overflow event elevation? * ☐Yes ☐No
3. Is an upstream bypass or overflow outlet provided? * ☐Yes ☐No
4. Is the drawdown time of the Detention Device a maximum of 96 hours? * ☐Yes ☐No
5. Is the basin outlet designed to minimize clogging (minimum outlet orifice diameter of 0.5 inches)? * ☐Yes ☐No
6. Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? * ☐Yes ☐No
7. Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? Otherwise include rock or similar protective system. Note: Detention Basins may be lined, in which case no vegetation would be required for lined areas.* ☐Yes ☐No
8. Has sufficient access for maintenance been provided? * ☐Yes ☐No
9. Is the side slope 4:1 (h:v) or flatter for interior slopes? **
   (Note: Side slopes up to 3:1 (h:v) allowed with approval by District Maintenance.) ☐Yes ☐No
10. If significant sediment is expected from nearby slopes, can the Detention Device be designed with additional volume equal to the expected annual loading? ** ☐Yes ☐No
11. Is flow path as long as possible (> 2:1 length to width ratio at WQV elevation is recommended)? ** ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 7

Prepared by: WRECO Date: November 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J100K

RWQCB: San Francisco Bay (2)

Gross Solids Removal Devices (GSRDs)

To be completed in PA/ED and PS&E

Feasibility

1. Is the receiving water body downstream of the tributary area to the proposed GSRD on a 303(d) list or has a TMDL for litter been established? ☒Yes ☐No
2. Are the devices sized for flows generated by the peak drainage facility design event (1-year, 1-hour) or can peak flow be diverted? ☐Yes ☐No
3. Are the devices sized to contain gross solids (litter and vegetation) for a period of one year? ☐Yes ☐No
4. Is there sufficient access for maintenance and large equipment (vacuum truck)? ☐Yes ☐No

   If "No" to any question above, then Gross Solids Removal Devices are not feasible. Note that Biofiltration Systems, Infiltration Devices, Detention Devices, Dry Weather Flow Diversion, and Media Filters may be considered for litter capture, but consult with District/Regional NPDES Coordinator if proposed to meet a TMDL for litter.
5. Does adequate area exist within the RW to place Gross Solids Removal Devices? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Gross Solids Removal Devices and how much RW would be needed? _____ acres ☐Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 7.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

Design Elements – Linear Radial Device

* **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 6 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. Does sufficient hydraulic head exist to place the Linear Radial GSRD? * ☐Yes ☐No
2. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** ☐Yes ☐No
3. Was the litter accumulation rate of 10 $ft^3/ac/yr$ (or a different rate recommended by District Maintenance) used to size the device? * ☐Yes ☐No
4. Was the overflow release device sized for the design storm event?* ☐Yes ☐No
5. Were the standard detail sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with OHSD and District/Regional Design Stormwater Coordinator.
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

Design Elements – Inclined Screen

* **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 6 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. Does sufficient hydraulic head exist to place the Inclined Screen GSRD? * ☐Yes ☐No
2. Was the litter accumulation rate of 10 $ft^3/ac/yr$ (or a different rate recommended by District Maintenance) used to size the device? * ☐Yes ☐No
3. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** ☐Yes ☐No
4. Was the overflow release device sized for the design storm event?* ☐Yes ☐No
5. Were the standard details sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with OHSD and District/Regional Design Stormwater Coordinator.
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 8

Prepared by: WRECO Date: November, 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

RWQCB: San Francisco Bay (2)

Media Filters

Caltrans has approved two types of Media Filters: Austin Sand Filter and Delaware Filter. An Austin Sand filter is typically designed for a larger contributing drainage area, while a Delaware Filter is typically designed for a smaller contributing drainage area. The Austin Sand Filter is constructed with an open top and may have a concrete or earthen invert, while the Delaware is always constructed as a vault.

To be completed in PA/ED and PS&E

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to the WQV, or portion thereof, using a 24-hour drawdown? [1] ☐Yes ☐No
2. Is there sufficient hydraulic head to operate the device (minimum 2 ft between the inflow and outflow chambers)? ☐Yes ☐No
3. If device has an earthen bottom, is the invert ≥ 5 ft above seasonally high groundwater? ☒Yes ☐No
4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No

   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the RW to place an Austin Sand Filter? ☒Yes ☐No

   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site the device and how much RW would be needed to treat WQV, or portion thereof? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section.

   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

[1]*Longer drawdown times being considered. Refer to the Austin Media Filter Design Guidance.*

Feasibility- Delaware Filter

1. Is the volume of the Delaware Filter equal to the WQV, or portion thereof, using a 40 to 48-hour drawdown? [1] ☐Yes ☐No

2. Is there sufficient hydraulic head to operate the device (minimum 2 ft between the inflow and outflow chambers)? ☐Yes ☐No

3. Would a permanent pool of water be allowed by the local vector control agency? Confirm that check valves and vector proof lid as shown on standard detail sheets will be allowed, and used. ☐Yes ☐No

4. Does the project discharge to a water body that has been placed on the 303(d) or has had a TMDL adopted for bacteria, mercury, sulfides, or low dissolved oxygen? ☐Yes ☐No

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

   If No to any question, then a Delaware Filter is not feasible

5. Does adequate area exist within the RW to place a Delaware Filter? ☐Yes ☐No
   If Yes, continue to Design Elements section. If No, continue to Question 6.

6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site the device and how much RW would be needed to treat WQV, or portion thereof? _____ acres ☐Yes ☐No
   If Yes, continue to the Design Elements section. If No, continue to Question 7.

7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

[1]*Longer drawdown times being considered. Refer to the Delaware Media Filter Design Guidance.*

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

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

1. Is the drawdown time of the device 24 hours? (Longer drawdown times being considered, refer to the *Austin Media Filter Design Guidance*)* ☐Yes ☐No
2. Is access for maintenance vehicles provided to the Austin Sand Filter? * ☐Yes ☐No
3. Is a bypass/overflow provided for storms > WQV? * ☐Yes ☐No
4. Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? ** ☐Yes ☐No
5. Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** ☐Yes ☐No
6. Can the Austin Sand Filter be placed using an earthen configuration? ** ☐Yes ☐No
   If No, go to Question 10.
7. Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 5 ft)? * (If AVSF, see Table B-8 3rd bullet in Application/Siting column.) ☐Yes ☐No
   If No, design with an impermeable liner.
8. Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * ☐Yes ☐No
9. Can vegetation be established at the invert and on the side slopes for erosion control and to minimize re-suspension? If No, include rock or similar protective system. Note: Austin Sand Filters may be lined, in which case no vegetation would be required for lined areas.* ☐Yes ☐No
10. Is maximum depth of sedimentation chamber ≤ 13 ft below ground surface? * If greater than 13 feet, a special design is required. ☐Yes ☐No
11. Can the Austin Sand Filter be placed in an offline configuration? ** ☐Yes ☐No
    If No, go to Question 12.
12. Is the flow line elevation of the over flow pipe set at the same elevation as the top of gabion wall elevation? ** ☐Yes ☐No

    Typically, the flow line should match the top of gabion wall elevation. However, the pipe may require adjustment to fit site condition requirements such as grading and pipe cover conflicts and utility conflicts. Additional overflow designs may be considered (see the *Partial Sedimentation Austin Vault Sand Filter Design Guidance*).

Design Elements – Delaware Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

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

1. Is the drawdown time of the device between 40 and 48 hours, typically 40-hrs? (Longer drawdown times being considered, refer to the *Delaware Media Filter Design Guidance)* * ☐Yes ☐No
2. Is access for maintenance vehicles provided to the Delaware Filter? * ☐Yes ☐No
3. Is a bypass/overflow provided for storms > WQV? * ☐Yes ☐No
4. Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** ☐Yes ☐No
5. Is maximum depth of sedimentation chamber ≤ 13 ft below ground surface? * ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 11

Prepared by: WRECO Date: November, 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

RWQCB: San Francisco Bay (2)

DPP Infiltration Areas

To be completed in PA/ED and PS&E

Feasibility[1]

1. Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality? ☐Yes ☒No
2. Does infiltration at the site compromise the integrity of any slopes in the area? ☐Yes ☒No

   If "Yes" to any question above, DPP Infiltration Areas are not feasible; stop here and consider other approved Treatment BMPs.
3. Are DPP Infiltration Areas 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. If adequate area cannot be obtained, document in Section 6 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 6 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 native soil gradation and infiltration rate been determined (see Design Guidance for more detail)? (Must be completed for PS&E level design.) * ☐Yes ☐No
2. Has the infiltration rate of the DPP Infiltration Area been calculated and maximized through amendments where appropriate? ** ☐Yes ☐No
3. Is the DPP Infiltration Area capacity sufficient to capture the WQV, or portion thereof? ** ☐Yes ☐No

   If "No", document the percentage and amount of the WQV captured. ☐ Complete
4. Is a surface reinforcing material required? ☐Yes ☐No

   If "Yes", select material based on the permissible shear and velocity (refer to HDM Chapter 860 and Table 865.2).* ☐ Complete

[1] *This feasibility evaluation is applicable to areas that are being modified for infiltration as part of the project treatment strategy. For existing areas within the project limits that are being delineated as DPP Infiltration Areas, proceed to the Design Elements section.*

DATE: _November 2018_____

Project ID / EA: _04-3J100K_____

Project Evaluation Process for the Consideration of Construction Site BMPs

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

Construction Site BMPs

Checklist CS-1, Part 1

Prepared by: WRECO Date: November, 2018 District-Co-Route: 04-SF/SM-101/I-280

PM: 101 PM R20.15-19.2, I-280 PM R4.51-T7.26 Project ID/EA: 04-3J00K

RWQCB: San Francisco Bay (2)

To be completed in PA/ED and PS&E

Temporary Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? 1

2. What is the total disturbed soil area for the project? (ac)

   Alternative 1 32.98

   Alternative 2 4.62

3. Consult your District/Regional Design Stormwater Coordinator for the minimum required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. ☐ Complete

Scheduling

4. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres?

   Yes only for Alternative 1 ☒ Yes ☐ No

   (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) ☐ Complete

   (b) Edit specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. ☐ Complete

   (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. ☐ Complete

Preservation of Existing Vegetation

5. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the construction limits? (Verify the completion of DPP-1, Part 5) ☐ Yes ☐ No

(a) Verify the protection of ESAs through delineation on all project plans. ☐Complete

(b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. ☐Complete

6. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed or existing Treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent practicable.) ☒Yes ☐No

(a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. ☐Complete

(b) Protect with high visibility plastic fence or other BMP. ☐Complete

7. If yes for 5, 6, or both, then designate ESA fencing as a separate contract bid line item, *if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5).* ☐Complete

Slope Protection

8. Provide a temporary soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District Landscape Architect.)

(a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Straw Mulch, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching, other BMPs or a combination to cover the DSA throughout the project's rainy season. ☒Complete

(b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☐Complete

(c) Designate as a separate contract bid line item. ☐Complete

Slope Interrupter Devices

9. For projects with temporary erosion control requirements, provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 20 ft in length, in accordance with CGP requirements.

(a) Select Fiber Rolls or other BMPs to protect slopes throughout the project's rainy season. ☒Complete

(b) For slope inclination of 4:1 (h:v) and flatter, Fiber Rolls or other BMPs shall be placed along the contour and spaced 20 ft on center. ☐Complete

(c) For slope inclination between 4:1 (h:v) and 2:1 (h:v), Fiber Rolls or other BMPs shall be placed along the contour and spaced 15 ft on center. ☐Complete

(d) For slope inclination of 2:1 (h:v) and greater, Fiber Rolls or other BMPs shall be placed along the contour and spaced 10 ft on center. ☐Complete

(e) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) ☐Complete

(f) Designate as a separate contract bid line item. ☐Complete

Channelized Flow

10. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the RW (off-site run-on). ☐Complete

(a) Utilize Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Earth Dikes/Swales, Ditches, Outlet Protection/Velocity Dissipation, Slope Drains, Check Dams, or other BMPs to convey concentrated flows in a non-erosive manner. ☐Complete

(b) Designate as a separate contract bid line item, as appropriate. ☐Complete

Construction Site BMPs
Checklist CS-1, Part 2

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

To be completed in PA/ED and PS&E

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? ☒Yes ☐No

   (a) Select linear sediment barrier such as Silt Fence, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) ☒Complete

   (b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☐Complete

   (c) Designate as a separate contract bid line item. ☐Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? ☒Yes ☐No

   (a) Utilize linear sediment barriers such as Earth Dike/Drainage Swales and Lined Ditches, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item, as appropriate. ☐Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the construction limits? ☐Yes ☐No

   (a) Select Drainage Inlet Protection to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in Drainage Inlet Protection - Type 2? ☐Yes ☐No

   (a) Include with other types of Drainage Inlet Protection. ☐Complete

Sediment/Desilting Basin

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? ☐Yes ☐No

   (a) Consider feasibility for desilting basin allowing for available right-of-way within the construction limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. ☐Complete

   (b) If feasible, design desilting basin(s) per the guidance in the *CASQA Construction BMP Guidance Handbook* to maximize capture of sediment-laden runoff. ☐Complete

   (c) Designate as a separate contract bid item ☐Complete

6. Is ATS to be used for controlling sediment? ☐Yes ☐No

   (a) If yes, then will desilting basin or other means of natural storage be used? ☐Yes ☐No

   (b) If no, then plan for storage tanks sufficient to hold treatment volume. ☐Complete

7. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) ☒Yes ☐No

   (a) Edit specifications for permanent Treatment BMP work to be implemented in a manner that will allow its use as a Construction Site BMP. ☐Complete

Sediment Trap

8. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge? ☐Yes ☐No

   (a) Design sediment traps in accordance with the *CASQA Construction BMP Guidance Handbook*. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Construction Site BMPs
Checklist CS-1, Part 3

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

To be completed in PA/ED and PS&E

Tracking Controls

Stabilized Construction Entrance/Exit

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) ☒Yes ☐No

   (a) Identify and designate these entrance/exit points as stabilized construction entrances. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Tire/Wheel Wash

2. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) ☐Yes ☒No

   (a) Designate as a separate contract bid line item. ☐Complete

Stabilized Construction Roadway

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) ☐Yes ☒No

   (a) Designate these temporary access roads as stabilized construction roadways. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Street Sweeping and Vacuuming

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) ☒Yes ☐No

   (a) Designate as a separate contract bid line item. ☐Complete

Construction Site BMPs

Checklist CS-1, Part 4

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

To be completed in PA/ED and PS&E

Wind Erosion Controls

Wind Erosion Control

1. Is the project located in an area where standard dust control practices in accordance with *Standard Specifications*, Section 14-903: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind? *(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.)* ☒Yes ☐No

   (a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Construction Site BMPs

Checklist CS-1, Part 5

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

To be completed in PA/ED and PS&E

Non-Stormwater Management

Temporary Stream Crossing & Clear Water Diversion

1. Will construction activities occur within a water body or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) ☒Yes ☐No

Yes only for Alternative 1

(a) Select from types offered in Temporary Stream Crossing to provide access through watercourses consistent with permits and agreements.[1] ☐Complete

(b) Select from types offered in Clear Water Diversion to divert watercourse consistent with permits and agreements.[1] ☐Complete

(c) Designate as a separate contract bid line item(s). ☐Complete

Other Non-Stormwater Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

(a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as Water Conservation Practices, Dewatering Operations, Paving and Grinding Operations, Potable Water/Irrigation, Vehicle and Equipment Cleaning, Vehicle and Equipment Fueling, Vehicle and Equipment Maintenance, Pile Driving Operations, Concrete Curing, Material and Equipment Use Over Water, Concrete Finishing, and Structure Demolition/Removal Over or Adjacent to Water.[1] ☒Complete

(b) Verify that costs for non-stormwater management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☐Complete

[1] *Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 and 401 permits and Dept. of Fish and Game 1601 Streambed alteration Agreements.*

Construction Site BMPs
Checklist CS-1, Part 6

Prepared by:_____Date:_____District-Co-Route:_____

PM:_____Project ID/EA:_____RWQCB:_____

To be completed in PA/ED and PS&E

Waste Management & Materials Pollution Control

Concrete Waste Management

1. Does the project include concrete placement or mortar mixing? ☒Yes ☐No

Yes only for Alternative 1

(a) Select from types offered in Concrete Waste Management to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.) ☒Complete

(b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd^3 or if requested by Construction. ☐Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

(a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as Material Delivery and Storage, Material Use, Spill Prevention and Control, Solid Waste Management, Hazardous Waste Management, Contaminated Soil Management, Sanitary/Septic Waste Management, and Liquid Waste Management ☒Complete

(b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☐Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction? ☒Yes ☐No

(a) Verify that costs for stockpile management and associated sediment control and temporary soil stabilization BMPs for temporary stockpiles are identified in the contract documents. Designate as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☐Complete