RBF CONSULTING

January 4, 2008 JN 10-103451

Mr. Jeremy Haas
REGIONAL WATER QUALITY CONTROL BOARD
San Diego Region (9)
9174 Sky Park Court, Suite 100
San Diego, California 92123

SUBJECT: South Orange County Transportation Infrastructure Improvement Project
NWU:18-2006064.02:haasj
Section 401 Certification Resubmittal and Response to Comments

Dear Mr. Haas:

Pursuant to your denial without prejudice letter dated September 24, 2007, the Transportation Corridor Agencies (Applicant) is resubmitting the Section 401 Water Quality Certification Application for the South Orange County Transportation Infrastructure Improvement Project (File No. 06C-064). Additionally, pursuant to meetings held on September 13 and November 13, 2007; the following supplemental information is being forwarded to assist in your processing of the Section 401 Certification. The following responses have been designed to address comments initiated by the Regional Water Quality Control Board as a result of the review of our Section 401 Water Quality Certification Application. Included within this package, please find:

1) Section 401 Water Quality Certification Application

2) Response to Comments Matrix

3) Attachments:

- *Runoff Management Plan Supplemental Documentation*, prepared by Saddleback Constructors, dated November 6, 2007
- *Habitat Mitigation and Monitoring Plan Memorandum*, prepared by Glenn Lukos Associates, dated December 17, 2007
- Electronic files of supporting documents and exhibits (provided on a CD):
    - RMP Supporting Documents (exhibits)

- HMMP Supporting Documents (exhibits; *Addendum to Jurisdictional Determination and Wetlands Delineation Technical Assessment*; *Hybrid Functional Assessment for Areas within the Jurisdiction of the RWQCB*)

- *Storm Water Quality Handbook, Maintenance Staff Guide*, prepared by Caltrans, revised October 2007.

- *Proposed Water Quality Monitoring Plan*, prepared by TCA, dated December 12, 2007.

Please note that recently the Applicant has determined that media filters are feasible within the previously identified extended detention basin (EDB) locations. The Applicant proposes the use of sand media filters within the San Mateo Watershed. Due to this recent change, minor modification (updates) to the RMP are required and shall be forwarded to the Regional Board for review shortly after this submittal. It should be noted that no new impacts have been identified with this anticipated increase in water quality.

On behalf of the Applicant, I hope you find the information noted above useful for processing of the Section 401 Water Quality Certification. Once staff has a chance to review the enclosed materials, please give me a call to discuss the next phase of the Certification process. Please do not hesitate to contact me at 949/855-3687, or Rbeck@rbf.com, should you or your staff have any questions.

Sincerely,

Richard Beck, REA
Regulatory Manager
Planning and Environmental Services

SOUTH ORANGE COUNTY TRANSPORTATION INFRASTRUCTURE IMPROVEMENT PROJECT (SOCTIIP)
SECTION 401 CERTIFICATION/WDR RESPONSE TO COMMENTS
(Updated 1/4/08)

TITLE: SOCTIIP (FILE NO. 06C-064)
SECTION 401 CERTIFICATION RESPONSE TO COMMENTS

Comments From: Mr. Jeremy Haas
Regional Water Quality Control Board (letter dated 9/24/07, meetings dated 9/13/07 and 11/13/07)

NO.	COMMENTS	RESPONSE
Final Runoff Management Plan:		
1.	The BMPs as described in the Runoff Management Plan (RMP) do not provide sufficient treatment, especially extended detention basins (EDBs) discharging to San Mateo and San Onofre creeks. For example,	Refer to the *Runoff Management Plan (RMP) Supplemental Documentation*, prepared by Saddleback Constructors, dated November 6, 2007.
	a. The RMP dismisses media filters without the level of review called for by the 2007 Caltrans Project Planning and Design Guide referred to in the RMP. Additional evaluation of media filters should be provided.	a. TCA proposes sand media filters within the San Mateo/San Onofre Watersheds. The original 401 Application identified extended detention basins (EDB) within these areas; sand media filters are now proposed in each of these locations. The RMP is currently being updated to reflect the change; no changes to splitters or other on-site drainage is proposed. No additional impacts have occurred as a result of the BMP shift.
	b. The RMP does not provide sufficient documentation to support the conclusion that infiltration-based measures are infeasible. The relationship of native and post-project soil conditions to EDB locations should be documented. Please provide a figure showing the soil types (or classifications) in the areas proposed for EDBs.	b. Maps of hydrologic soil groups overlaying the alignment have been attached to the supplemental documentation. The maps show that the EDB sites are located where hydrologic soil groups C and D prevail. These soil groups are characterized as having poor infiltration characteristics. The BMPs located within the alluvial valleys of San Onofre and San Mateo Creeks are sited over soil groups A and B. Here, however, the groundwater table is too high for infiltration devices. Instead, media filters are proposed for these locations. Please also refer to Response a., above, which notes the BMP change within the San Mateo/San Onofre Watersheds.
	c. The RMP fails to recognize that environmentally-sensitive areas adjacent to the project route, such as San Mateo and San Onofre creeks, should receive specific design review for construction-phase and post- construction management practices. The RMP assumes all aquatic areas will receive some baseline construction-phase measures loosely called for in the EIR. Similarly, the evaluation of post-construction storm water discharges does not account for the presence of sensitive species in the receiving waters. The RMP should be revised to demonstrate that the appropriate level of attention will be provided when developing specific management measures for discharges to areas occupied by	c. The RMP provides specific construction related BMPs to be implemented when working over or next to the water bodies. The post construction BMPs used adjacent to San Mateo and San Onofre Creek have been modified to sand media filters. Secondly, all outlets to wetlands are equipped with energy dissipating devices, which do not encroach into the wetland boundaries. Refer to the RMP supplement, attached.

NO.	COMMENTS	RESPONSE
	threatened and endangered species.	
	d. The RMP assumes most pollutants will be captured in the EDBs because Caltrans research shows that most expected pollutants are associated with particulates. However, Caltrans studies also note that expected size of the particles with adsorbed pollutants may not be contained in the EDBS. Additional information should be provided to support the expectation that the EDBs would retain the particles expected to runoff the project's impervious surfaces. For instance, information regarding the particle sizes of runoff from similar roads in the vicinity (e.g., SR 73) may provide useful information.	d. The most recent Caltrans "Stormwater Monitoring and BMP Development Status Report" (2007) indicates that particulate matter greater than 2 micrometers (clay to silt size particles) in diameter was shown to settle out well with detention times of 72-hours using EDBs designed to Caltrans standards. In the project vicinity, 50 boring logs were evaluated to assess particulate size. Alluvial valleys exhibited deep soil profiles consisting of silty to fine grained sands with some gravelly sands while the hillsides exhibited shallower soils consisting of finer grained silty to clayey sands. This indicates that the particulate matter in this vicinity will be of sufficient size to settle out in the EDBs. Note that the EDBs originally proposed near San Mateo and San Onofre Creeks have been revised to media filters. The revised Section 7 of the RMP has a more detailed description of this analysis. The outlets to all EDBs will be modified for a 72-hour retention time to make sure the finer grained particulate matter settles out.
	e. The RMP calls for lining the EDBs that discharge to the lower San Mateo and San Onofre creeks because of high groundwater elevations, but does not discuss measures to provide additional treatment to offset the effect of the lining. In response to comments on the EIR (comment no. F2-4, impacts to groundwater), the Transportation Corridor Agencies (TCA) suggests that the project's EDBs will infiltrate approximately 40 percent of the inflow volume. This implies that TCA expects a 40 percent reduction in effectiveness as a result of lining the EDBs. Additional measures should be evaluated and designed for basins proposed to be lined.	e. These BMPs have been changed to sand media filters, which should alleviate the concern.
2.	Water quality mitigation measures in the project's Final Supplemental Environmental Impact Report (EIR, November 2005) are not provided in the RMP. The RMP should be revised to ensure that appropriate mitigation measures are included. For reference, see Table 4.9-6 in the EIR.	
	a. The RMP does not implement measures 10b, 10c, 10d, or 10f, although the project design features cited in the EIR are intended to ensure that the RMP addresses those mitigation measures. TCA should clarify which mitigation measures are being met by the RMP and identify the means by which others will be met.	a. Table Item 10b: Refer to Response 1a above (sand media filters) for additional information regarding the transition form EDBs to sand media filters. Table Item 10c: Refer to the site plans regarding swale locations and limitations with grass covered drainage channels due to soils and slopes. Table Item 10d: Corridor runoff shall be conveyed to EDB and sand media filter locations. Off-site drainage areas (1.e., vegetated slopes) will be bypass BMP devices as no treatment is required.

NO.	COMMENTS	RESPONSE
		Table Item 10f: A post-construction testing plan that identifies methodology and a schedule of monitoring activities within representative downstream drainages shall be prepared and submitted to the Regional Board within 90-days of project completion. It is preferred that the plan specifically addresses the as-built condition, especially with respect to onsite BMPs.
	b. In addition, The EIR summary (page ES-62) claims that EDBs will result in potential contaminants in runoff that are less than or the same as pre- project conditions. However, the design of EDBs in the RMP does not reflect that statement. Instead, the EDBs are designed based on Caltrans guidance that is intended to result in significant reduction in runoff pollutants from the project area, without regard to pre-project conditions. This discrepancy should be clarified.	b. Refer to Response 1a above.
3.	Hydromodification assumptions in the RMP must be better supported.	
	a. The RMP assumes that storm water discharges from EDBs would not threaten to increase conditions of erosion in receiving water conditions if flows are released at one-tenth the rate of a two-year storm (i.e., assumptions used in Santa Clara County). However, the RMP lacks discussion of the receiving water morphological conditions that could be used to support the assumption.	a. Discussions of all receiving waters have been included as described below. Flow rates and velocities have been estimated for the outlet channels for the estimated critical shear flow rates. Velocities range from 0.8 fps to 1.7 fps for natural channels and 3 fps for the lined concrete channel as shown in the revised Table 7-1 of the RMP.
	i. Please provide figures showing the federal waters and non-federal waters of the State in the vicinity of each post-construction BMP.	i. State and federal waters of the U.S. are now identified on the BMP Exhibits.
	ii. Please provide a description of the morphological conditions of receiving waters at the EDB discharge locations.	ii. The outlet conditions are now provided for each EDB discharge location
	b. The RMP should provide an estimate of the discharges and velocities expected from the EDBs in order to support the conclusions drawn from Table 7-1 that flows from the EDBs will be insignificant compared to the flows necessary in the receiving waters to cause conditions of erosion.	b. Flow rates and velocities have been estimated for the outlet channels for the estimated critical shear flow rates. Velocities range from 0.8 fps to 1.7 fps for natural channels and 3 fps for the lined concrete channel as shown in the revised Table 7-1 of the RMP.
	c. The RMP should support the assumption that the reduction of pervious soils associated with the project is unlikely to result in adverse hydromodification effects. The assumption is that the change in imperviousness in the drainage areas	c. The overall imperviousness in the drainage areas of the extended detention basins was not provided since flow splitters are included in the on-site drainage networks that connect to the BMPs. The flow splitters are considered hydromodification facilities that serve to reduce any flow increase resulting from

NO.	COMMENTS	RESPONSE
	of the EDBs is insignificant relative to the entire drainage area of San Mateo and San Juan creeks. However, the change within the EDB drainage area, and how that may affect the EDB receiving water, is more important to assess site-specific runoff effects of the discharge.	the additional imperviousness. Because of the inclusion of hydromodification facilities, the comparison of flow rates rather than impervious area is a better reflection of any potential minor changes that may occur to the flow regime. Additional information has been provided which relates 2-year storm flows from the detention basins and 2-year off-site storm flows from the sub-watershed of the outlet channel. Two year on-site and off-site storm flows are shown in the revised Table 7-1 of the RMP.
	d. The RMP does not adequately describe how the proposed flow splitters will ensure that the first-flush runoff from each segment of roadway will be routed to the EDBs.	d. The flow splitter will be sized to make sure all water quality flow enters into the pipeline that connects to the downstream EDB. A schematic of the flow splitter showing the water quality flow pipeline in relation to the bypass pipeline has been included in the RMP. A schematic of the overall hydromodification system (which includes upstream flow splitters and downstream EDBs) has also been provided to show how the on-site and off-site systems relate to each other and how the water quality flow will be directed to the detention basins while higher flows will bypass the drainage system.
	e. Please verify whether hillslope runoff from the project footprint (including fill slopes and landscaped areas) will be routed to extended detention basins.	e. Hillslope runoff is routed through separate systems that connect to the offsite drainage culverts that cross the highway.
Conceptual Habitat Mitigation and Monitoring Plan:		
1.	Please provide figures showing all locations of proposed temporary and permanent discharges of fill to federal waters and non-federal waters of the State.	Please refer to Response 1 in the *Habitat Mitigation and Monitoring Plan (HMMP) Memorandum*, prepared by Glenn Lukos Associates, dated December 17, 2007, included in this response package.
2.	Please provide figures of proposed mitigation areas that clearly and separately delineate areas proposed for creation, restoration, and enhancement. Also, please indicate in acres and linear feet the total quantity of waters of the U.S. and non-federal waters of the State for each compensatory mitigation type.	
	a. Please identify whether each proposed compensatory mitigation area is expected to be considered waters of the U.S., non-federal waters of the State, or neither.	a. Refer to Response 2a of the HMMP Memo.
	b. Finally, please verify that each area in the figure and table can be readily matched to the functional assessment tables in the Hybrid Functional Assessment (HFA).	b. Refer to Response 2b of the HMMP Memo.
3.	Compensatory mitigation should be further pursued in the San Mateo Creek watershed. Reasons cited for not conducting mitigation within the San Mateo Creek watershed continue to be insufficient to support concentrating compensatory mitigation activities near the northern terminus of the project. It is not clear	Refer to Response 3 of the HMMP Memo.

NO.	COMMENTS	RESPONSE
	that the project proponent has fully considered and pursued options for conducting compensatory mitigation in the San Mateo Creek watershed. For instance, the existence of a grazing plan on land owned by Rancho Mission Viejo does not preclude restoration or enhancement of water bodies and associated riparian zones affected by grazing. Further, it is not clear whether other landowners in the watershed have been contacted. If compensatory mitigation will not be proposed in the San Mateo Creek watershed to compensate the loss of waters and beneficial uses in the watershed, then the project proponent should consider reducing permanent effects to the water bodies.	
4.	There are still insufficient details in the Habitat Mitigation and Monitoring Plan (HMMP) to constitute a mitigation plan for the "temporary" impacts, especially at the San Mateo and San Onofre Creek locations. Descriptions of existing conditions, performance objectives, success criteria, and methods are lacking.	Refer to Response 4.
5.	There are insufficient details in the HMMP to constitute a mitigation plan for effects to the aquatic and riparian habitat within Talega's Cristianitos flood control basin. Descriptions of existing conditions, performance objectives, success criteria, and methods are lacking.	Refer to Response 5 of the HMMP Memo.
6.	Performance Standards: The success criteria have been partly clarified, but the outstanding issues remain regarding the general approach and specific details in the HMMP. a. The proposed success standards in the HMMP allow for up to 25 percent cover of non-natives. The HMMP should be revised to require that mitigation areas must be maintained free of perennial exotic plants and annual exotic plant species must not occupy more than five percent of the onsite or offsite mitigation areas. b. Please clarify in which situations the success criteria will apply to specific metrics and functions, rather than overall HFA score as implied in Table 8. In particular, "success" cannot be defined solely by meeting vegetation metrics. Some level of performance must be attained for each proposed success criteria. c. The HMMP must be revised to include functional success standards for the Riparian Oak/Elderberry Woodland and Ephemeral Drainage enhancement areas.	a. Refer to Response 6a of the HMMP Memo. b. Refer to Response 6b of the HMMP Memo. c. Refer to Response 6c of the HMMP Memo.

NO.	COMMENTS	RESPONSE
	d. Please identify the proposed reference sites that will be used in evaluating the microtopographic complexity and habitat heterogeneity success standards for the wet meadow, southern willow woodland, mule fat scrub, freshwater marsh and arroyo willow forest mitigation areas.	d. Refer to Response 6d of the HMMP Memo.
7.	Hybrid Functional Assessment (HFA). The HFA fails to adequately support conclusions regarding increases in water body functions provided by the project.	
	a. The Table showing pre-project mitigation area assessments still assigns no functions to the existing stream channels in the area, even though it portrays those areas as currently providing functions. The assessment should clarify why value, but no acreage, is assigned to the pre-project condition.	a. Refer to Response 6a of the HMMP Memo.
	b. Conversely, the assessment should clarify why the indirect impacts table assigns acreage, but no value, to many of the water bodies considered.	b. Refer to Response 6b of the HMMP Memo.
	c. Please clarify what areas are identified as "EDB 1" and "EDB 2" in the post-project mitigation table. These areas were not included in earlier versions of the HMMP or HFA. Note that proposing compensatory mitigation within extended detention basins is inappropriate.	c. Refer to Response 6c of the HMMP Memo.
	d. Additional indirect impacts to habitat functions with the "action area" of 500 feet do not appear to be addressed in the "Indirect Impacts" table. Such effects could include significant disturbances to biotic functions from habitat fragmentation, edge effects, increased exotic species, etc.	d. Refer to Response 6d of the HMMP Memo.
	e. The HFA should justify its assumption that the oak woodland within the upper Chiquita site will achieve optimal scores in all habitat functions for all 13 acres, while other mitigation activities are not expected to achieve such ideal results.	e. Refer to Response 6e of the HMMP Memo.
	f. The HFA and HMMP should clarify expectations for increase in functions at the Tesoro South site. The HFA assigns credit for 11.13 acres, while the HMMP envisions scores of greater than optimal. This is unclear.	f. Refer to Response 6f of the HMMP Memo.

NO.	COMMENTS	RESPONSE
	g. The HFA and HMMP should clarify accounting for acreage at the Chiquita site. The HMMP states there are 13 acres of drainages, while the HFA assigns credits to three acres of streambed enhancement and 13 acres of oak-riparian woodland habitat creation. It is unclear which areas are proposed for enhancement as opposed to creation. The figures requested above in comment B should also help to clarify this.	g. Refer to Response 6g of the HMMP Memo.
8.	Please clarify whether and how the proposed toll road will indirectly affect the adjacent Tesoro Mitigation Area A. This mitigation area appears to be within or very close to the footprint and action area of the road. Indirect effects should be included in the HFA.	Refer to Response 8.
9.	Please provide additional details concerning the newly proposed mitigation areas labeled EDB 1 and EDB 2 in the HFA post-project tables.	Refer to Response 9 of the HMMP Memo.
10.	The HMMP does not adequately provide descriptions of anticipated effects and proposed mitigation measures related to water-dependent threatened and endangered species in the project area. a. Please discuss anticipated direct and indirect effects to the Tidewater Goby from dewatering and flow diversion activities within the vicinity of occupied areas. b. Please identify proposed preventative and compensatory mitigation measures for the RARE beneficial uses associated with the Arroyo Toad, Least Bells's vireo, and Tidewater Goby. This description should also identify the watershed of impact and proposed compensatory mitigation.	 a. Refer to Response 10 of the HMMP Memo. b. Refer to Response 10 of the HMMP Memo.
11.	There are insufficient details in the HMMP to constitute an assessment of effects to the habitat recently restored by Caltrans for its San Mateo Creek bridge project. The HMMP also lacks sufficient details to constitute a mitigation plan for adverse effects to the area.	Refer to Response 11 of the HMMP Memo.
Baseline Water Quality Investigation		
1.	The "Baseline" investigation does not provide an adequate representation of baseline conditions, nor does it provide the level of information portrayed in the EIR (see EIR Table 4.9-6). As a	Refer to the *Proposed Water Quality Monitoring Plan Technical Memorandum*, prepared by the TCA, dated December 12, 2007. This proposed plan outlines the baseline investigation and approach.

NO.	COMMENTS	RESPONSE
	result, the investigation is insufficient for documenting pre-project water quality and for assessing effects of post-project discharges.	
2.	Baseline water quality conditions should be provided consistent with the commitments of the EIR. In particular monitoring should include water quality conditions expected to be affected by the project's discharges.	Refer to Response 1., Baseline Water Quality Investigation, above.
Response to Comments Matrix Submitted on August 20,2007		
1.	Please note that many deficiencies in the Response to Comments Matrix (matrix) are discussed in the above sections on the RMP and HMMP.	Comment noted.
2.	A water quality monitoring plan has not been submitted, nor are there any indications that one will be prepared or implemented. Recall that post- construction water quality monitoring of the project's runoff and representative downstream receiving waters is a commitment made in the EIR. The EIR states that water quality monitoring would be provided through project design features and water quality mitigation measures. The response matrix subsequently defers all post-construction activities to Caltrans. The response suggests that Caltrans is obligated under its statewide NPDES permit to monitor BMP discharges. However, there is no indication that Caltrans intends to conduct water quality monitoring associated with this project. If TCA expects Caltrans to conduct post-project water quality monitoring, then confirmation from Caltrans should be provided. A water quality-monitoring plan that is designed to assess both the quality of water discharged to receiving waters from the project and the quality of representative receiving waters should be submitted.	A post-construction water quality monitoring plan that identifies methodology and a schedule of monitoring activities within representative downstream drainages shall be prepared and submitted to the Regional Board within 90-days of project completion. It is preferred that the plan specifically addresses the as-built condition, especially with respect to onsite BMPs.

3.	Please clarify when the Operations, Maintenance, and Monitoring Plan will be prepared. The EIR indicates that one would be prepared when an alternative alignment is selected. However, the response matrix indicates that Caltrans will develop one in the future.	The Operations, Maintenance, and Monitoring Plan has been prepared and developed by Caltrans for Statewide facilities. The project is covered under this existing plan, which has been provided electronically (refer to CD) enclosed with this submittal. The Plan discusses the following components:
		
		• Maintenance BMPs
		• Maintenance Activity Tables
		• Scheduling and Planning
		• Sediment Control
		  o Silt Fence
		  o Sandbag or Gravel Bag Barrier
		  o Straw Bale Barrier
		  o Fiber Rolls
		  o Check Dam
		  o Sediment Trap
		• Storm Drain Inlet Protection

NO.	COMMENTS	RESPONSE

		• Concentrated Flow Conveyance Controls
		  o Overside/Slope Drains
		  o Ditches, Berms, Dikes and Swales
		  o Temporary Diversion Ditches
		• Soil Stabilization
		  o Compaction
		  o Wood Mulch
		  o Hydraulic Mulch C
		  o Hydroseeding/Handseeding
		  o Soil Binders
		  o Straw Mulch
		  o Geotextiles, Mats/Plastic Covers and Erosion Control Blankets
		  o Riprap (Rock Slope Protection)
		• Preservation of Existing Vegetation
		• Clear-Water Diversion
		• Work in a Water Body
		• Wind Erosion Control
		• Sediment Tracking Control
		  o Stabilized Activity Entrance/Exit
		  o Tire Inspection and Sediment Removal
		• Waste Management
		  o Spill Prevention and Control
		  o Solid Waste Management
		  o Hazardous Waste Management
		  o Contaminated Soil Management
		  o Sanitary/Septic Waste Management
		  o Liquid Waste Management
		  o Concrete Waste Management
		• Materials Handling
		  o Material Delivery and Storage
		  o Material Use
		• Vehicle and Equipment Operations
		  o Vehicle and Equipment Cleaning
		  o Vehicle and Equipment Fueling
		  o Vehicle and Equipment Maintenance
		• Paving Operations Procedures
		• Stockpile Management
		• Water Conservation Practices
		• Potable Water/Irrigation
		• Storm Drain Stenciling
		• Safer Alternative Products
		• Drainage Facilities
		  o Baseline Storm Water Drainage Facilities Inspection and Cleaning
		  o Enhanced Storm Drain Inlet Inspection and Cleaning Program
		  o Illicit Connection Detection, Reporting and Removal
		  o Illegal Spill Discharge Control
		• Treatment System Maintenance
		  o Vegetated Treatment System (Biofiltration Swales and Strips)
		  o Infiltration Basins
		  o Infiltration Trenches
		  o Detention Devices
		  o Traction Sand Trap Devices
		  o Gross Solids Removal Devices
		  o Austin Sand Filters
		  o 8 Delaware Sand Filters
		  o Multi-Chambered Treatment Train (MCTT)

NO.	COMMENTS	RESPONSE
		o Wet Basin • Litter and Debris Removal o Litter and Debris o Anti-Litter Signs • Chemical Vegetation Control • Vegetated Slope Inspection • Snow Removal and De-Icing Agents • Storm Water Dewatering Operations (Temporary Pumping Operation) • Sweeping and Vacuuming • Maintenance Facility Housekeeping Practices

California Regional Water Quality Control Board

San Diego Region

Over 50 Years Serving San Diego, Orange, and Riverside Counties
Recipient of the 2004 Environmental Award for Outstanding Achievement from USEPA

Alan C. Lloyd, PhD.
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

APPLICATION FOR CLEAN WATER ACT §401 WATER QUALITY CERTIFICATION

All applicants **must** provide a complete and detailed response to all sections of the application or the application will be deemed incomplete. Responses by reference shall indicate the specific document(s) and page number(s) (include copies of the entire document). Indicate by Not Applicable (NA) all sections that do not apply, along with an explanation of why the project is exempt from the section.

APPLICANT/AGENT INFORMATION

APPLICANT'S NAME AND TITLE	AUTHORIZED AGENT'S NAME AND TITLE
Foothill/Eastern Transportation Corridor Agency Valarie McFall Acting Deputy Director, Environmental Planning	RBF Consulting Richard Beck Regulatory Manager

APPLICANT'S ADDRESS	AGENT'S ADDRESS
125 Pacifica, Suite 100 Irvine, CA 92618	14725 Alton Parkway Irvine, CA 92618

APPLICANT'S PHONE, FAX, EMAIL	AGENT'S PHONE, FAX, EMAIL
(949) 754-3475 (949) 754-3491 (fax) mcfall@sjhtca.com	(949) 855-3687 (949) 837-4122 (fax) Rbeck@rbf.com

STATEMENT OF AUTHORIZATION

I hereby authorize Mr. Richard Beck to act in my behalf as my agent in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.

VMcFall
Applicant's Signature
(This **must** be signed by the applicant, not the authorized agent)

1/4/08
Date

OWNERSHIP

Does the applicant own the project site? Yes ☐ No ☒*

If the project site is not owned by the applicant, provide the name, address, and phone number for the property owner as well as evidence that the applicant has the necessary approvals to construct the project at this location.

*The Applicant will acquire the property in accordance with State and Federal Law governing public agency acquisitions. If necessary, the Agency's power of eminent domain will be exercised.

Property owners: Rancho Mission Viejo Company, Richard Broming, 949-240-3363, PO Box 9, San Juan Capistrano, CA 92693; Donna O'Neill Land Conservancy, Gilbert Aquirre, 949-240-3363, PO Box 802, San Juan Capistrano, CA 92693; Talega, Jim Yates, 949-498-1366, 951 Calle Negocia, Suite D, San Clemente, CA 92673; Camp Pendleton, Larry Rannals, 760-725-6513, Commanding General (CPLO) PO Box 555010, MCB, Camp Pendleton, CA 92055-5010.

Does the applicant plan on selling all or a portion of the site after receiving the necessary approvals and prior to starting construction? Yes ☐ No ☒

If yes, provide the name, address, and phone number of the future land owner, if available.

PROJECT ACTIVITY/INFORMATION

PROJECT NAME OR TITLE

South Orange County Transportation Infrastructure Improvement Project (SOCTIIP)

AFFECTED WATER BODY(IES) (Provide a clear written description and clearly indicate affected water body(ies) on maps of appropriate scale.)

San Juan Creek (Hydrologic Unit 1.25), San Mateo Creek (Hydrologic Unit 1.40), and San Onofre Creek (Hydrologic Unit 1.50). Please see Attachment for Beneficial Uses.

Are any of the waterbody(ies) considered isolated per SWANCC? Yes ☒ No ☐

LOCATION OF PROJECT (Attach map(s) showing project location.)

Street address NA

Latitude Varies Longitude Varies

Assessors Parcel Number(s) Please refer to the attachment.

County Orange and San Diego City San Clemente, Rancho Santa Margarita

DIRECTIONS TO PROJECT SITE

From Interstate 5 (I-5) north, take the Oso Parkway exit. Turn right onto Oso Parkway. Continue to follow Oso Parkway until you reach State Route 241 (SR-241). The project site begins at the intersection of Oso Parkway and SR-241, where the existing SR-241 terminates.

PROJECT PURPOSE (Describe the reason or purpose for the overall project.)

The purpose of the SOCTIIP is to provide improvements to the transportation infrastructure system that would help alleviate future traffic congestion and accommodate the need for mobility, access, goods movement and future traffic demands on I-5 and the arterial network in the study area. Please see the attachment for additional information.

DESCRIPTION OF ACTIVITY (Provide a full, technically accurate description of the entire activity and associated environmental impacts. Include proposed start and completion dates and dates for major phases of the project. If reference is made to documents submitted with this application, provide the specific document title and page numbers.)

Preferred Alternative Description

The preferred alternative is a limited access highway that would extend the existing SR-241, (FTC-N), south from its existing southern terminus at Oso parkway to I-5 in the vicinity of the Orange/San Diego County line. This extension would be operated as a toll road, as are the existing portions of SR-241, until the construction bonds are paid.

The Preferred Alternative is approximately 16 miles long plus approximately 0.8 mile of improvements on the I-5. The proposed facility includes four general-purpose travel lanes, two in each direction, for the entire length of the corridor. Two additional lanes will be added in the future as traffic conditions warrant for a maximum of six lanes. Key components of the Preferred Alternative include continuous mainline travel lanes and ramps south of Oso Parkway, fifteen wildlife structures/bridges to facilitate wildlife movement, an approximately 2,100 foot bridge structure crossing San Juan Creek, a toll plaza north of Ortega Highway, ramp toll plazas at Cow Camp Road and Avenida Pico, an approximately 2,859 foot elevated bridge structure spanning San Mateo Creek and I-5 providing a direct connection to I-5, and reconstruction of the existing I-5 Basilone Road interchange. Please see the attachment for additional information.

Construction

Construction would begin early 2010 and occur over a period of 36 to 42 months.

AVOIDANCE AND MINIMIZATION OF IMPACTS (Describe efforts to avoid and minimize direct impacts to waters of the U.S.)

The SOCTIIP Collaborative agreed that the selection of the Preferred Alternative required a balanced approach that required an assessment of its regional significance and its compatibility with the ongoing regional planning process in south Orange County including the Southern Natural Community Conservation Plan (NCCP) and Special Area Management Plan (SAMP) processes. These planning processes have implications for the SOCTIIP because they will determine the location and extent of development and open space uses in the SOCTIIP study area.

The Collaborative recognized that the impacts of a Preferred Alternative could be further reduced by insuring that the alternative is located as much as possible in an area contemplated for development in the NCCP and SAMP. Doing so has further advantages of minimizing fragmentation of habitat and minimizing cumulative and growth-inducing impacts. Please see the attachment for additional information.

PROTECTION OF WATER QUALITY – CONSTRUCTION Describe efforts to avoid and minimize impacts to water quality during project construction. Include a discussion of erosion and sediment control measures, project scheduling, flow diversions, staging and material storage yards.

Construction site BMPs will be implemented during construction of the SOCTIIP, including provisions for final stabilization of the project. Please see the attachment for During-Construction BMPs.

PROTECTION OF WATER QUALITY – POST-CONSTRUCTION Describe efforts to avoid and minimize impacts to water quality following project construction.

- Include a description of each proposed land use (e.g., residential, street, commercial) identify the expected pollutants, specific post-construction BMPs, their effectiveness with regards to the expected pollutants, maintenance requirements, and party(ies) responsible for maintenance*.
- Also include a detailed description of how the project will address post-construction changes in flow rates, velocities, and shear stresses.
- Include a figure showing the location and type of all post-construction BMPs.

Targeted design constituents (pollutants) have been identified by Caltrans for roadways. Structural treatment devices effective in the removal of targeted design constituents have been selected for the project. Please see the attachment for Post-Construction BMPs.

* The applicant must submit proof with this application that the parties designated as responsible for BMP maintenance have accepted the maintenance responsibility and are aware of the maintenance requirements.

PROTECTION OF WATER QUALITY – IMPAIRED WATER BODY(IES).

Are any of the water body(ies) within the project area, including impacted and preserved water body(ies), list as impaired on the Clean Water Act Section 303(d) list? Yes ☒* No ☐

Are any of the water body(ies) within the project area a tributary to a Clean Water Act Section 303(d) water body(ies)? Yes ☒ No ☐

Are any of the water body(ies) within the project area the subject of an adopted Total Maximum Daily Load (TMDL)? Yes ☐ No ☒

If yes, provide a detailed description of the actions that will be taken to ensure that the project does not contribute additional pollutants to the water body(ies). Include a discussion of the pollutants causing the impairment, potential sources of pollutants, and construction and post-construction BMPs.

*Bacterial indicators, nonpoint/point source, cause impairment of San Juan Creek.

FILL INFORMATION (indicate in ACRES and LINEAR FEET the proposed waters to be impacted, and identify the impacts(s) as permanent and/or temporary for each water body type listed below.) For purposes of this application, fill is defined as "rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and any materials used to create any structure or infrastructure in waters of the U.S."

	Permanent Impact		Temporary Impact	
Water Body Type*	Acres	Linear Feet	Acres	Linear Feet
ACOE vegetated waters	4.24	18,685	9.44	1,230
ACOE unvegetated waters	2.03	22,500	0.00	0
Lake/Reservoir	NA	NA	NA	NA
Ocean/Estuary/Bay	NA	NA	NA	NA
Isolated waters (per SWANCC)	1.68	5,181	0.05	667
CDFG jurisdiction only	15.13	NA	4.88	NA

* Provide a detailed description of the vegetated and unvegetated water body(ies) in an attachment. Include the plant community, type of water body (e.g., ephemeral, intermittent, perennial), designated beneficial uses, and a discussion of functions. Attach a copy of the completed wetland delineation to this application.

DREDGING Provide a description of the dredging activity and specific location, cubic yards of material to be dredged, disposal location and necessary approvals, dewatering methods, stockpile location, best management practices, and reason for dredging.

Jurisdictional impacts are a result of fill activities.

OTHER LICENSES/PERMITS/AGREEMENTS

OTHER APPROVALS List all applicable federal, state, and local permits, licenses, and agreements that will be required for any construction, operation, maintenance, or other actions associated with the project. Include permits from CDFG, ACOE (include permit number), RWQCB, California Coastal Commission, flood control agency, local planning agencies, etc. include date of application and status (e.g., pending, approved) of each. Attach copies of all draft or final documents and copies of CDFG and ACOE applications.

Agency	Contact (Include phone number, email)	License/Permit/Agreement	Date Applied	Status
ACOE	Susan Meyer, (213) 452-3412, susan.a.meyer@usace.army.mil	404 Individual Permit (File No. 200000392-SAM)	TBD	To be submitted early 2008
CDFG	Warren Wong	1602 Streambed Alteration Agreement	May 9, 2006	Currently submitted

COMPENSATORY MITIGATION

Is compensatory mitigation proposed? Yes ☒ No ☐

For all mitigation areas, provide a draft mitigation plan that includes, but is not limited to, the information contained in Attachment 1.

Indicate in ACRES and LINEAR FEET (where appropriate) the total quantity of **waters of the United States** proposed to be Created, Restored, Enhanced, or Preserved for purposes of providing Compensatory Mitigation.

Water Body Type/Plant Community Type	Created	Restored	Enhanced	Preserved
Wetlands	0.82			
Waters of the U.S.		5.45		

Note: Creation is defined as creating waters of the U.S. where none have previously existed; restoration is restoring waters of the U.S. where they have previously existed but have since been eliminated; enhancement is improving existing waters of the U.S. (e.g., removing exotic species and replanting with natives); and preservation is protecting an area in perpetuity and place by a conservation easement, deed restriction, or other legal instrument.

Is the mitigation site owned by the applicant? Yes ☒* No ☐

(if no, provide the name, address, and phone number of the land owner and evidence (e.g., agreements, contracts, etc.) that the applicant has the necessary approvals to implement mitigation at this location. If the land is to be purchased, provide the expected date that the purchase will be complete.)

*The Upper Chiquita Canyon Conservation Area was purchased by the applicant in 1996. The Tesoro Wetlands were acquired from Rancho Mission Viejo (RMV) in late 2007. RMV contact is Richard Broming, 949-240-3363Rancho Mission Viejo, PO Box 9, San Juan Capistrano, CA 92693.

MITIGATION BANK/IN-LIEU FEE PROGRAM (If proposed)

Mitigation Bank/In-Lieu Fee Name: _____

Name of Mitigation Bank/In-Lieu Fee Operator: _____

Office Address of Operator/Phone Number: _____

Mitigation Bank/In-Lieu Fee Location (Latitude/Longitude, County, and City): _____

Mitigation Bank/In-Lieu Fee Water Body Type(s): _____

Mitigation Area (acres or linear feet) and cost (dollar): _____

APPLICATION FEE

FILING FEE A fee deposit of $500.00 is required to be submitted with this application. Additional fees, based on the extent of impacts, may be due. A fee schedule and calculator can be found at: http://www.swrcb.ca.gov/rwqcb9/programs/401cert.html

Is check payable to the "State Water Resources Control Board" attached? Yes ☒* No ☐

* Check submitted with original application.

Check No. _____ Amount _____

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Document Type/Title: Final SEIR

Lead Agency and Contact Information (name, address, phone number):
TCA
Valarie McFall
Acting Deputy Director,
Environmental Planning
125 Pacifica, Irvine, CA 92618
(949)754-3475

State Clearing House Number: 2001061046

Has the document been certified/approved or has a Notice of Exemption been filed? Yes ☒ No ☐
(If yes, include a copy of the certification. If no, provide the expected approval date.)

Is this project considered an "emergency" pursuant to CEQA? Yes ☐ No ☒

Include a copy of the draft or final CEQA document with this application.

Note: The Regional Board is required to comply with CEQA before issuing a certification. Section 401 certification will **not** be granted without a certified CEQA document.

ADDITIONAL INFORMATION

Has any portion of the work been initiated? Yes ☐ No ☒*

If yes, describe the initiated work and explain why it was initiated prior to obtaining a permit; indicate whether any enforcement action has been taken against the project.

*However, the proposed project is an extension of the existing SR-241, which currently terminates at Oso Parkway in the City of Mission Viejo.

PAST/FUTURE IMPACTS (Briefly list/describe any projects carried out in the last 5 years or planned for implementation in the next 5 years that are in any way related to the proposed activity or may impact the same receiving body of water. Include actual or estimated adverse impacts.)

There are three other major governmental actions that are being processed in the study area. Please see the attachment for additional information.

SIGNATURE

I herby certify under penalty of perjury that the information provided in this application and in any attachments are true and accurate to the best of my knowledge. I further certify that I possess the necessary authority to undertake the work described in this application.

Applicant's Signature
(This **must** be signed by the applicant, not the authorized agent)

Date 1/4/08

Attach the appropriate fee and any additional documents and submit this application to:

California Regional Water Quality Control Board, San Diego Attn: 401 Water Quality Certification 9174 Sky Park Court, Suite 100 San Diego, CA 92123

Saddleback CONSTRUCTORS

FOOTHILL TRANSPORTATION CORRIDOR-SOUTH
MEMORANDUM

TO: Richard Beck/RBF **DCN:** FS03698

FROM: Richard Bottcher/SBC

DATE: November 6, 2007

COPIES TO: FTC-S DCM

SUBJECT: **FOOTHILL TRANSPORTATION CORRIDOR-SOUTH RUNOFF MANAGEMENT PLAN SUPPLEMENTAL DOCUMENTATION**

INTRODUCTION

The purpose of this memorandum is to provide supplemental documentation for the previously submitted Runoff Management Plan (DCN FS03247) as requested by the San Diego Regional Water Quality Control Board (RWQCB). This memo also incorporates updated information regarding drainage designs for Sections 1 and 4 of the project.

RESPONSE TO COMMENTS

The following is a summary of RWQCB comments and the corresponding responses to the comments. Additional information is provided in the attachments included at the end of this memorandum.

- Comment 1: One assumption is that the change in imperviousness in the drainage areas of the extended detention basins is insignificant relative to the entire drainage area of San Mateo and San Juan creeks. However, the change within the EDB drainage area is more important to assess discharge site-specific runoff effects.

- *Response 1: The overall imperviousness in the drainage areas of the extended detention basins was not provided since flow splitters are included in the on-site drainage networks that connect to the BMPs. The flow splitters are considered hydromodification facilities that serve to reduce any flow increase resulting from the additional imperviousness. Because of the inclusion of hydromodification facilities, the comparison of flow rates rather than impervious area is a better reflection of any potential minor changes that may occur to the flow regime. Additional information has been provided which relates 2-year storm flows from the detention basins and 2-year off-site storm flows from the sub-watershed of the outlet channel. Two year on-site and off-site storm flows are shown in the revised Table 7-1 of the RMP.*

- Comment 2: The assumption that critical flow is 0.1x 2yr peak flow results in some velocities that may be fairly above the velocities considered erosive by the local flood control district. Thus, it's hard to judge the merits of this assumption.

Saddleback Constructors
23456 Madero Ste. 150
Mission Viejo, CA 92691
Phone: 949/544-7000
Fax: 949/544-7005

- *Response 2: Velocities have been estimated for the outlet channels for the estimated critical flow rates. These range from 0.8 fps to 1.7 fps for natural channels and 3 fps for the lined concrete channel as shown in the revised Table 7-1 of the RMP. Note that maximum permissible velocities for sustained flow in unlined channels with fine sand to sandy loam material is 2.5 fps as specified in the Caltrans Highway Design manual.*

- Comment 3: The flow duration curves were done for 2 (of 48) flow splitters, but those are for basins in which the EDB drainage areas are the lowest percentage of the receiving water's drainage area. How does that affect the overall assumption for bypassed flows?

- *Response 3: The flow splitter duration curves are taken at the outlet of the flow splitters where the flow enters the hillside channel adjacent to the road, well upstream of the EDBs. The percentage of overall EDB drainage area to receiving water body drainage area does not enter into the analysis. The flow splitter analyses were performed for locations that include one small sub-watershed and one large sub-watershed. These represent the full spectrum of sub-watershed sizes along the alignment.*

- Comment 4: The BMPs as selected and designed may not provide sufficient treatment, especially EDBs near the San Mateo and San Onofre creeks. For example, the size of the particles with adsorbed pollutants expected may not be contained in the EDBs.

- *Response 4: The most recent Caltrans "Stormwater Monitoring and BMP Development Status Report" (2007) indicates that particulate matter greater than 50 micrometers (silt to fine sand size particles) in diameter was shown to completely settle out with detention times of 24-hours using EDBs designed to Caltrans standards. If the detention times are increased to 72-hours, particulate matter greater than 0.5 micrometers (clay size particles) in diameter will settle out. In the project vicinity, 50 boring logs were evaluated to assess particulate size. Alluvial valleys exhibited deep soil profiles consisting of silty to fine grained sands with some gravelly sands while the hillsides exhibited shallower soils consisting of finer grained silty to clayey sands. In order to provide for sufficient settling time in the EDBs, the outlets will be designed for a 72-hour drawdown time. This has no impact on the size of the basin, just on the outlet size. In this way, the particulate matter in this vicinity will settle out in the EDBs. Note that the EDBs originally proposed near San Mateo and San Onofre Creeks have been revised to media filters. The revised Section 7 of the RMP has a more detailed description of this analysis.*

- Comment 5: The RMP dismisses media filters without the level of review called for by the 2007 PPDG.

- *Response 5: As indicated in response 4, media filters are being proposed in the vicinity of San Mateo and San Onofre Creeks. The attached BMP exhibits have been revised accordingly.*

- Comment 6: A soil map should be provided to show the feasibility of infiltration devices.

- *Response 6: Maps of hydrologic soil groups overlaying the alignment have been attached. The maps show that the EDB sites are located where hydrologic soil groups C and D prevail. These soil groups are characterized as having poor infiltration characteristics. The BMPs located within the alluvial valleys of San Onofre, San Mateo, San Juan and Canada Chiquita Creeks are sited over soil groups A and B. Here, however, the seasonally high groundwater table is generally too high for infiltration devices. Caltrans design criteria requires infiltration devices to be sited where the seasonally high groundwater table is at least 10-ft below the basin bottom.*

- Comment 7: The feasibility of incorporating bioswales in a treatment train with the proposed EDBs should be addressed.

- *Response 7: Swales were considered for locations along the alignment where longitudinal slopes do not exceed 3 percent and where right-of-way requirements will not conflict with other environmental mitigation. In general, the detention basins are located in areas where longitudinal grades are greater than 3%, thus precluding the use of the swales for pre-treatment of runoff. The exceptions are at EDB-11 and EDB-15 where bioswales have now been added upstream of the detention basins.*

ATTACHMENTS

In accordance with the responses provided above, additional information has been provided in the RMP under sections 7 and 8.3. Revised BMP exhibits have also been provided and hydrologic soil group maps have been developed. This information is provided in the following attachments. Attachments A and B correspond to the revised Section 7 and Section 8.3 of the RMP, respectively. Attachment C includes the revised BMP drawings while Attachment D includes the Hydrologic Soil Group maps.

ATTACHMENT 1

RUNOFF MANAGEMENT PLAN

REVISED SECTION 7

SECTION 7
POLLUTION TREATMENT CONTROL

7.1 REQUIREMENTS

Best Management Practices (BMPs) will be designed and implemented to reduce the discharge of pollutants from the onsite storm drainage system for all of the SR-241 freeway runoff and 2 miles of I-5 where there are currently no treatment BMPs in place. Treatment BMPs considered feasible and practicable for the project include media filters, detention basins (EDBs), biofiltration swales and biofiltration strips. Incorporation of these BMPs into the onsite drainage system will result in an improvement in water quality from I-5 runoff before it enters into the receiving water bodies. Constraints evaluated during BMP design included:

- Land use (for example, impacts on culturally and biologically sensitive sites were minimized)
- Storm drain conveyance viability (for example, collection, conveyance, and treatment of bridge runoff required detailed analysis)
- Right-of-way and topographic constraints (for example, locating EDBs along hillsides with maintenance access required detailed grading)
- Outlet locations (for example, outleting directly to major streams minimized potential erosion on hillsides)

Onsite drainage, from I-5 from San Mateo Creek southward 2 miles, will be retrofitted to treat onsite runoff. All of the proposed SR-241 onsite highway runoff also will be treated.

7.2 MEDIA FILTER DESIGN

Media filters primarily remove particulates from runoff by sedimentation and filtration and also are effective for removing dissolved metals and litter. An "Austin" sand filter typically has an open top, is designed at grade, has no permanent water pool and requires sufficient hydraulic head to operate by gravity (3 feet). It may be configured with earthen sides or concrete sides and invert. This style of sand filter basin (SFB) has been proposed for the FTC-S project. A schematic of the SFB is shown in Figure 7-1 from the Caltrans PPDG (May 2007). Note that a partial sedimentation sand filter is proposed at this level of design. The earthen type requires 3:1 side slopes with at least 10-ft separation between the top of the media bed and the seasonally high groundwater along with a 2:1 length to width ratio in the sedimentation chamber. If the groundwater is too high, a vault type sand filter with concrete bottom and sides is required. Approximately 3 to 6 ft of drop will be required between the inflow and outflow. The filter bed will include a 1.5 ft layer of sand (with coefficient of permeability of 2 inches/hr) underlain by filter fabric and a 1-ft layer of gravel (permeable material) with a 6-inch perforated underdrain system. The design drain time for the filter bed will be 24 hrs and the maximum height of water for the WQV in the device will be 5-ft. The sedimentation chamber is designed to hold 20 percent (minimum) of the WQV while the filter chamber is designed to hold the rest.

Three SFBs are proposed along the alignment. Table 7-1 provides a synopsis of the media filter sizes and tributary areas. Note that the location for SFB 1 is still under coordination with MCB Camp Pendleton and SFB 2 must be vaulted due to high groundwater levels.

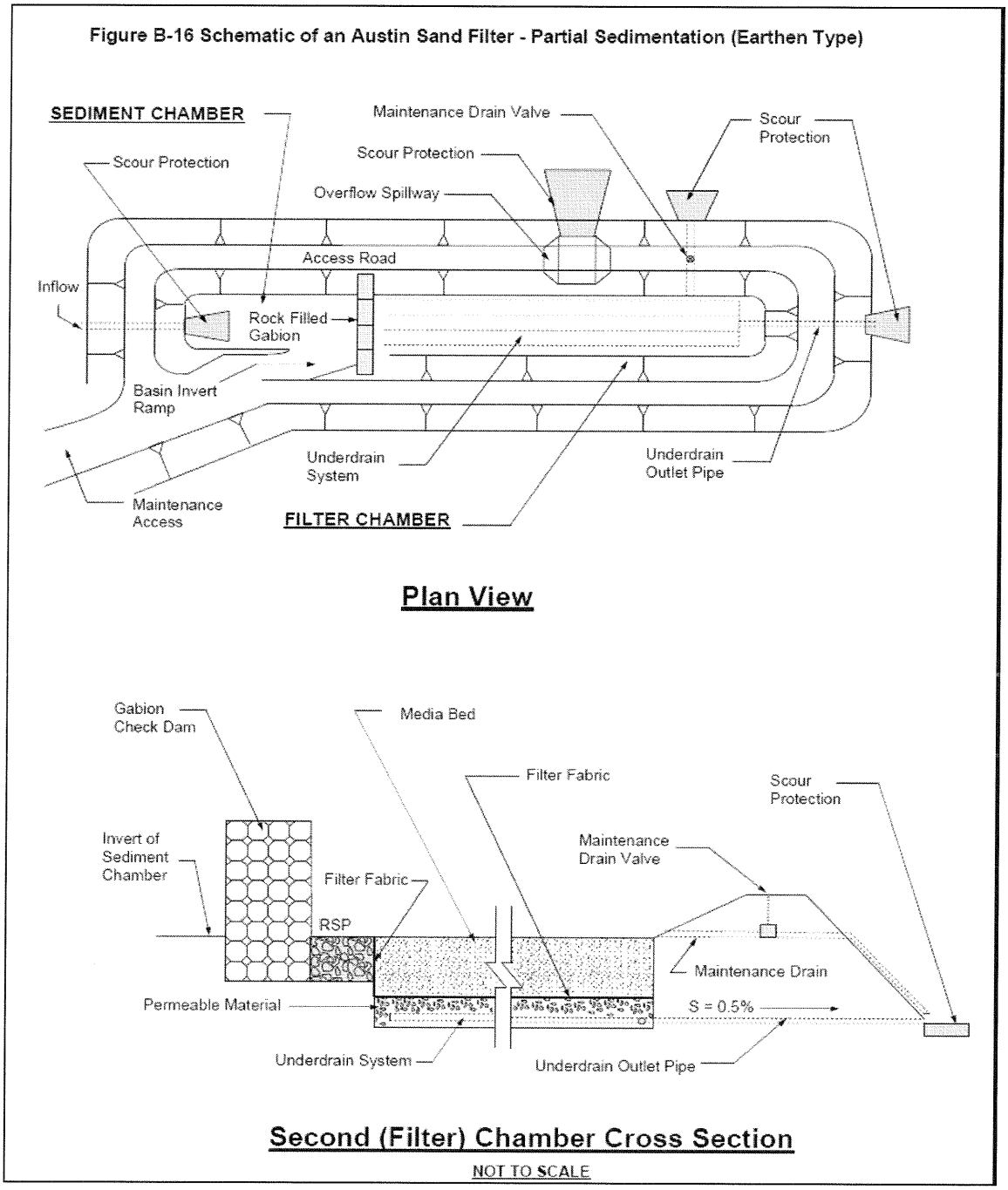


Figure 7-1 Proposed SFB Design Details

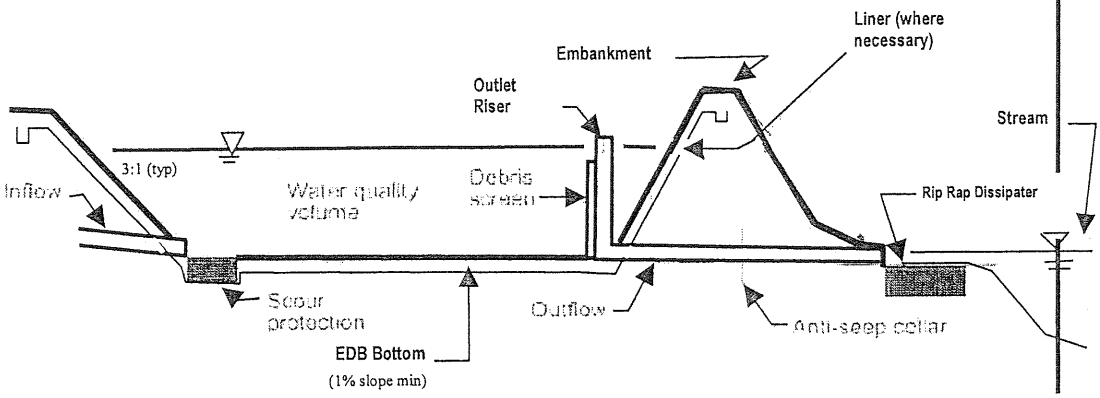
7.3 EDB DESIGN

Detention basins (EDBs) are impoundments where the water quality volume resulting from 0.8 inch of rainfall is temporarily detained under calm conditions, allowing sediment and particulates to settle out. Detention basins collect litter, settleable solids (debris), TSS, and pollutants which are attached (adsorbed) to the settled particulate matter. The invert of all detention basins will be vegetated with bioswale hydroseed mixture to promote oil and grease removal for low flows. All EDBs will be designed per Caltrans standards which include a flow-path-to-width ratio of at least 2:1 and accessible maintenance gravity drains. Appendix B of the Caltrans Project Planning and Design Guide (PPDG, 2007) provides additional design criteria. The facilities will be accessible for maintenance with 12-foot-wide access roads, designed with adequate turnaround for maintenance vehicles. The maximum access road grade will not exceed 18 percent, and grades greater than 9 percent will be paved. Figure 7-2 shows typical design details for the EDBs.

The most recent Caltrans "Stormwater Monitoring and BMP Development Status Report" (2007) indicates that particulate matter greater than 50 micrometers (silt to fine sand size particles) in diameter was shown to completely settle out with detention times of 24-hours using EDBs designed to Caltrans standards. If the detention times are increased to 72-hours, particulate matter greater than 0.5 micrometers (clay to silt size particles) in diameter will settle out. In the project vicinity, 50 boring logs were evaluated to assess particulate size. In general, the alluvial valleys exhibited deep soil profiles consisting of silty to fine grained sands with some gravelly sands. The hillsides exhibited shallower soils consisting of finer grained silty to clayey sands. This indicates that the particulate matter found in the project vicinity will consist mainly of sands (greater than 75 micrometers in size) with a small percentage of finer silt size particles (greater than 10 micrometers in size) and an even smaller percentage of clay size particles (less than 10 micrometers in size). As discussed above, previous studies show that the detention basins enable particulate matter greater than 0.5 micrometers in diameter to settle out when the settling time is increased to 72 hours. Therefore, the EDB outlets proposed for this project will be designed for a 72-hour drawdown time rather than the normal 24-hour drawdown time. This has no impact on the size of the basin, just on the outlet size. In this way, the particulate matter in this vicinity will settle out in the EDBs.

Ten EDBs are proposed along the alignment. Table 7-1 provides a synopsis of the detention basin sizes and tributary areas. Several EDBs have been increased in size to attenuate storm flows (hydromodification control) for erosion protection at the outlet. These are considered conjunctive use hydromodification basins.

Detention Basin



Outlet Detail

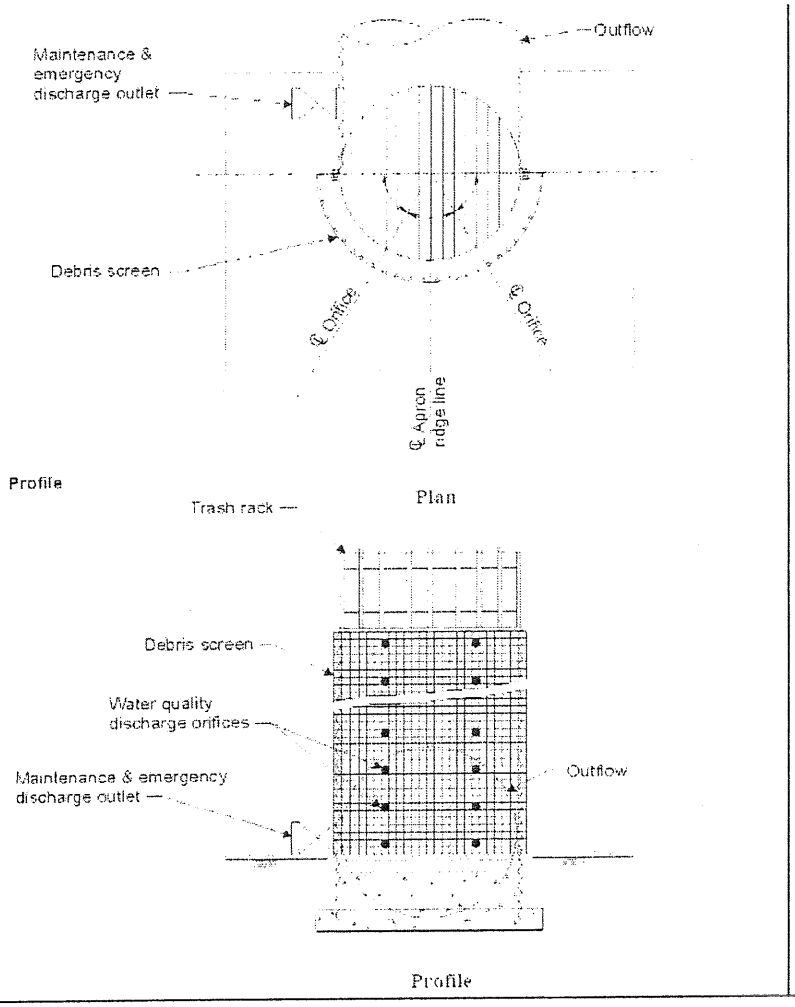


Figure 7-2 Proposed EDB Design Details

Table 7-1
SAND FILTER AND DETENTION BASIN DESIGN ELEMENTS

ID	*Location*	*Preliminary Sizing*[1]	*Receiving Water Body*	*Tributary Area (Ac)*	*2-Yr On-Site Flow*[2] *(cfs)*	*2-Yr Flow in Outlet Chnl*[3] *(cfs)*	*Soil Surface in Outlet Channel*	*Critical Flow Velocity (fps)*[4]	*Remarks*
SFB1	Sta 122+00	WQV = 3.7 Ac-Ft	San Onofre Creek	61.9	15	1062	Cobbles, gravel, coarse sand	1.6	Outlets directly to creek from sand filter at Percolation Pond Site for Camp Pendleton. Creek width = 100 ft.
SFB2	Sta 174+50	WQV = 2.5 Ac-Ft	San Mateo Creek	40.6	32	4407	Cobbles, gravel, coarse sand	1.7	Outlets directly to creek from sand filter. Creek width = 220 ft.
SFB5	Sta 228+00	WQV = 1.1 Ac-Ft	San Mateo Creek	17.0	6	4407	Cobbles, gravel, coarse sand	1.7	Outlets directly to creek from sand filter. Creek width = 220 ft.
EDB6	Sta 258+00	Hydromod = 3.7 Ac-Ft (WQV = 1.8 Ac-Ft)	San Mateo Creek	29.6	6 (1.4 after hydro-mod)	25	Silty sand, cobbles interspersed	1.1	Outlets to 50-foot wide natural channel, 1,000 feet upstream of creek.
EDB7	Sta 396+00	Hydromod = 3.5 Ac-Ft (WQV = 1.8 Ac-Ft)	Cristianitos Creek	27.9	9 (1.4 after hydro-mod)	85	Silty sand, cobbles interspersed	1.2	Outlets to 50-foot wide natural channel, 1,600 feet upstream of creek.
EDB8	Sta 452+00	WQV = 2.2 Ac-Ft	Cristianitos Creek	36.9	14	898	Cobbles, gravel, coarse sand	1.6	Outlets directly to creek. Creek width = 150 ft
EDB10	Sta 625+00	WQV = 2.8 Ac-Ft	San Juan Creek (SJC)	45.7	11	330	Compacted sand w/ grassy surface, cobbles	1.7	Outlets directly to Trampas Canyon, a major tributary to San Juan Creek. Creek width = 80 ft
EDB11	Sta 700+00	WQV = 0.7 Ac-Ft	San Juan Creek	11.4	6	3026	Cobbles, gravel, coarse sand	1.6	Outlets directly to creek. Creek width = 600 ft. Liner may be required.
EDB12	Sta 755+00	WQV = 1.6 Ac-Ft	San Juan Creek	17.3	18	3026	Cobbles, gravel, coarse sand	1.6	Outlets directly to creek. Creek width = 600 ft
EDB13	Sta 850+00	Hydromod = 5.3 Ac-Ft (WQV = 1.2 Ac-Ft)	Lower Gobernadora/ SJC	19.8	5 (0.6 after hydro-mod)	8	Silty sand	0.8	Outlets to 80-foot wide natural channel, 400 feet upstream of creek.
EDB13 A	Sta 905+00	Hydromod = 4.0 Ac-Ft (WQV = 0.8 Ac-Ft)	Canada Chiquita/ SJC	13.8	5 (1.3 after hydro-mod)	13	Silty sand	0.8	Outlets to 50-foot wide natural channel, 1,000 feet upstream of large tributary to Canada Chiquita.
EDB14	Sta 935+00	Hydromod = 3.6 Ac-Ft (WQV = 0.8 Ac-Ft)	Canada Chiquita/ SJC	13.2	4 (1.1 after hydro-mod)	12	Silty sand	0.8	Outlets to 100-foot wide natural channel, 1,000 feet upstream of creek.
EDB15	Sta 998+00	WQV = 0.6 Ac-Ft	Canada Chiquita/ SJC	9.5	4	410	Concrete	3.0	Outlets directly to creek. Creek width = 50 ft. Liner may be required.

[1]Sizing based on build-out conditions. Impervious surface is approximately 30% less for initial conditions. Initial WQV approximately 17 % less than build-out WQV.
[2]2-yr on-site flows estimated using Rational Method for areas downstream of flow splitters.
[3] 2-yr flow rates of major streams provided from previous studies that were conducted for planning purposes and listed here for order-of-magnitude comparison only.
[4] Critical flow velocities estimated using 10% of 2-yr flow, assuming normal depth conditions in outlet channel.

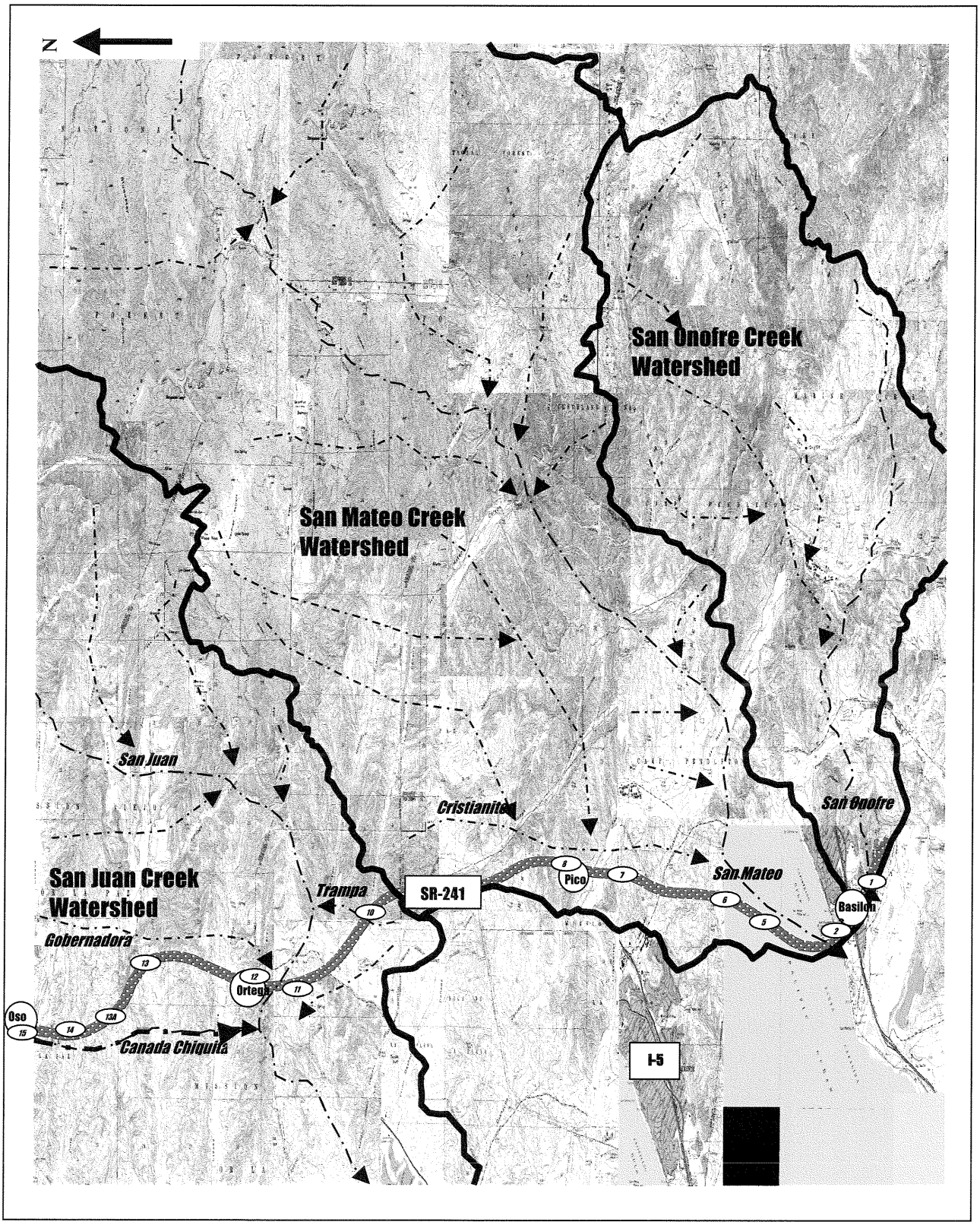


Figure 7-3: FTC-S Watershed Map with Detention Basin and Media Filter Locations

7.4 BIOSWALE DESIGN

Biofiltration swales (bioswales) are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through straining by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff.

Swales were considered for locations along the alignment where longitudinal slopes do not exceed 3 percent and where right-of-way requirements will not conflict with other environmental mitigation. Much of the project alignment is at longitudinal grades exceeding about 3 percent due to the local topography. As a result, vegetated swales were not considered technically feasible in many locations. Along the project alignment, twelve swales are proposed. Three bioswales will be located south of Basilone Road, one bioswale will be located immediately north of the SR-241 crossing of San Mateo Creek within the median, one will be located adjacent to EDB-11 for pre-treatment, three will be located at the G Street interchange, three will be located immediately south of Oso Parkway on the west side of the alignment and one will be located adjacent to EDB-15 for pre-treatment. All of the proposed bioswales will be placed "in-line," meaning they will be located in the drainage flow path of the runoff. Thus, they must convey runoff from any storm that occurs by passing all flows through the bioswale itself. All of the bioswales have been analyzed for scour for a 25-year storm event.

The vegetated trapezoidal swales will be at a slope of less than 3 percent, with 4:1 to 5:1 side slopes, bottom widths between 4 and 10 feet, and lengths ranging from 50 to 700 feet. Swales will be designed to Caltrans standards, which require water quality flow velocities (equal to the flow generated from the 85th percentile storm) to be low enough to keep hydraulic residence times in the swale greater than 5 minutes with a Manning's n of 0.2 used for mowed grass at flow depths less than 0.5 foot. The swales will be vegetated with native grasses. The downstream ends of the swales will connect to grated inlet structures which outlet to adjacent offsite storm drainage systems. All the proposed bioswales will meet Caltrans Traffic Operations requirements with side slopes of 5:1 at Clear Recovery Zones.

Note that bioswales could only be located for pre-treatment upstream of proposed detention basins EDB-11 and EDB15. The other detention basins are located in areas where longitudinal grades are greater than 3%, thus precluding the use of the swales for pre-treatment of runoff.

7.5 BIOSTRIP DESIGN

Biofiltration strips (biostrips) are vegetated sections of land over which stormwater flows as overland sheet flow. Pollutants are removed by straining through the grass, sedimentation, adsorption to soil particles, and infiltration into the soil. Biostrips are mainly effective at removing debris and solid particles, although some dissolved constituents are removed by adsorption onto the soil. These BMPs are most applicable in areas where site conditions and climate allow for the establishment of vegetation, where flow velocities are low, where the length of flow across the biostrips can be maximized and where the slope in the direction of

flow is less than 12 percent. In accordance with the *Caltrans Treatment BMP Technology Report, April 2007,* biostrips have good removal efficiencies for pollutants of concern - metals and total suspended solids. Table 7-2 provides a synopsis of the bioswale and biostrip design elements.

Table 7-2
BIOSWALE AND BIOSTRIP DESIGN ELEMENTS

ID	*Location*	*Water Quality Flow (cfs)*	*Receiving Water Body*	*Tributary Area (Ac)*	*Remarks*
BSW-1	Sta 81+00 to 82+00	0.4	San Onofre Creek	2.3	S=0.25%, L=100 ft, d=0.3 ft, V=0.12 fps, HRT= 14 min, HRT/(Vd)=389
BSW-2	Sta 144+25 to 145+75	0.3	San Mateo Creek	1.4	S=0.25%, L=150 ft, d=0.3 ft, V=0.12 fps, HRT= 21 min, HRT/(Vd)=583
BSW-3	Sta 145+50 to 146+50	0.6	San Onofre Creek	3.2	S=0.25%, L=100 ft, d=0.4 ft, V=0.15 fps, HRT= 11 min, HRT/(Vd)=147
BSW-4	Sta 205+00 to 212+00	1.9	San Mateo Creek	12.0	S=1.0%, L=700 ft, d=0.5 ft, V=0.34 fps, HRT= 34 min, HRT/(Vd)=810
BSW-5	Sta 695+50	2.0	San Juan Creek	11.4	S=0.5 %, L=100 ft, d=0.5 ft, V=0.30 fps, HRT= 6 min, HRT/(Vd)=40
BSW-6	Sta 778+00 to 779+60	0.2	San Juan Creek	1.0	S=3.8 %, L=160 ft, d=0.1 ft, V=0.32 fps, HRT= 8 min, HRT/(Vd)=217
BSW-7	Sta 783+00 to 788+60 (SB)	0.9	San Juan Creek	4.6	S=3.2%, L=560 ft, d=0.3 ft, V=0.54 fps, HRT= 17 min, HRT/(Vd)=97
BSW-8	Sta 783+00 to 785+50 (NB)	0.6	San Juan Creek	3.2	S=2.8%, L=250 ft, d=0.3 ft, V=0.45 fps, HRT= 9 min, HRT/(Vd)=76
BSW-9	Sta 969+00 to 973+30	0.4	Canada Chiquita	2.0	S=1.2%, L=430 ft, d=0.3 ft, V=0.28 fps, HRT= 26 min, HRT/(Vd)=366
BSW-10	Sta 974+00 to 980+40	0.9	Canada Chiquita	4.6	S=0.5%, L=640 ft, d=0.5 ft, V=0.32 fps, HRT= 33 min, HRT/(Vd)=213
BSW-11	Sta 984+00 to 987+00	0.8	Canada Chiquita	4.2	S=0.5%, L=300 ft, d=0.5 ft, V=0.26 fps, HRT= 19 min, HRT/(Vd)=157
BSW-12	Sta 997+00	1.5	Canada Chiquita	9.5	S=0.5%, L=100 ft, d=0.5 ft, V=0.28 fps, HRT= 6 min, HRT/(Vd)=43
BST-1	Sta 770+00 to 780+00	0.3	San Juan Creek	1.6	S=5.9%, L=50 ft, d=.01 ft, V=0.05 fps, HRT=6 min
BST-2	Sta 783+00 to 789+00	0.2	San Juan Creek	1.0	S=5.9%, L=50 ft, d=.01 ft, V=0.05 fps, HRT=6 min

7.6 INITIAL VERSUS BUILD-OUT CONDITIONS

The tributary areas shown above conform to build-out conditions (with the exception of BSW-4). The initial roadway conditions will include two travel lanes in each direction, with a third truck-climbing lane where longitudinal grades require it. The roadway will include a relatively wide median (approximately 62 feet). In the build-out phase, HOV lanes will be

constructed in the median. The tributary areas provided in Tables 7-1 and 7-2 include a paved median which will accommodate the future HOV lanes. For the initial condition, the median will not be paved, which will reduce the impervious area by approximately 33 percent. This only has an impact on the runoff coefficient (not the area) used for calculating the water quality volumes and flows. For low flow conditions, the C-factor for an unpaved median is 0.45 while the C-factor for pavement is 0.9. This translates to a difference in water quality flows and volumes of approximately 17 percent between initial and build-out conditions.

The preliminary design at the northern abutments of the connectors differs for initial and build-out conditions. In the initial design, the majority of pavement runoff will be conveyed to BSW-4 in the median and discharged to an offsite drainage pipeline, which will outlet to San Mateo Creek at I-5. In the build-out, the water quality pavement runoff (that would normally go to BSW-4) will be routed to the I-5 Bridge over San Mateo Creek. Future widening of the I-5 Bridge should, therefore, be equipped with a pipeline that can convey these water quality flows to the south side of the bridge. The pipe then will connect to the storm drain system tributary to SFB-2 proposed for the initial condition.

ATTACHMENT 2

RUNOFF MANAGEMENT PLAN

REVISED SECTION 8.3

8.3 FLOW SPLITTERS

The purpose of the flow splitter is to direct water quality flows (WQF) to the detention basins (EDBs) for stormwater treatment, while allowing peak flows to remain in their original watershed/discharge location (mimicking pre-project conditions). The splitter design shown in Figure 8-2 has been used in Caltrans District 11 at several locations. Alternative designs may be evaluated in the final design phase of the project in accordance with Caltrans design procedures. Caltrans has drafted design guidelines for flow splitters used for purposes of directing water quality flows and/or volumes to BMPs while allowing higher flows to bypass (Caltrans 2007). The flow splitter shown in Figure 8-2 is similar to the Caltrans Type 4 flow splitter modified with a restrictor plate on the outlet pipe to reduce surcharge to the EDBs. This is considered one of the easiest flow splitters to maintain and the least costly to construct.

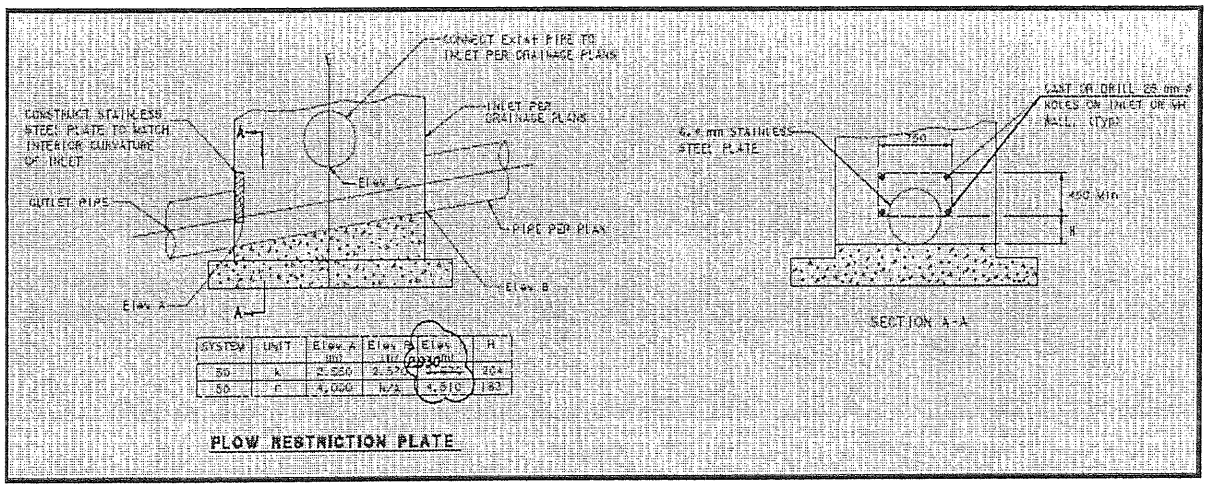


Figure 8-2 Sample Flow Splitter (Caltrans Contract No. 11-233504, May 1998)

Flow splitters were simulated within the SWMM model assuming a side flow orifice located at the invert of an inlet structure with an orifice coefficient of 0.66. The high flow bypass pipelines were placed 1 foot higher than the orifice invert. The orifice size was calculated using the estimated water quality flow (WQF) with a head of 1 foot acting on the orifice. A minimum opening height of 4 inches was used to minimize potential clogging. The splitters were placed at most of the offsite drainage culvert crossings. Figure 8-2a provides a schematic of the flow splitter and shows its placement in the overall hydromodification systems.

Hydrologic simulations were performed for pre- and post- project flow conditions at two representative drainage crossings where flow splitters have been located to assess the need for hydromodification control facilities downstream of flow splitter locations. These analyses were performed for locations that are upstream of the detention basins and include one small sub-watershed and one large sub-watershed, which represent the full spectrum of sub-watershed sizes along the alignment. The analysis of the flow duration curves indicates that the hydrologic conditions for the drainage courses remain generally the same in the pre- and post-project conditions, indicating that the minor changes in the drainage areas/land use as a result of the roadway construction will not adversely affect the downstream local natural

drainages. The locations of the selected hydromodification analyses can be found in Appendix C.

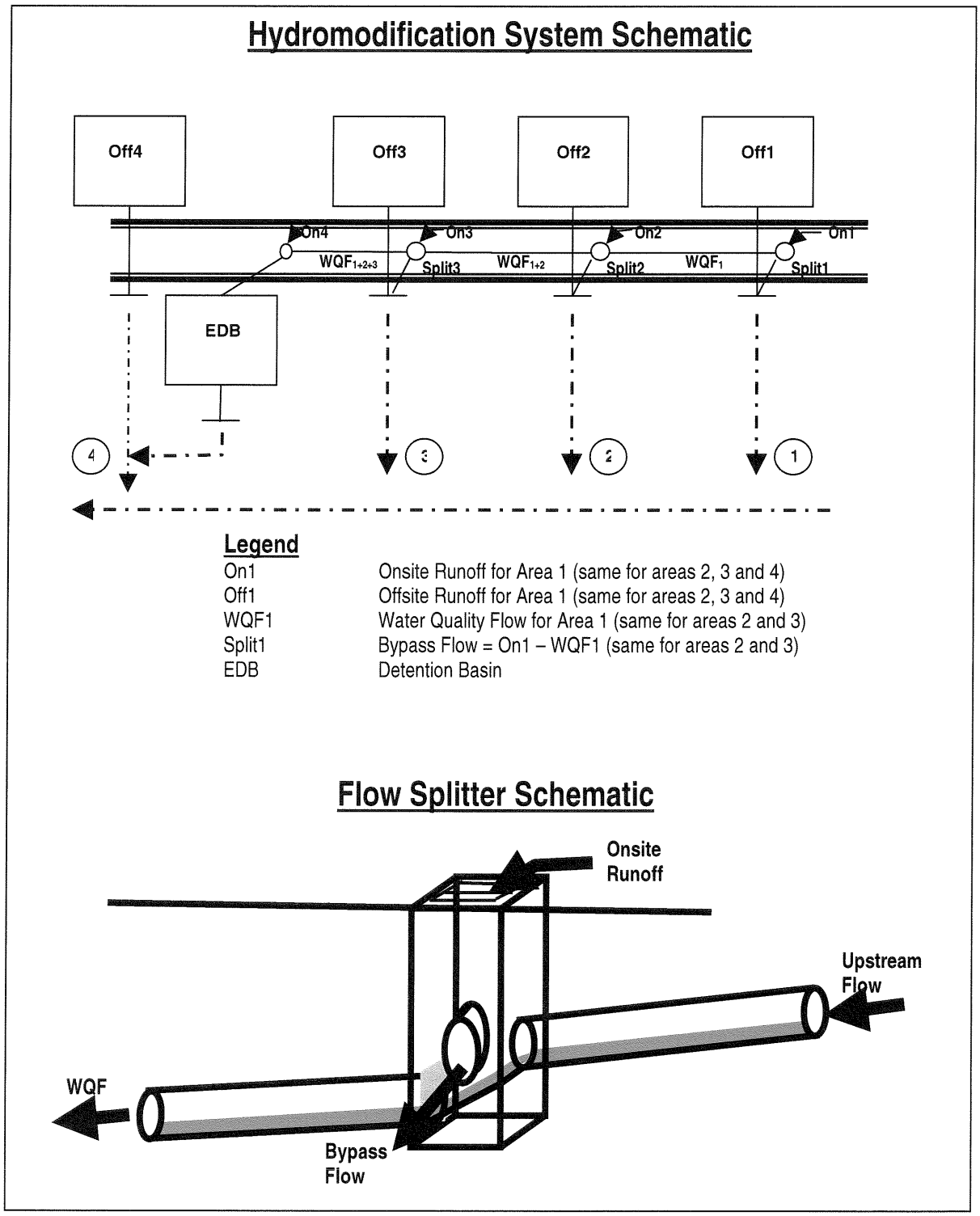


Figure 8-2a Flow Splitter Schematic

Figure 8-3 shows the results of the two simulations. Bypass 1 represents a flow splitter outfall along a small drainage course in the EDB-6 drainage network, while Bypass 2 represents a flow splitter outfall along a large drainage course in the EDB-7 drainage network. A total of 42 flow splitters are proposed for this project, as shown in the exhibits in Appendix A.

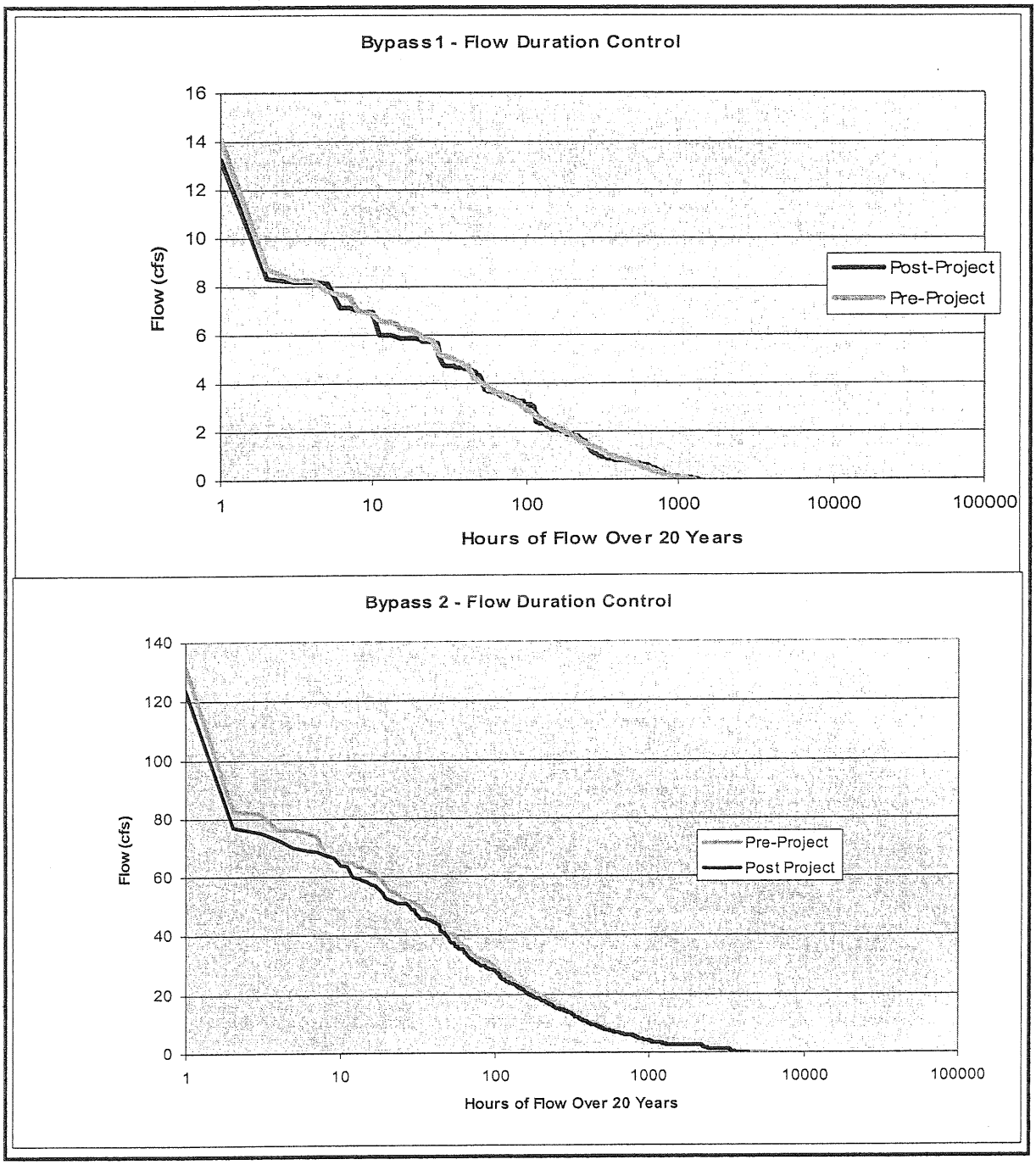


Figure 8-3 Representative Flow Duration Curves at Flow Splitter Outfalls

ATTACHMENT 3

RUNOFF MANAGEMENT PLAN
REVISED BMP EXHIBITS

(See electronic PDF files provided)

ATTACHMENT 4

HYDROLOGIC SOIL GROUP MAPS

(See electronic PDF files provided)