
APPENDIX F

PRELIMINARY WATER QUALITY MANAGEMENT PLAN



County of Orange/Santa Ana Region Priority Project Preliminary Water Quality Management Plan (WQMP)

Project Name:

Orange Coast Memorial Medical Center Parking Structure

PLANNING APPLICATION NO.

APN: 157-511-01

Tract No. 12107, Lot 1

9920 Talbert Avenue

Fountain Valley, CA 92708

Prepared for:

Orange Coast Memorial Medical Center

9920 Talbert Ave.

Fountain Valley, CA 92708

(714) 378-7000

Prepared by:

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Tait & Associates, Inc.

701 N. Parkcenter Dr.

Santa Ana, CA 92705

(714) 560-8200

Date Prepared: March 11, 2024 (Preliminary)

Conceptual Priority Project Water Quality Management Plan (WQMP)
Orange Coast Memorial Medical Center Parking Structure

Project Owner's Certification			
Planning Application No. (If applicable)	TBD	Grading Permit No.	TBD
Tract/Parcel Map and Lot(s) No.	Tract No. 12107, Lot 1	Building Permit No.	TBD
Address of Project Site and APN 9920 Talbert Avenue, Fountain Valley, CA 92708			APN: 157-511-01

This Water Quality Management Plan (WQMP) has been prepared for Orange Coast Memorial Medical Center by Tait & Associates, Inc. The WQMP is intended to comply with the requirements of the County of Orange NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan, including the ongoing operation and maintenance of all best management practices (BMPs), and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner: Mark Shuck			
Title	Executive Director Construction Management		
Company	Orange Coast Memorial Medical Center		
Address	18111 Brookhurst St. Suite 0100, Fountain Valley, CA 92708		
Email	mshuck@memoiralcare.org		
Telephone #	(714) 378-7798		
I understand my responsibility to implement the provisions of this WQMP including the ongoing operation and maintenance of the best management practices (BMPs) described herein.			
Owner Signature		Date	

Preparer (Engineer): Ryan Haskin			
Title	Project Manager	PE Registration #	84850
Company	Tait & Associates, Inc.		
Address	701 N. Parkcenter Dr.		
Email	rhaskin@tait.com		
Telephone #	(714) 560-8200		
I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board.			
Preparer Signature		Date	
Place Stamp Here			

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Section I Permit(s) and Water Quality Conditions of Approval or Issuance

Project Information			
Permit/Application No. (If applicable)	TBD	Grading or Building Permit No. (If applicable)	TBD
Address of Project Site (or Tract Map and Lot Number if no address) and APN	Tract 12107, Lot 1 APN: 157-511-01		
Water Quality Conditions of Approval or Issuance			
Water Quality Conditions of Approval or Issuance applied to this project. (Please list verbatim.)	The Conditions of Approval have not yet been applied.		
Watershed-Based Plan Conditions			
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	Project site drains to City of Fountain Valley Storm Drain on Talbert Avenue, tributary to the Talbert Channel, tributary to Huntington Beach State Park, listed on the 303-d list for PCBs. The TMDL was estimated to be completed in 2019. A WIHMP is not available at this time.		

Section II Project Description

II.1 Project Description

Description of Proposed Project				
Development Category (From Model WQMP, Table 7.11-2; or -3):	Priority Project. Category 8. All significant redevelopment projects where significant redevelopment is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety.			
Project Area (ft ²): <u>95,797</u>	Number of Dwelling Units: <u>N/A</u>		SIC Code: <u>7521</u>	
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	17,857 sq. ft.	19%	77,941 sq. ft.	81%
Post-Project Conditions	23,105 sq. ft.	24%	72,531 sq. ft.	76%
Drainage Patterns/Connections	<i>Existing drainage conditions</i> The existing drainage pattern consists of two drainage areas. One drainage area sheet flows to the parkway drain at the Northwest of the site, tributary to Talbert Avenue, tributary to the downstream curb inlet, which connects directly to an existing 45" storm drain line north of the site. The other drainage area sheet flows to a catch basin at the Northeast of the site, which connects the back of an existing catch basin on Talbert Avenue, which connects directly to the existing 45" storm drain line north of the site. <i>Proposed drainage conditions</i> The proposed parking structure will sheet flow to roof drains on the north and south side of the parking structure that will be discharged at grade and flow to the Modular Wetland System positioned in the northeast corner of the project site. The Modular Wetland System will discharge to the existing catch basin at the northeast of the site tributary to the 45" storm drain north of the site in Talbert Avenue.			
Narrative Project Description: (Use as much space as necessary.)	The project consists of demolishing an existing parking lot on the site and constructing a proposed four-level parking structure. The site has two existing driveways that will be demolished and reconstructed. The proposed project will increase the on-site area of landscaping. The project parking structure also features a second story pedestrian bridge that will pass over Foster Street with a stair and elevator structure east of Foster Street. Three existing ADA parking stalls will be			

removed and replaced with the stair/elevator structure as well as additional landscaping in an area of disturbance of 1,096 square feet. In a portion of existing parking lot south east of the stair/elevator structure, existing standard parking stalls will be re-stiped with three new ADA parking stalls with new portion of hardscape added connecting the ADA stalls to the existing sidewalk, consisting of a disturbed area of 285 square feet. These two small areas of improvements east of Foster Street combined make up 1,381 square feet and in isolated drainage areas from the majority of the project. It is impractical to provide water quality treatment for these two isolated areas of work, however the net effect of these two areas will be to increase pervious area of the by 39 square feet of the 1,381 square feet with added landscaping. These two areas are shown on the WQMP map however they have been excluded from DMA and DCV calculations in this report since they are not hydrologically connected or treated by the proposed BMPs.

II.2 Potential Stormwater Pollutants

Pollutants of Concern			
Pollutant	Check One for each: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	E ☒	N ☐	Landscaping is proposed on-site.
Nutrients	E ☒	N ☐	Landscaping is proposed on-site.
Heavy Metals	E ☐	N ☒	Outdoor storage or metal roofs are not included in project.
Pathogens (Bacteria/Virus)	E ☐	N ☒	Land use does not involve food or animal waste products.
Pesticides	E ☒	N ☐	Landscaping is proposed on-site.
Oil and Grease	E ☒	N ☐	Project has parking area.
Toxic Organic Compounds	E ☒	N ☐	
Trash and Debris	E ☒	N ☐	

II.3 Hydrologic Conditions of Concern

☐ No - Show map

☒ Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the Technical Guidance Document (TGD).*

Per Section 2.2.3.1 of the Technical Guidance Document and the map provided in Appendix XVI, the project site is tributary to the Talbert Channel, which is a stabilized channel until the last $\frac{3}{4}$ of a mile before it reaches Huntington Beach State Park, where it is tributary to an unstabilized earth channel. See the map in Attachment D.

The calculations shown in Attachment C show that the post-development runoff will decrease with the proposed improvements due to an increase in the pervious area. Also, the proposed drainage pattern results in a longer time of concentration in the post development condition. Therefore, the project meets the HCOC requirements and will not require any mitigation.

The results for the 2-yr 24-hr storm event area as follows:

	Volume	Peak Flow Rate	Time of Concentration
Pre-Development	4,992 ft ³	1.80 cfs	8.31 min (from hydrology study)
Post-Development	4,058 ft ³	1.67 cfs	9.16 min (from hydrology study)

II.4 Post Development Drainage Characteristics

The proposed drainage pattern for the site consists of two main drainage areas. The drainage areas are shown on the WQMP Exhibit in Section VI.1.

Drainage area A consists of 1.11 acres and encompasses approximately half of the proposed parking structure, landscape, and an AC driveway. The AC driveway will sheet flow into a catch basin and the roof drains will sheet flow and both areas will be discharged underground into a 12" storm drain and flow into the Modular Wetland System at the northeast corner of the site.

Drainage area B consists of 1.09 acres and encompasses approximately half of the proposed parking structure, landscape, and an AC driveway. The AC driveway will sheet flow into a catch basin and the roof drains will sheet flow and both areas will be discharged underground into a 12" storm drain and flow into the Modular Wetland System at the northeast corner of the site.

A portion of the proposed landscape between the parking structure and the right-of-way in drainage area A will flow offsite, matching existing conditions.

II.5 Property Ownership/Management

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As of this WQMP report date, the current property owner is listed below:

Orange Coast Memorial Medical Center
9920 Talbert Avenue
Fountain Valley, CA 92708
(714) 378-7000

Section III Site Description

III.1 Physical Setting

Name of Planned Community/Planning Area (if applicable)	N/A
Location/ Address	Talbert Avenue and Forest Street Fountain Valley, CA 92708
General Plan Land Use Designation	Parking
Zoning	
Acreage of Project Site	2.20 AC
Predominant Soil Type	Soil Group A per Figure XVI-2a of the Technical Guidance Document

III.2 Site Characteristics

Site Characteristics	
Precipitation Zone	The rainfall zone for the site has a design capture storm depth of 0.75" per Figure XVI of the Technical Guidance Document.
Topography	The existing site ranges in elevation from 27.5' to 24.8' above sea level. The existing site is relatively flat; however, an existing retaining wall lines the southern and western property line to account for the adjacent property grade variance.
Drainage Patterns/Connections	The proposed site includes a parking structure, two driveways, and landscape. The parking structure will sheet flow to roof drains that will discharge underground into a proposed 12" storm drain which will then flow into the Modular Wetland System at the northeast corner of the site. The AC pavement and driveways will sheet flow into catch basins that will discharge into a proposed 12" storm drain which will then flow into the Modular Wetland System at the northeast corner of the site. A portion of the landscape area will sheet flow into the proposed 12" storm drain and the other portion will flow offsite matching existing drainage patterns from the existing landscape.
Soil Type, Geology, and Infiltration Properties	A Geotechnical Report was performed by GPI on August 11, 2015. Soils encountered in the CPT's below the groundwater table are predominantly medium dense to dense sands and silty sands. Loose sand layers were also

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	encountered. The site is located within an area mapped by the State of California as having potential for soil liquefaction. The soil profile includes compressible and potentially liquefiable soils in the upper 60 feet. The placement of new fill or structural loads will cause significant long-term settlement of these upper materials. The natural soils consist of interbedded layers of sand, silts and clays and their mixtures. The consistencies of the sandy soils range typically from medium dense to dense with some localized loose layers. Very dense and sand layers were encountered at depths greater than 60 feet. In general, the fine-grained soils within the upper 30 to 40 feet are relatively weak and compressible.
Hydrogeologic (Groundwater) Conditions	Per Geotechnical Report dated August 11, 2015, groundwater was encountered at depths of approximately 5 to 7 feet below existing grades in the CPTs. In the borings, groundwater was measured at depths of 10' to 12' feet. The historic high ground has been determined to be 5 feet deep by the State of California (CGS 1987).
Geotechnical Conditions (relevant to infiltration)	Due to the high groundwater table explained above, infiltration is not feasible for the site.
Off-Site Drainage	The proposed site has been graded to have much of the landscape along Talbert Avenue and Foster Street, between the parking structure and the right-of-way, drain offsite to match existing drainage patterns. The proposed northern and southeastern driveways will sheet flow out to Talbert Avenue and Foster Street, respectively, so as to maintain the existing drainage patterns. Due to the elevation of the site at the southeastern driveway, redirecting the flow pattern would be infeasible. As shown in Section IV.4.1, the project qualifies for 919 ft³ of water quality credit, which will be applied to the driveways on the proposed site. See Attachment C and Attachment D for calculations. No run-on contributions are anticipated for the project site.
Utility and Infrastructure Information	An existing 4' easement along the western property line and an existing easement at the northwest corner of the site have been granted to Southern California Edison Company for electrical lines and structures. This easement has been quitclaimed. There are existing water, sanitary sewer, and gas lines north of the site in Talbert Avenue, as well as an existing water line east of the site in Foster Street. None of these existing underground structures are underground structures are in conflict with the proposed LID BMP's. Any new utilities will be located with a minimum setback from the

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	proposed LID BMP's.
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III.3 Watershed Description

Receiving Waters	Huntington Beach State Park
303(d) Listed Impairments	PCBs
Applicable TMDLs	None are known at this time.
Pollutants of Concern for the Project	Per Table 2.2 of the Technical Guidance Document for North Orange County, other organics are pollutants of concern for Huntington Beach State Park.
Environmentally Sensitive and Special Biological Significant Areas	None are known at this time.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?	YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	There are currently no WIHMP's for the Santa Ana River Watershed.	

Project Performance Criteria	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	The calculations shown in Attachment D show that the post-development runoff will decrease with the proposed improvements due to an increase in the pervious area. Also, the proposed drainage pattern results in time of concentrations longer in the post-development condition. Therefore, the project meets the HCOC requirements and will not require any mitigation.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	The entire Design Capture Volume will be treated with a bio-treatment proprietary BMP in the form of a Modular Wetland System. Since the groundwater level at the site is high, infiltration is not feasible, and the Modular Wetland System will have a closed bottom.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	Treatment control BMP's will not be utilized for this project.
Calculate LID design storm capture volume for Project.	Drainage Area = 2.20 acres Rainfall Depth = 0.73 inches Impervious Area = 1.67 acres Impervious Ratio = 0.76 C = 0.70 Design Capture Volume = 4,073 cu. ft.

IV.2. Site Design and Drainage

The proposed site consists of 1.67 acres of impervious area, which includes the parking structure, drive entries, and walkway. The project will implement bio-treatment a proprietary BMP in the form of a Modular Wetland System. Since the groundwater level at the site is high, infiltration is not feasible, and the Modular Wetland System will be designed with a closed bottom.

The proposed parking structure will sheet flow to roof drains on the south side of the parking structure that will be discharged underground and flow to the Modular Wetland System positioned in the northeast corner of the project site. The Modular Wetland System will have overflow pipes that will discharge to the existing catch basin at the northeast of the site tributary to the 45" storm drain north of the site in Talbert Avenue. A map of the post-construction drainage condition is included in Attachment B.

The landscape north and east of the parking structure, between the structure and the right-of-way, will primarily flow offsite, matching existing drainage patterns.

Landscape west and south of the site will be designed to flow across the grass vegetation into inlets downstream that will collect and convey stormwater into the storm drain system.

The proposed northern and southeastern driveways will sheet flow out to Talbert Avenue and Foster Street, respectively, to maintain the existing drainage patterns. Due to the elevation of the site at the southeastern driveway, redirecting the flow pattern would be infeasible. As shown in Section IV.4.1, the project qualifies for 919 ft³ of water quality credit, which will be applied to the driveways on the proposed site. See Attachment C and Attachment D for calculations.

IV.3 LID BMP Selection and Project Conformance Analysis

IV.3.1 Hydrologic Source Controls (HSCs)

Hydrologic source controls will not be proposed for the project. The site BMP's will meet the DCV with LID BMP's.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☒
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable	☐

pavers, site design)	
Other:	☐

IV.3.2 Infiltration BMPs

Infiltration BMP's will not be utilized for this project due to the presence of high groundwater on-site. See Attachment E for the infiltration BMP feasibility worksheet which contains more information regarding the infiltration infeasibility criteria for this project.

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐

As stated above, due to high groundwater encountered 5' below existing surface, infiltration is considered infeasible for this site.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; See Section IV.3.1	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☒
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐

Evapotranspiration is met through bio-treatment BMP's. See section IV3.4.

Harvest and Use Infeasibility calculations provided in Appendix G.

IV.3.4 Biotreatment BMPs

Name	Included?
Bioretention with underdrains	☒
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☐
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐

IV.3.5 Hydromodification Control BMPs

Hydromodification BMP's are not required for this site as the pre-construction pervious area of the site will be increased post-construction.

Hydromodification Control BMPs	
BMP Name	BMP Description
N/A	

IV.3.6 Regional/Sub-Regional LID BMPs

Regional/Sub-Regional LID BMP's are not applicable for the project.

IV.3.7 Treatment Control BMPs

The Design Capture Volume will be treated with Bio-treatment BMP's; therefore treatment control BMP's will not be utilized for the project.

Treatment Control BMPs	
BMP Name	BMP Description
N/A	

IV.3.8 Non-structural Source Control BMPs

All educational materials will be provided with Final WQMP.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☐	☒	There are no activity restrictions for this project
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	
N6	Local Industrial Permit Compliance	☐	☒	The project will not have fuel dispensing areas or other areas of concern.
N7	Spill Contingency Plan	☐	☒	The project will not have bulk storage of liquids.
N8	Underground Storage Tank Compliance	☐	☒	The project is not proposing the use of storage tanks.
N9	Hazardous Materials Disclosure Compliance	☒	☐	
N10	Uniform Fire Code Implementation	☒	☐	
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	This project does not have loading docks.
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	This project does not have retail gasoline.

N1 – Education for Property Owners, Tenants and Occupants & N12 – Employee Training

The property owner shall prepare a training manual for all existing and future employees. The manual shall include information regarding proper practices that contribute to the protection of the stormwater quality. Training shall be provided upon hire of new associates. A copy of the training manual shall remain on-site at all times for employees to use as needed. The manual shall include all Educational Materials included in Attachment A of this report. Additional educational materials may be found at the following website: <http://www.ocwatershed.com/PublicED/resources/business-brochures.html>

N3 – Common Area Litter Control

All maintenance must be consistent with the City of Fountain Valley requirements. Proper maintenance practices should help reduce and/or eliminate pollution from pesticides, nutrients, trash/debris and sediments. The project common area landscape maintenance should be consistent with the “Building and Ground Maintenance Guidelines,” “Plaza and Sidewalk Cleaning,” and “Tips for Landscaping and Gardening” documents included in Attachment A.

N4 – BMP Maintenance

BMP maintenance, implementation schedules, and responsible parties are included with each specific BMP narrative.

N5 – Title 22 CCR Compliance (How development will comply)

Hazardous waste shall be managed properly through compliance with applicable Title 22 regulations. Storage and transportation of hazardous materials shall be per Title 22 of the California Code of Regulations and the Health and Safety Code.

N9 – Hazardous Materials Disclosure Compliance

The owner is responsible for obtaining the required permits for the use and transportation of hazardous materials. Permits may be required from the County of Orange Health Department, City of Fountain Valley, and other local authorities.

N10 – Uniform Fire Code Implementation

The owner is responsible for complying with the Orange County Fire Department requirements regarding proper management of hazardous materials and emergency response plans. An inventory of hazardous materials should be maintained on-site and an emergency response plan should be established.

N11 – Common Area Litter Control

The Owner will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Owner may contract with their landscape maintenance firm to provide this service with regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations and reporting the violations to the Owner for investigation.

N14 – Common Area Catch Basin Inspection

Common area catch basin inspection procedures, schedules, and responsible parties.

N15 – Street Sweeping Private Streets and Parking Lots

Street sweeping procedures, schedules, and responsible parties.

IV.3.9 Structural Source Control BMPs

Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No outdoor storage is proposed for this site.
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	No trash or waste storage areas proposed for this site.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	The proposed project area does not have any slopes or channels that require protections.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☐	
S6	Dock areas	☐	☒	This project does not have any proposed dock areas.
S7	Maintenance bays	☐	☒	This project does not have any maintenance bays.
S8	Vehicle wash areas	☐	☒	This project does not have any vehicle wash areas.
S9	Outdoor processing areas	☐	☒	The project does not have outdoor processing areas.
S10	Equipment wash areas	☐	☒	The project does not have equipment wash areas.
S11	Fueling areas	☐	☒	The project does not have fueling areas.
S12	Hillside landscaping	☐	☒	The project does not have hillside landscaping.
S13	Wash water control for food preparation areas	☐	☒	The project does not have food preparation areas.
S14	Community car wash racks	☐	☒	The project does not have car wash racks.

S1 – Provide storm drain system stenciling and signage

All catch basins/inlets/outlets on site must be marked using the City's "No Dumping – Drains to Ocean" curb marker or stencilled using an approved stencil to paint this message on the top of curb directly above the inlet, and on one side of the curb face. Labelling for catch basins is to be inspected regularly and maintained so as to be reasonably legible at all times. The inspection and maintenance is to be performed by the Owner. This stencil is to alert the public/employees to the destination of pollutants discharged into the storm water.

S4 – Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control

All irrigation systems will be inspected to ensure that the systems are functioning properly and that the programmable timers are set correctly.

IV.4 Alternative Compliance Plan (If Applicable)

IV.4.1 Water Quality Credits

Description of Proposed Project				
Project Types that Qualify for Water Quality Credits (Select all that apply):				
☒ Redevelopment projects that reduce the overall impervious footprint of the project site.	☐ Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.		☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).	
☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).		☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned		☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).
☐ Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.	☐ Developments in a city center area.	☐ Developments in historic districts or historic preservation areas.	☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.	☐ In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.
Calculation of Water Quality Credits (if applicable)	Equivalent "existing" DCV = 4,992 ft ³ Proposed DCV = 4,073 ft ³ Credit Volume = 919 ft ³			

IV.4.2 Alternative Compliance Plan Information

Not applicable to this project.

Section V Inspection/Maintenance Responsibility for BMPs

BMP Inspection/Maintenance			
BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Modular Wetland System	Owner	Inspect pre-treatment, biofiltration, and discharge chambers.	Multiple times during the first year and then every 6 to 12 months after the first year.
Education for Property Owners, tenants and occupants & Employee training	Owner	The association shall prepare a training manual for existing and future employees. The manual should include information on non-point source pollution and how to use Best Management Practices. Training shall be provided upon hire and at regular intervals thereafter.	Quarterly
Common Area Landscape Management	Owner	Ongoing maintenance is conducted to minimize erosion and over-irrigation, conserve water and reduce pesticide and fertilizer applications.	Weekly
Common Area Litter Control	Owner	The Owner will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Owner may contract with their landscape maintenance firm to provide this service with regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations and reporting violations to the Owner for investigation.	Continual

Conceptual Priority Project Water Quality Management Plan (WQMP)
Orange Coast Memorial Medical Center Parking Structure

Catch Basin/Inlet Inspection	Owner	The Owner must ensure that the on-site drain inlets, grates, and drainpipes will be periodically inspected visually. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. If necessary, clean, repair, or replace any drainage facility prior to the start of each rainy season (no later than October 15 of each year). Also, refer to "Drainage System Maintenance" in Attachment A.	Monthly -Before and after predicted storm events
Street Sweeping Private Streets and Parking Lots	Owner	The Owner must sweep outdoor lots regularly (minimum monthly), and prior to the storm season (no later than October 15 each year). Sweeping shall be done with a vacuum-type sweeper. Under no circumstances are outdoor areas/lots to be rinsed or washed with water unless said rinse/wash water is collected and disposed of properly (i.e. into the sewer)	Monthly
Provide Storm Drain Stencilling and signage	Owner	All catch basins/inlets/outlets on site must be marked using the City's "No Dumping – Drains to Ocean" curb marker or stencilled using an approved stencil to paint this message on the top of curb directly above the inlet, and on one side of the curb face. Labelling for catch basins is to be inspected regularly and maintained so as to be reasonably legible at all times. The inspection and maintenance is to be performed by the Owner. This stencil is to alert the public/employees to the destination of pollutants discharged into the storm water.	Annual

Section VI BMP Exhibit (Site Plan)

VI.1 BMP Exhibit (Site Plan)

See next page for grading and WQMP plan.

Section VII Educational Materials

Education Materials			
Residential Material (http://www.ocwatersheds.com)	Check If Applicable	Business Material (http://www.ocwatersheds.com)	Check If Applicable
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☒
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	Other Material	Check If Attached
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐	Building and Ground Maintenance Guidelines	☒
Recycle at Your Local Used Oil Collection Center (Central County)	☐	Plaza and sidewalk cleaning	☒
Recycle at Your Local Used Oil Collection Center (South County)	☐	Efficient Irrigation	☒
Tips for Maintaining a Septic Tank System	☐	Drainage System Maintenance	☒
Responsible Pest Control	☐		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☐		☐

Mar 11, 2024 - 2:38pm by mskadi K:\Drawings\SP7911 - CDMAA\ENG\WQMP\SP7911-WQMP.dwg



Know what's below
Call before you dig.

UNAUTHORIZED CHANGES & USES

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES OF THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS PRIOR TO CONSTRUCTION. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

NOTE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAYBE EXISTING UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION OF THOSE UNDERGROUND UTILITIES TO BE USED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

BASIS OF BEARINGS:
BEARINGS BASED ON ...

BENCH MARK:
NGS BENCH MARK ...



PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

RYAN HASKIN, P.E. CA P.E. #84850 DATE

DRAWN: JM
DATE: 6/9/23
CHECKED: RH
DATE: 6/15/23
REVISION #:
DATE:
JOB NO: SP7911

1 OF 1

WQMP MAP

ORANGE COAST MEMORIAL MEDICAL CENTER PARKING STRUCTURE
9920 TALBERT AVENUE
FOUNTAIN VALLEY, CA 92708



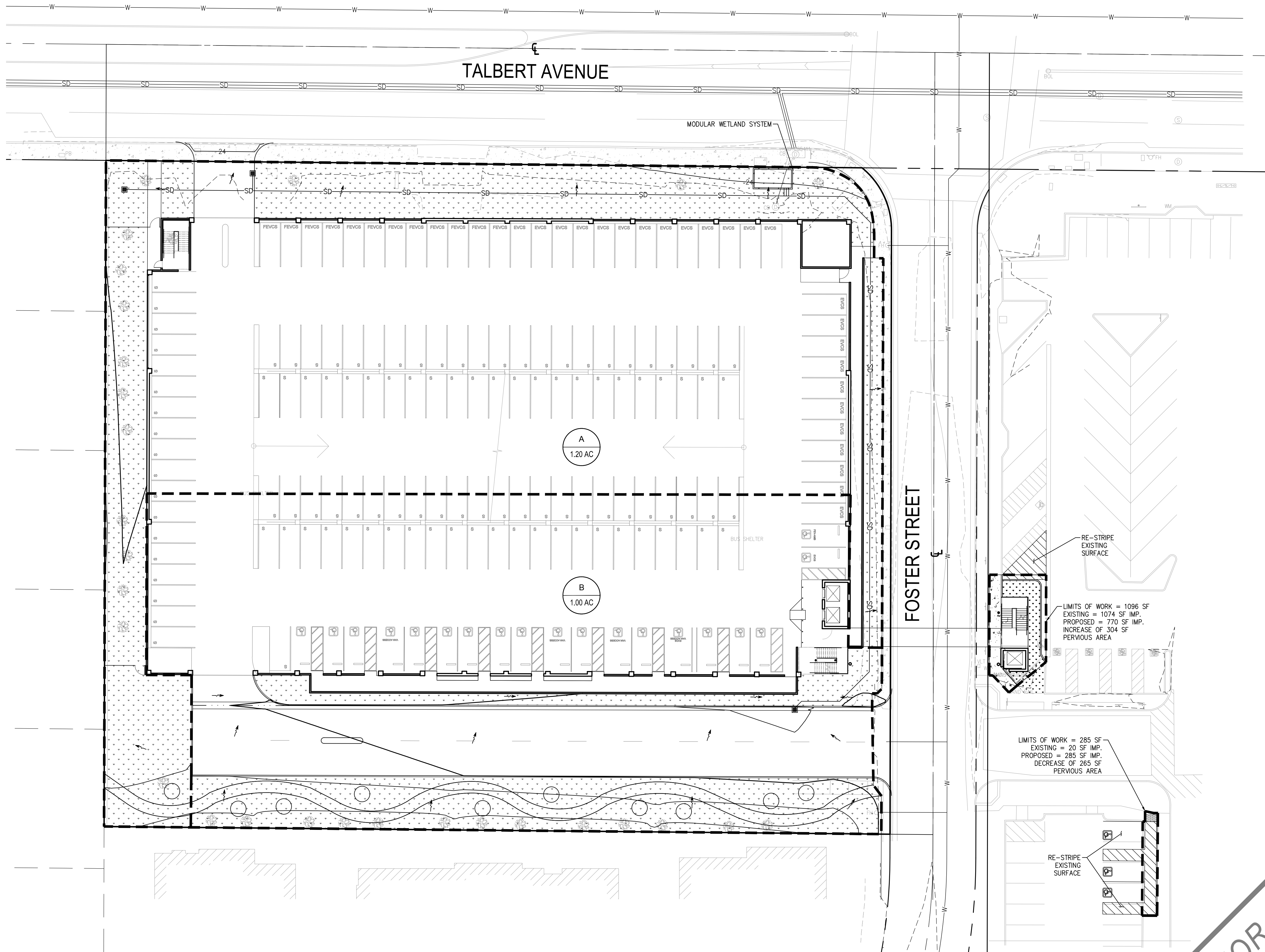
701 North Parkcenter Drive
Santa Ana, CA 92705

p: 714.580.8200
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Since 1964

5/15/2019 Internal Review #1

FOR REVIEW ONLY - NOT FOR CONSTRUCTION



LEGEND

- EXISTING CONTOUR
- FLOW LINE
- SLOPE
- AREA BOUNDARY
- SUB-AREA BOUNDARY
- NODE
- AREA ID
- AREA (AC)

Attachment A Educational Materials

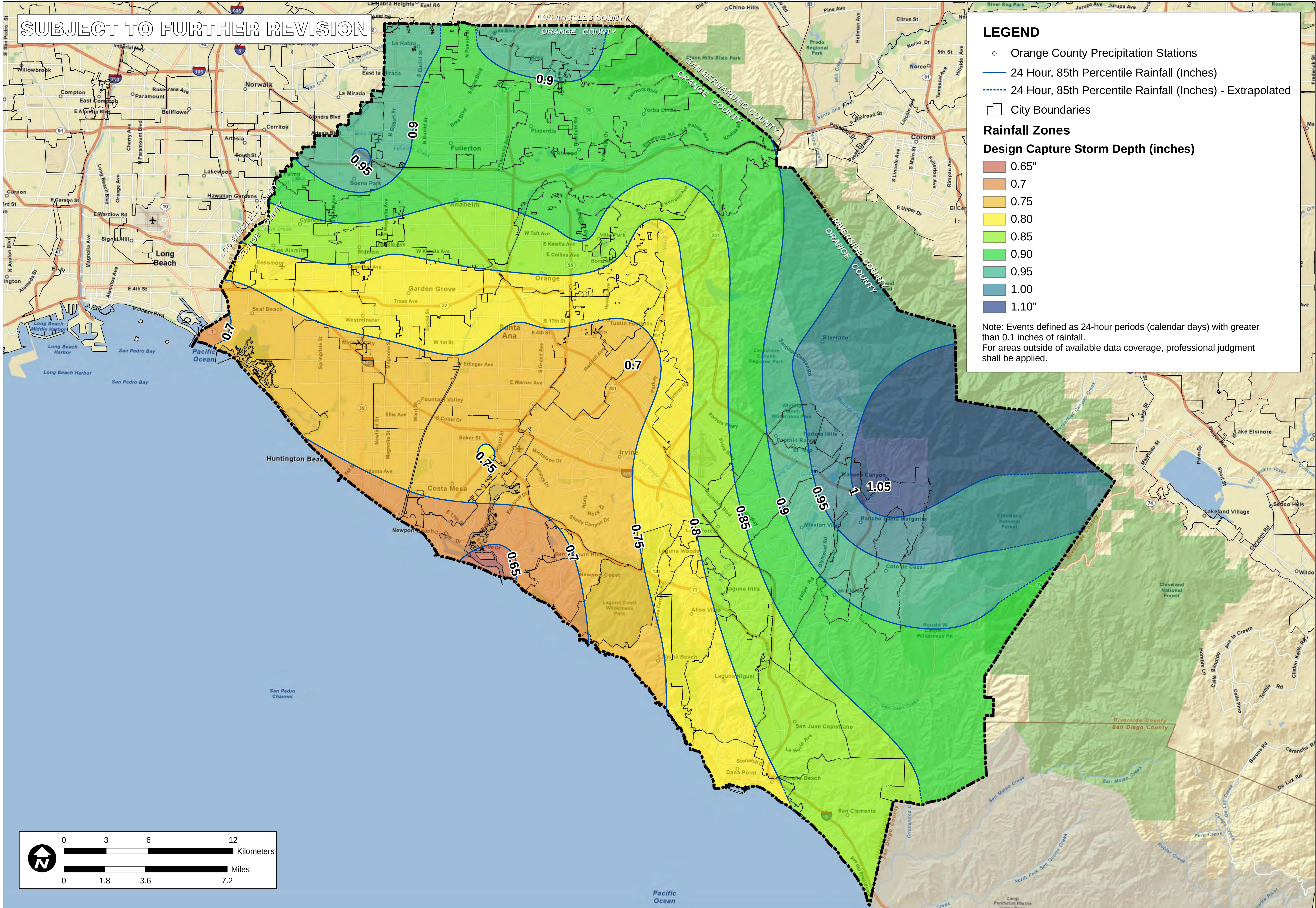
Attachment B Supporting Maps & Exhibits

Rainfall Zones (Figure XVI-1)

NRCS Hydrologic Soils Groups (Figure XVI-2a)

Mapped Depths to First Groundwater (Figure XVI-2d)

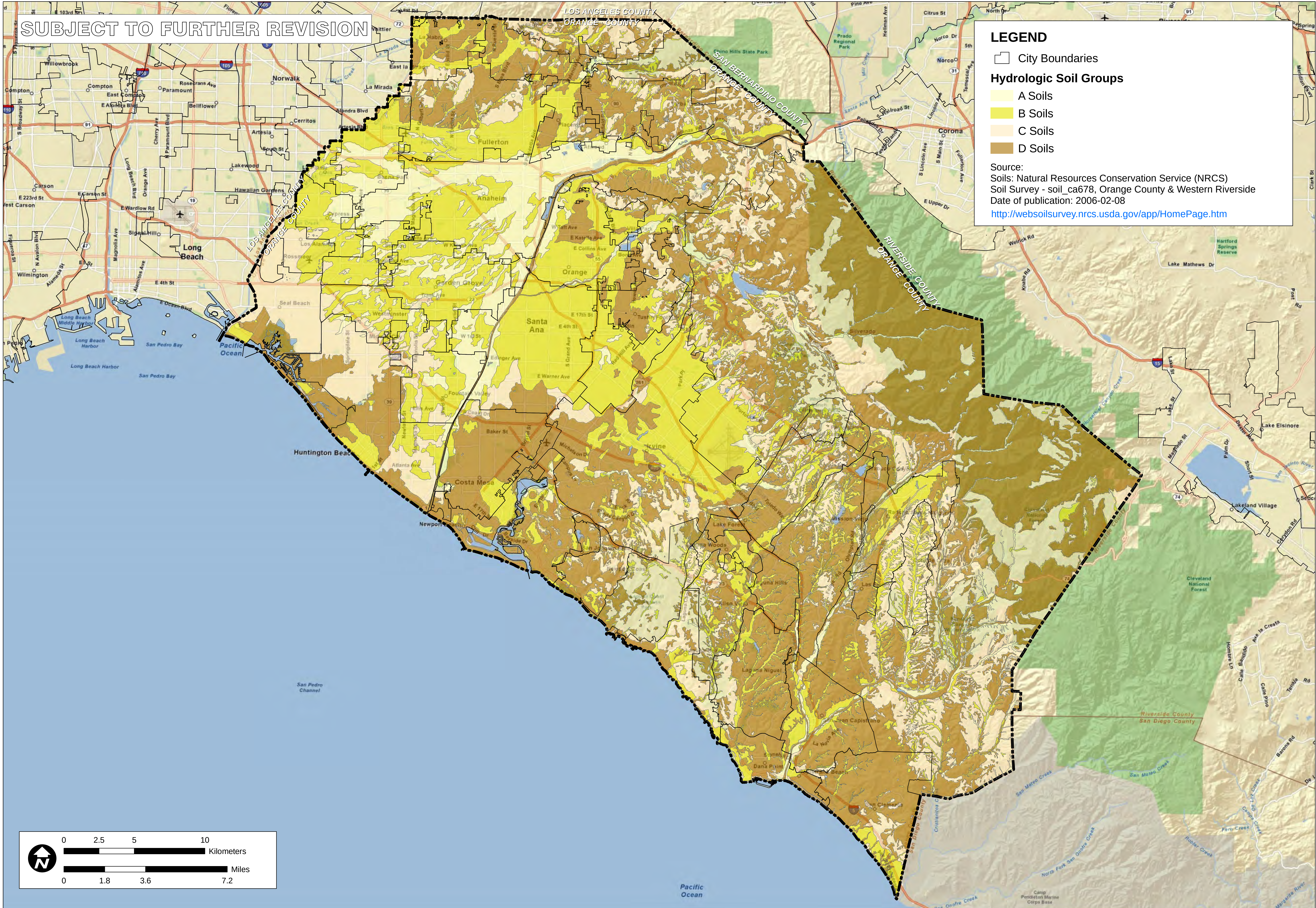
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ORANGE COUNTY TECHNICAL GUIDANCE DOCUMENT		TITLE	RAINFALL ZONES
ORANGE CO.		CA	
SCALE	1" = 1.8 miles	JOB	
DESIGNED	TH		
DRAWING	TH		
CHECKED	BMP		
DATE	04/22/10		
JOB NO.	9526-E		
FIGURE		XVI-1	

PACE
Advanced Water Engineering

P:\9526E\GIS\Mxds\Reports\InfiltrationFeasibility_20110215\9526E_FigureXVI-2a_HydroSoils_20110215.mxd



LEGEND

City Boundaries

Hydrologic Soil Groups

A Soils

B Soils

C Soils

D Soils

Source:

Soils: Natural Resources Conservation Service (NRCS)

Soil Survey - soil_ca678, Orange County & Western Riverside

Date of publication: 2006-02-08

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

TITLE

NRCS HYDROLOGIC
SOILS GROUPS

CA

JOB

SCALE 1" = 1.8 miles

DESIGNED TH

DRAWING TH

CHECKED BMP

DATE 02/09/11

JOB NO. 9526-E

ORANGE CO.

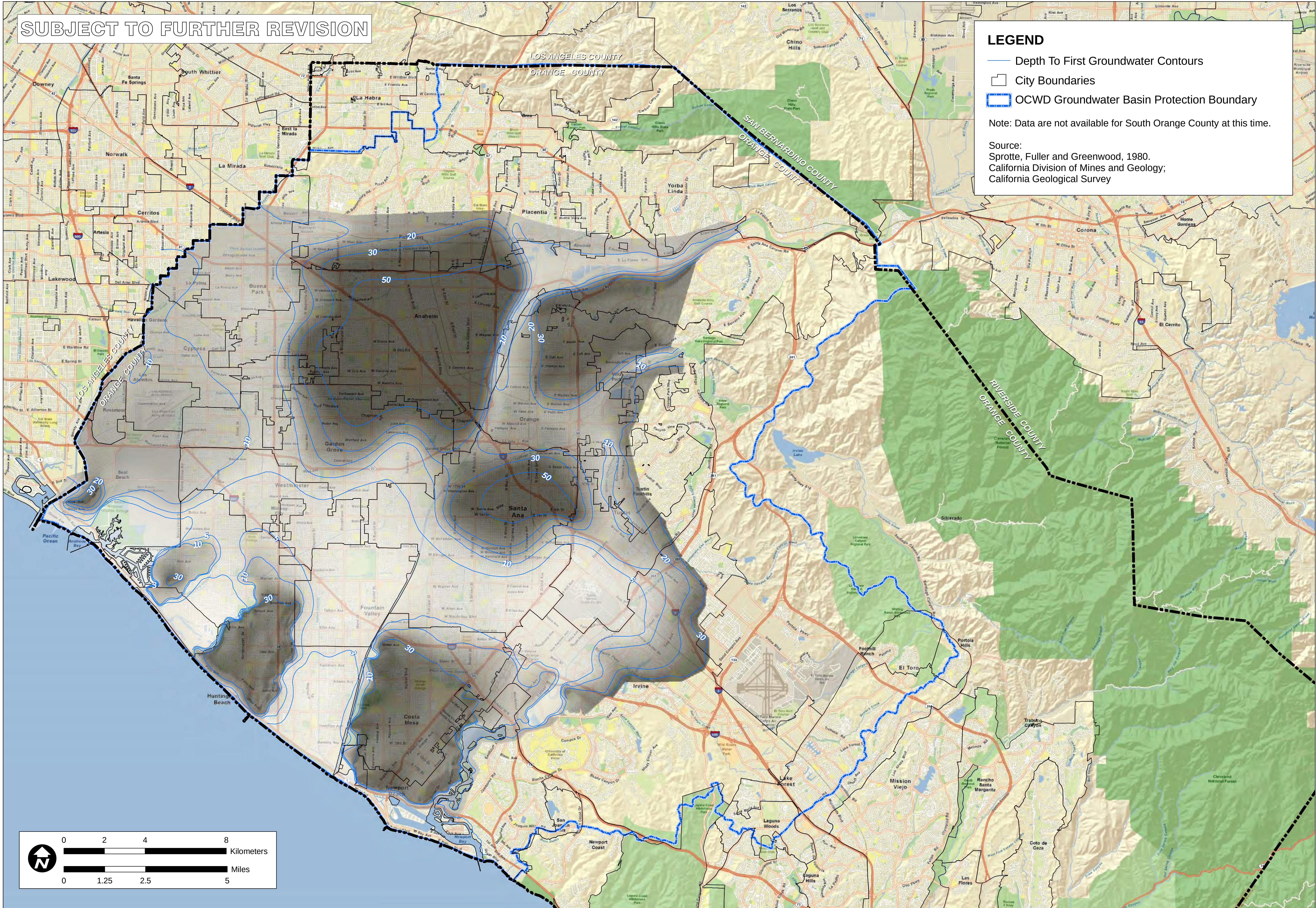
ORANGE COUNTY
INFILTRATION STUDY

FIGURE

XVI-2a



P:\19526\16-GIS\Mxds\Reports\Infiltration\Feasibility_20110215\19526_FigureXVI-2d_DepthToGroundwaterOverview_20110215.mxd



NORTH ORANGE COUNTY MAPPED DEPTH TO FIRST GROUNDWATER		TITLE	
ORANGE COUNTY INFILTRATION STUDY		CA	
ORANGE CO.		JOB	
SCALE	1" = 1.25 miles	DESIGNED	TH
DRAWING	TH	CHECKED	BMP
DATE	02/09/11	JOB NO.	9526-E
FIGURE		XVI-2d	

PACE
Advanced Water Engineering

Attachment C BMP Design Calculations & Details

Design Calculations

Details

Conceptual Priority Project Water Quality Management Plan (WQMP)
Orange Coast Memorial Medical Center Parking Structure

Area A - Design Capture Volume (DCV) for Proposed Condition		
$V = C \times d \times A \times 43,560 \times 1/12$		
$C = (0.75 \times d + 0.15)$		
C =	0.70	
A =	52,102 ft ²	= 1.20
d =	0.73	(From Rainfall Zones Map)
V =	2210.753	cf

Area B - Design Capture Volume (DCV) for Proposed Condition		
$V = C \times d \times A \times 43,560 \times 1/12$		
$C = (0.75 \times d + 0.15)$		
C =	0.70	
A =	43,534 ft ²	= 1.00
d =	0.73	(From Rainfall Zones Map)
V =	1847.202	cf

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.462			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	DIRECT TRAFFIC		
NOTES:			

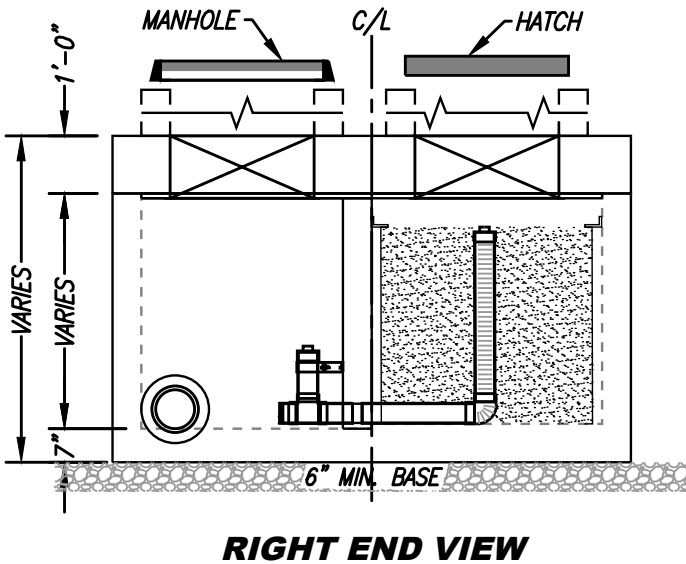
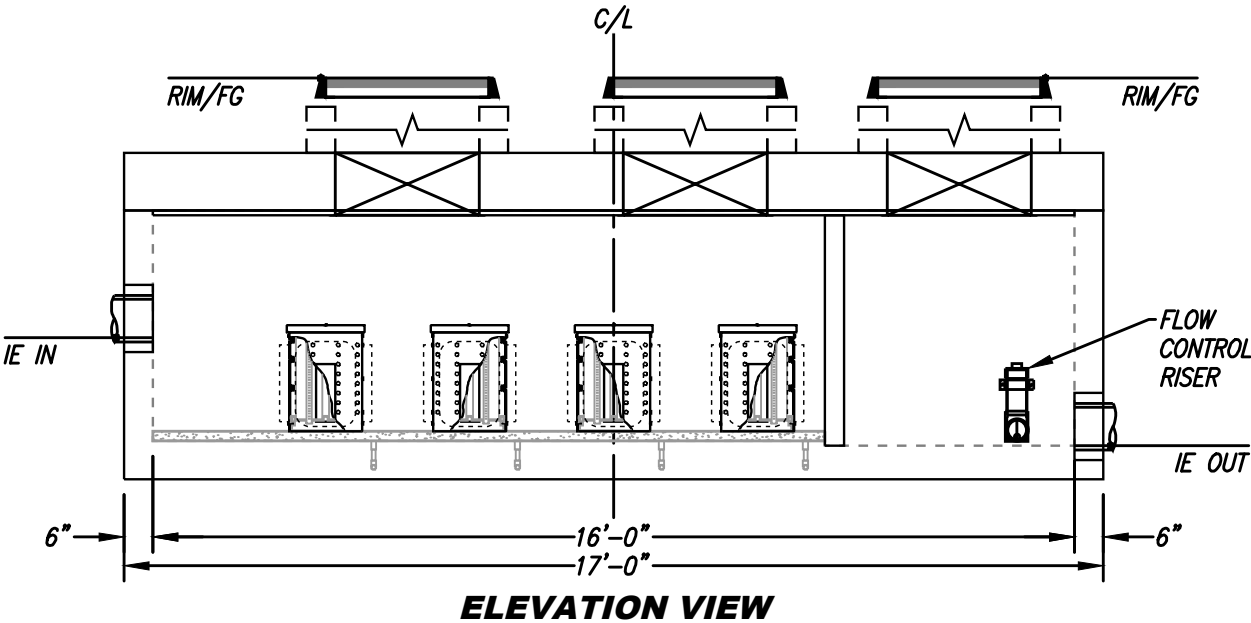
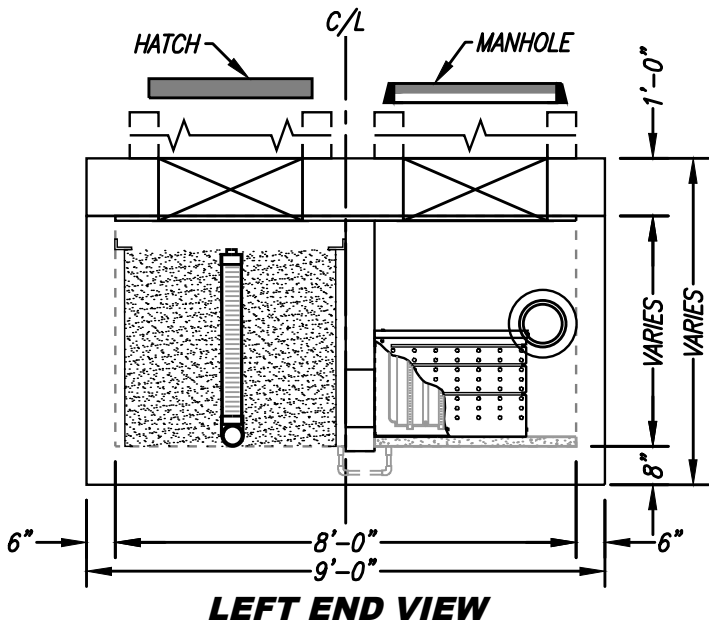
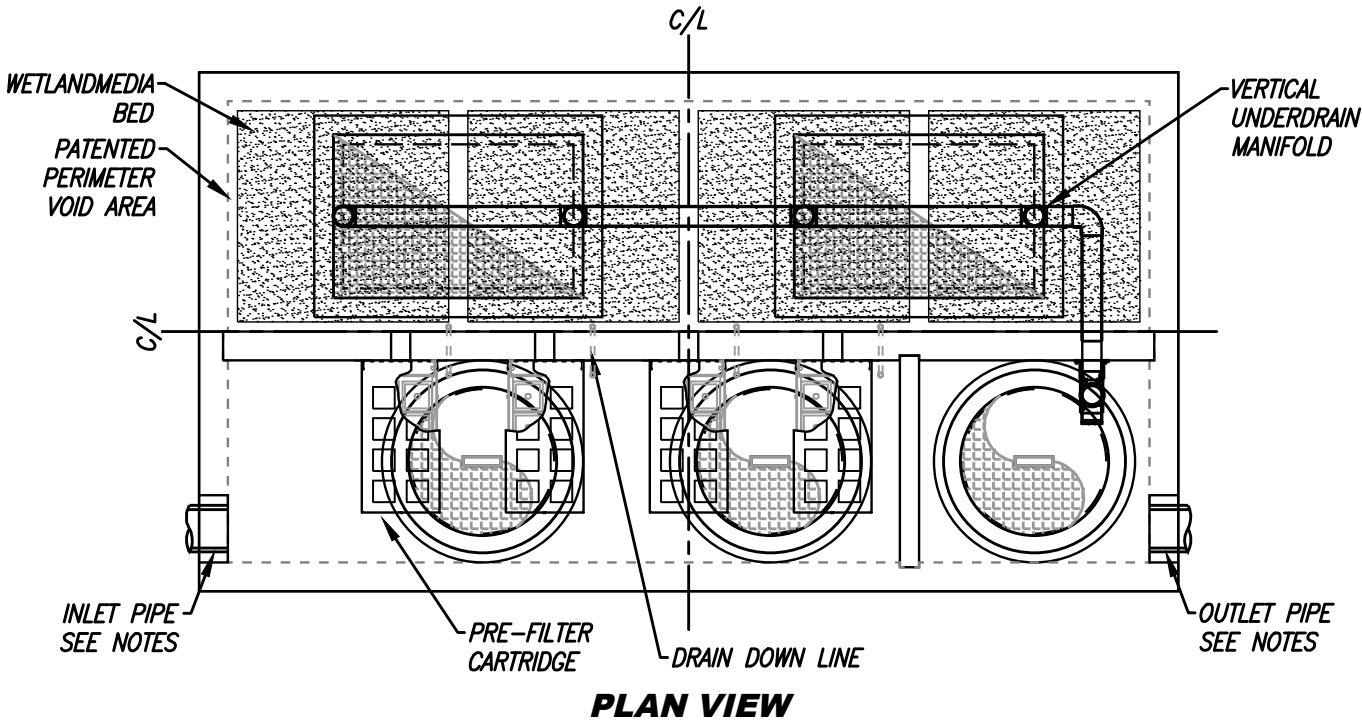
* PRELIMINARY NOT FOR CONSTRUCTION

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT CONTECH.



TREATMENT FLOW (CFS)	0.462
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0



MWS-L-8-16-V-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Attachment D HCOC Calculations

Susceptibility Analysis Santa Ana River (Figure XVI-3c)

Pre-Development Tc Calculation

Pre-Development Q (2-yr Storm) Calculation

Post-Development Tc Calculation

Post-Development Q (2-yr Storm) Calculation

NOAA Precipitation Frequency

Pre-Development 2-Yr Storm	
<u>Information from the Orange County Hydrology Manual</u>	
Flow Rate Equation: $Q = C \times I \times A$	
C = runoff coefficient	
$F_p =$	0.40 for Soil Group A
$a_i =$	0.81
$a_p =$	0.19
Calculations	
$A =$	$95,798 \text{ ft}^2 = 2.20 \text{ AC}$
$I(t) =$	0.73 in/hr (From TGD Rainfall Map)
$L =$	280 ft
$H =$	2.7 ft
$P_i =$	0.81
$I > F_p$	
$C = 0.90 (a_i + (I - F_p)a_p / I) =$	0.81
$I_{1440} =$	0.09 in/hr (from NOAA ATLAS 14 Point Precipitation Frequency Estimates)
$T_c' =$	8.31 min (from hydrology study)
$\frac{I_t}{I_{1440}} = \left(\frac{1440}{t} \right)^{0.47}$	
$I_t =$	1.015 in/hr
$Q = C \times I \times A = 1.80 \text{ cfs}$	

Post-Development 2-Yr Storm	
Information from the Orange County Hydrology Manual	
Flow Rate Equation: $Q = C \times I \times A$	
C = runoff coefficient	
$F_p =$	0.40 for Soil Group A
$a_i =$	0.76
$a_p =$	0.24
Calculations	
$A =$	$95,636 \text{ ft}^2 = 2.20 \text{ AC}$
$I(t) =$	0.73 in/hr (From TGD Rainfall Map)
$L =$	590 ft
$H =$	35 ft
$P_i =$	0.76
$I > F_p$	
$C = 0.90 (a_i + (I - F_p)a_p/I) = 0.78$	
$I_{1440} =$	0.09 in/hr (from NOAA ATLAS 14 Point Precipitation Frequency Estimates)
$T_c' =$	9.26 min (from hydrology study)
$\frac{I_t}{I_{1440}} = \left(\frac{1440}{t} \right)^{0.47}$	
$I_t =$	0.965 in/hr
$Q = C \times I \times A = 1.66 \text{ cfs}$	



NOAA Atlas 14, Volume 6, Version 2
Location name: Fountain Valley, California, US*
Latitude: 33.7009°, Longitude: -117.9597°
Elevation: 26 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.44 (1.21-1.73)	1.90 (1.60-2.29)	2.52 (2.11-3.05)	3.05 (2.53-3.72)	3.79 (3.04-4.79)	4.38 (3.43-5.66)	5.00 (3.82-6.65)	5.68 (4.19-7.75)	6.61 (4.67-9.46)	7.37 (5.02-10.9)
10-min	1.03 (0.864-1.24)	1.36 (1.14-1.64)	1.81 (1.51-2.18)	2.18 (1.81-2.66)	2.72 (2.17-3.43)	3.14 (2.45-4.06)	3.59 (2.73-4.76)	4.07 (3.01-5.56)	4.74 (3.35-6.77)	5.28 (3.60-7.84)
15-min	0.832 (0.700-1.00)	1.10 (0.920-1.32)	1.46 (1.22-1.76)	1.76 (1.46-2.15)	2.19 (1.75-2.77)	2.53 (1.98-3.28)	2.89 (2.20-3.84)	3.28 (2.42-4.48)	3.82 (2.70-5.46)	4.26 (2.90-6.32)
30-min	0.578 (0.484-0.696)	0.762 (0.638-0.918)	1.01 (0.846-1.22)	1.22 (1.01-1.49)	1.52 (1.22-1.92)	1.76 (1.37-2.27)	2.01 (1.53-2.67)	2.28 (1.68-3.11)	2.65 (1.87-3.79)	2.96 (2.01-4.38)
60-min	0.396 (0.333-0.477)	0.523 (0.438-0.630)	0.695 (0.581-0.839)	0.839 (0.695-1.02)	1.04 (0.834-1.32)	1.21 (0.943-1.56)	1.38 (1.05-1.83)	1.56 (1.15-2.13)	1.82 (1.29-2.60)	2.03 (1.38-3.01)
2-hr	0.283 (0.238-0.340)	0.373 (0.312-0.450)	0.495 (0.414-0.598)	0.598 (0.495-0.728)	0.742 (0.593-0.938)	0.858 (0.670-1.11)	0.980 (0.746-1.30)	1.11 (0.820-1.52)	1.30 (0.915-1.85)	1.45 (0.984-2.14)
3-hr	0.232 (0.194-0.279)	0.305 (0.256-0.368)	0.404 (0.338-0.489)	0.488 (0.404-0.595)	0.606 (0.484-0.766)	0.700 (0.547-0.905)	0.800 (0.609-1.06)	0.906 (0.669-1.24)	1.06 (0.747-1.51)	1.18 (0.804-1.75)
6-hr	0.161 (0.135-0.194)	0.211 (0.177-0.255)	0.280 (0.234-0.338)	0.337 (0.279-0.411)	0.418 (0.334-0.528)	0.483 (0.377-0.624)	0.551 (0.419-0.731)	0.623 (0.460-0.852)	0.726 (0.513-1.04)	0.810 (0.551-1.20)
12-hr	0.104 (0.087-0.125)	0.136 (0.114-0.164)	0.180 (0.150-0.218)	0.217 (0.180-0.264)	0.269 (0.215-0.340)	0.310 (0.242-0.401)	0.354 (0.269-0.469)	0.400 (0.295-0.547)	0.465 (0.328-0.664)	0.517 (0.352-0.767)
24-hr	0.068 (0.060-0.079)	0.090 (0.079-0.104)	0.119 (0.105-0.138)	0.144 (0.125-0.168)	0.178 (0.151-0.215)	0.206 (0.171-0.254)	0.235 (0.190-0.296)	0.266 (0.210-0.344)	0.310 (0.234-0.417)	0.345 (0.252-0.481)
2-day	0.042 (0.037-0.048)	0.055 (0.049-0.064)	0.074 (0.065-0.085)	0.089 (0.078-0.104)	0.111 (0.094-0.134)	0.129 (0.107-0.158)	0.147 (0.119-0.185)	0.167 (0.131-0.216)	0.194 (0.147-0.262)	0.216 (0.158-0.302)
3-day	0.031 (0.027-0.036)	0.042 (0.037-0.048)	0.056 (0.049-0.065)	0.068 (0.059-0.079)	0.085 (0.072-0.102)	0.098 (0.081-0.121)	0.112 (0.091-0.142)	0.127 (0.100-0.165)	0.149 (0.113-0.201)	0.166 (0.122-0.231)
4-day	0.025 (0.022-0.029)	0.034 (0.030-0.039)	0.046 (0.040-0.053)	0.056 (0.049-0.065)	0.070 (0.059-0.084)	0.081 (0.067-0.099)	0.092 (0.075-0.116)	0.105 (0.083-0.136)	0.123 (0.093-0.165)	0.137 (0.100-0.191)
7-day	0.016 (0.014-0.019)	0.022 (0.019-0.025)	0.030 (0.026-0.035)	0.036 (0.032-0.042)	0.046 (0.039-0.055)	0.053 (0.044-0.065)	0.061 (0.049-0.077)	0.069 (0.055-0.090)	0.081 (0.061-0.109)	0.091 (0.066-0.126)
10-day	0.012 (0.011-0.014)	0.017 (0.015-0.019)	0.022 (0.020-0.026)	0.028 (0.024-0.032)	0.035 (0.029-0.042)	0.040 (0.033-0.050)	0.046 (0.038-0.058)	0.053 (0.042-0.068)	0.062 (0.047-0.083)	0.069 (0.051-0.097)
20-day	0.007 (0.006-0.008)	0.010 (0.009-0.012)	0.014 (0.012-0.016)	0.017 (0.015-0.020)	0.021 (0.018-0.026)	0.025 (0.021-0.031)	0.029 (0.023-0.036)	0.033 (0.026-0.042)	0.038 (0.029-0.052)	0.043 (0.032-0.060)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.011 (0.009-0.012)	0.013 (0.012-0.015)	0.017 (0.014-0.020)	0.020 (0.016-0.024)	0.023 (0.018-0.029)	0.026 (0.020-0.033)	0.030 (0.023-0.041)	0.034 (0.025-0.048)
45-day	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.010)	0.010 (0.009-0.012)	0.013 (0.011-0.016)	0.015 (0.013-0.019)	0.018 (0.014-0.022)	0.020 (0.016-0.026)	0.024 (0.018-0.032)	0.027 (0.020-0.038)
60-day	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.014)	0.013 (0.011-0.016)	0.015 (0.012-0.019)	0.017 (0.014-0.023)	0.021 (0.016-0.028)	0.023 (0.017-0.032)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

Water Quality Credit Calculations	
Credit Volume	
Equivalent "existing" DCV =	4,992 ft ³
Proposed DCV =	4,058 ft ³
Credit Volume =	934 ft ³
<u>Information from the Orange County Hydrology Manual</u>	
Flow Rate Equation: $Q = C \times I \times A$	
C = runoff coefficient	
$F_p =$	0.30 for Soil Group B
$a_i =$	1.00
$a_p =$	0.00
<u>Information from the Technical Guidance Document</u>	
d = 0.80 inches = 0.0667 ft (Data from Rainfall Zones in Technical Guidance Document)	
Volume Equation: $V = C \times d \times A$	
Credit Area	
$V = C \times d \times A =$	934 ft ³
$I(t) =$	0.75 in/hr (From TGD Rainfall Map)
$d =$	0.80 in = 0.07 ft
$I > F_p$	
$C = 0.90 (a_i + (I - F_p)a_p/I) =$	0.90
$A =$	$15,567 \text{ ft}^2 = 0.36 \text{ AC}$
Drainage Area B and F consist of 0.01 acres and 0.08 acres of pavement respectively. These two areas encompass the drive-entries that sheet flow out on Talbert Avenue and Foster Street, respectively, so as to maintain the existing drainage patterns. Due to the elevation of the site at the southeastern driveway, redirecting the flow pattern would be infeasible. As shown above, the water quality credit applied amounts to 0.11 acres and will be applied to the driveways. 0.11acres > (0.01+0.08)=0.09ac.	

Attachment E Geotechnical Supporting Documents

Attachment F Operation & Maintenance (O&M) and Inspection Form

Attachment G Harvest and Use Feasibility Calculations

Conceptual Priority Project Water Quality Management Plan (WQMP)
Orange Coast Memorial Medical Center Parking Structure

Capture and reuse calculations provided below deem this option infeasible for the site. Biofiltration is the next available BMP option.