STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

AMENDMENT

DATE:	May 5, 2014
PROJECT NAME:	1901 East First Street
REASON FOR AMENDMENT:	Construction Phase and Project Schedule
WDID NO.:	8 30C366709
PROJECT AREA:	5.18 acres disturbed
ORIGINATOR:	Fuscoe Engineering, Inc.
ATTACHMENTS:	1 Construction Phase SWPPP Exhibits (Appendix B) 2 Risk Assessment (Appendix C) 3 SWPPP Amendment Log (Appendix E) 4 BMP Implementation Schedule (Appendix H)

DESCRIPTION OF UPDATE:

Amend the following sections:

1.1 Introduction
1.11 References
2.1 Project and Site Description
2.3 Table 2.4 Sediment Risk Factor Summary
2.4 Construction Schedule
3.2 SWPPP Exhibits
Appendices B, C, E, & H

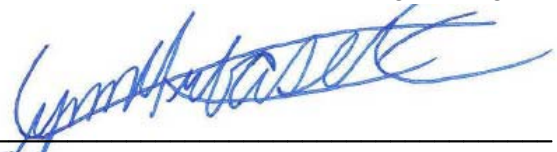
CERTIFICATION

QUALIFIED SWPPP DEVELOPER (QSD) CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those person(s) directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility for fine and imprisonment for knowing violations."

PREPARED BY: Fuscoe Engineering, Inc.



Signature

05/02/2014
Date

Lynn Kubasek, CPESC, QSD #00573
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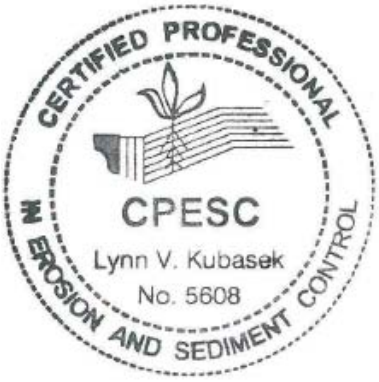

OWNER / LEGALLY RESPONSIBLE PERSON (LRP) CERTIFICATION

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_____ _____

Signature Date

Peter Zak
Vice President

Lyon Communities
4901 Birch Street
Newport Beach, CA 92660
949.838.1244
peterzak@lyon1.com

AMENDMENT

for

1901 EAST FIRST STREET APARTMENTS

The following revisions are hereby incorporated into the Storm Water Pollution Prevention Plan (SWPPP) for 1901 E. First St. Apts. Demolition Phase SWPPP dated June, 2013 (herein referred to as "original SWPPP".

1. SWPPP REQUIREMENTS

1.1. INTRODUCTION

This SWPPP Amendment has been prepared to provide specifications for the management of both storm water and non-storm water discharges during the construction of the 1901 First Street residential project. The original SWPPP prepared for the project, dated June, 2013, included the demolition of the existing apartment building and associated underground utilities.

The project is classified as a redevelopment project with a variety of existing condition constraints that control the proposed development design. The original condition included a 5.02 acre fully built out site with an existing 2-story building and a 4-level 660 space parking structure. As part of the redevelopment process and entitlement approvals, the 2-story building was demolished and the parking structure was preserved. Under the proposed condition, apartments and retail units will be constructed in the place of the 2-story building and around the existing parking structure to remain.

This SWPPP amendment covers vertical construction, utilities and final stabilization of the project which includes the construction of 256 apartment units. 242 units will be constructed within three 5-story buildings on the central and west sections of the site. In addition, 14 town home units, three stories in heights are proposed at the south and east sides of the parking structure. Adjacent land uses includes office and retail.

This Amendment has been developed as required under State Water Resource Control Board (SWRCB) Order No. 2009-0009-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No CA. S000002 (herein referred to as the General Construction Permit or CGP), and in accordance with good engineering practices.

1.2. SWPPP OBJECTIVES

No change.

1.3. PERMIT REGISTRATION DOCUMENTS

No change. The current approved WDID included the construction disturbed area for the entire property, including all construction activities.

1.4. SWPPP AVAILABILITY AND IMPLEMENTATION

No change.

1.5. SWPPP AMENDMENTS

No change. A copy of the updated SWPPP Amendment Log is attached. A copy of this Amendment shall be kept with the original SWPPP document at all times.

1.6. RETENTION OF RECORDS

No change.

1.7. REQUIRED NON-COMPLIANCE REPORTING

No change

1.8. ANNUAL REPORT

No change.

1.9. CHANGES TO PERMIT COVERAGE

No change. The current approved WDID included the construction disturbed area for the entire property, including the Construction Phase.

1.10. NOTICE OF TERMINATION

No change.

1.11. REFERENCES, PERMITS AND GOVERNING DOCUMENTS

The following documents are included as reference:

- Fuscoe Engineering, Inc. "Storm Water Pollution Prevention Plan 1901 East First Street Apartments. Demolition Phase SWPPP", Prepared for Lyon Communities. June 2014
- Fuscoe Engineering Inc. "Final Water Quality Management Plan (WQMP) 1901 East 1st Street" Date Prepared: December 17, 2013. Date Revised: March 31, 2014

2. PROJECT INFORMATION

2.1. PROJECT AND SITE DESCRIPTION

2.1.1. Project Description

The proposed 1901 East 1st Street project site encompasses approximately 5.02 acres in the City of Santa Ana. The project site is bounded by Cabrillo Park Drive to the west, E. 4th Street to the north, N. Golden Circle Drive to the east and E. 1st St to the south.

The project is classified as a redevelopment project with a variety of existing condition constraints that control the proposed development design. The original condition included a 5.02 acre fully built out site with an existing 2-story building and a 4-level 660 space parking structure. As part of the redevelopment process and entitlement approvals, the 2-story building was demolished and the parking structure was preserved. Under the proposed condition, apartments and retail units will be constructed in the place of the 2-story building and around the existing parking structure to remain.

This SWPPP amendment covers vertical construction, utilities and final stabilization of the project including the construction of 256 apartment units. 242 units will be constructed within three 5-story buildings on the central and west sections of the site. In addition, 14 town home units, three stories in heights are proposed at the south and east sides of the parking structure.

2.1.2. Site Description

No change.

2.1.3. Existing Drainage Conditions

No change.

2.1.4. Proposed Drainage Conditions

No change.

2.1.5. Geology and Groundwater

No change.

2.1.6. Environmentally Sensitive Site Conditions

No change.

2.1.7. Site Plan

No change.

2.2. STORM WATER RUN-ON FROM OFF-SITE AREAS

No change.

2.3. FINDINGS OF THE CONSTRUCTION SITE SEDIMENT & RECEIVING WATER RISK DETERMINATION

The risk assessment included in the original SWPPP assumed demolition only. This SWPPP includes a revised risk assessment for the production construction schedule.
To determine the Sediment Risk for the Town Centre project, the hand calculation via EPA Fact Sheet 3.1 and GIS Map Methods were utilized. Table 2.4 summarizes the results of the Sediment Risk Analysis performed for the project. Supporting details and calculations are provided in Appendix C.

Table 2.4 Sediment Risk Factor Summary

Parameter	*Method Used*	*Result*
R Factor	Hand Calculation per EPA Fact Sheet 3.1	72.93
K Factor	GIS Map Method	0.32
LS Factor	GIS Map Method	0.65
	Watershed Erosion Estimate (in tons/acre)	15.16
	Overall Sediment Risk	Medium

The Project remains Risk Level 2.

2.4. CONSTRUCTION SCHEDULE

Demolition and rough grading began in June 2013. Construction is anticipated to begin June 2014. It is estimated that the project will be completed by December 2015. The construction activity schedule for the El Paseo project is provided in Appendix H of the project SWPPP. A schedule for BMP implementation is also included in Appendix H.

2.5. POTENTIAL CONSTRUCTION SITE POLLUTANT SOURCES

No change.

2.6. IDENTIFICATION OF NON-STORM WATER DISCHARGES

No change.

3. BEST MANAGEMENT PRACTICES (BMPS)

3.1. SCHEDULE FOR BMP IMPLEMENTATION

No change.

3.2. SWPPP EXHIBITS

Revised SWPPP Exhibits are attached to this Amendment, to be included in Appendix B. The maps show existing topography, identify grading areas and the location of erosion control measures, such as perimeter controls and storm drain inlet protection measures for construction areas. These maps are to be updated by the Contractor continually throughout construction of the project, as each phase of construction commences to reflect current BMP conditions. Updates may be made by hand in the field, and shall be initialed and dated. Copies of updated maps shall be included with this SWPPP.

3.3. EROSION CONTROL AND SEDIMENT CONTROL

3.3.1. Erosion Control BMPs

No change. Refer to Section 3.3.1 of the original SWPPP for descriptions of erosion control BMPs to be implemented on the project site for construction activities.

3.3.2. Sediment Control BMPs

No change. Refer to Section 3.3.2 of the original SWPPP for descriptions of sediment control BMPs to be implemented on the project site for construction activities.

3.3.3. Tracking Control BMPs

No change. Refer to Section 3.3.3 of the original SWPPP for descriptions of tracking control BMPs to be implemented on the project site for construction activities.

3.3.4. Wind Erosion Control BMPs

No change. Refer to Section 3.3.4 of the original SWPPP for descriptions of wind erosion control BMPs to be implemented on the project site for construction activities.

3.4. NON-STORM WATER AND MATERIAL MANAGEMENT

3.4.1. Non-Storm Water Management BMPs

No change. Refer to Section 3.4.1 of the original SWPPP for descriptions of other non-storm water and material management BMPs to be implemented on the project site for construction activities.

3.4.2. Material and Waste Management BMPs

No change. Refer to Section 3.4.2 of the original SWPPP for descriptions of material and waste management BMPs to be implemented on the project site for construction activities.

3.5. POST-CONSTRUCTION STORM WATER MANAGEMENT MEASURES

Table 3.7 Non-Structural Source Control BMPs

BMP Name	*Description*
N1 Education for Property Owners, Tenants and Occupants	Educational materials will be provided to tenants, including brochures and restrictions to reduce pollutants from reaching the storm drain system. Examples include tips for pet care, household tips, and proper household hazardous waste disposal. Tenants will be provided with these materials by the property management prior to occupancy, and periodically thereafter. Refer to Section VII for a list of materials available. Additional materials are available through the County of Orange Stormwater Program website (http://ocwatersheds.com/PublicEd/) and the California Stormwater Quality Association's (CASQA) BMP Handbooks (http://www.cabmphandbooks.com/). Tenants will be provided these materials by the Owner prior to occupancy and periodically thereafter.
N2 Activity Restrictions	The property owner shall restrict activities that have the potential to create adverse impacts on water quality. Activities include, but are not limited to: prohibiting vehicle maintenance activities within the parking garage, prohibiting long-term parking without prior authorization, and prohibiting outdoor vehicle washing on the premises.
N3 Common Area Landscape Management	Management programs will be designed and implemented by the Owner to maintain all the common areas within the project site. These programs will cover how to reduce the potential pollutant sources of fertilizer and pesticide uses, utilization of water-efficient landscaping practices and proper disposal of landscape wastes by the Owner and/or contractors.

BMP Name	*Description*
N4 BMP Maintenance	The Owner will be responsible for the implementation and maintenance of each applicable LID and structural BMP prescribed for the project. Inspection and maintenance will be carried out by property management staff and/or contractors. Details on BMP maintenance are provided in Section V the project WQMP.
N11 Common Area Litter Control	The Owner will be responsible for performing trash pickup and sweeping of littered common areas on a weekly basis or whenever necessary. Responsibilities will also include noting improper disposal materials by the public and reporting such violations for investigation.
N12 Employee Training	All employees of the Owner and any contractors will require training to ensure that employees are aware of maintenance activities that may result in pollutants reaching the storm drain. Training will include, but not be limited to, spill cleanup procedures, proper waste disposal, housekeeping practices, etc.
N14 Common Area Catch Basin Inspection	All on-site catch basin inlets shall be inspected and maintained by the Owner at least once a year, prior to the rainy season, no later than October 1st of each year.
N15 Street Sweeping Private Streets and Parking Lots	The Owner shall be responsible for the street sweeping of all private drive aisles and parking areas within the project quarterly, and prior to the rainy season, no later than October 1st of each year.

Table 3.8 *Structural Source Control BMPs*

BMP Name	*Description*
S1, SD-13, Provide storm drain system stenciling and signage	The Owner will be responsible for the stenciling of all on-site catch basins to include a legible message such as "No Dumping - Drains to Ocean". The Owner will be responsible for maintaining and replacement of signage when necessary.
S4, SD-12, Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	The Owner will be responsible for the installation and maintenance of all common landscape areas utilizing similar planting materials with similar water requirements to reduce excess irrigation runoff. The Owner will be responsible for implementing all efficient irrigation systems for common area landscaping including, but not limited to, provisions for water sensors and programmable irrigation cycles. This includes smart timers, rain sensors, and moisture shut-off valves. The irrigation systems shall be in conformance with water efficiency guidelines. Systems shall be tested twice per year, and water used during testing/flushing shall not be discharged to the storm drain system.

Table 3.9 *Structural Treatment Control BMPs*

BMP Name	*Description*
BIO-7, Proprietary Biotreatment: Modular Wetlands	Low flows will be diverted to the Modular Wetland System (MWS) unit located along the east side of the project near Cabrillo Park Drive within the public open space. These treated flows will be pumped to the street. The MWS unit shall be maintained in accordance with manufacturer's specifications. The system shall be inspected at a minimum of once every six months, prior to the start of the rainy season (October 1) each year, and after major storm events. Typical maintenance includes removing trash & debris from the catch basin screening filter (by hand), removal of sediment and solids in the settlement chamber (vacuum truck), replacement of the BioMediaGREENTM filter cartridge, and replacement of the BioMediaGREENTM drain down filter (if equipped). In addition, plants within the wetland chamber will require trimming as needed in conjunction with routine landscape maintenance activities. No fertilizer shall be used in this chamber. Wetland chamber should be inspected during rain events to verify flow through the system. If little to no flow is observed from the lower valve or orifice plate, the wetland media may require replacement. If prior treatment stages are properly maintained, the life of the wetland media can be up to 20 years.
TRT-2, Roof Downspout Filter	Eight (8) Bioclean Downspout filters will be used to treat the existing parking structure (see SWPPP exhibits for locations). Maintenance will include cleaning and removing debris minimum of four (4) times per year, and replacing hydrocarbon booms a minimum of once per year. Evaluation of the hydrocarbon boom shall be performed at each cleaning. If the boom is filled with hydrocarbons and oils it should be replaced. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements

The East 1st Street Apartment project is exempt from the post-construction water balance standards outlined in Section XIII of the General Permit, since the project is subject to the post-construction requirements of the Phase I municipal separate storm sewer system (MS4) permit approved for the region (Santa Ana RWQCB Order No. R8-2009-0030). Refer to the original SWPPP Section 3.5 and the project-specific WQMP for further details.

4. BMP INSPECTION, MAINTENANCE, AND RAIN EVENT ACTION PLANS (REAPS)

4.1. BMP INSPECTION AND MAINTENANCE

No change.

4.2. RAIN EVENT ACTION PLANS (REAPs)

No change. Since the project remains at Risk Level 2, Rain Event Action Plans (REAPs) are required to be prepared and implemented in accordance with Section 4.2 of the original SWPPP.

5. TRAINING

5.1. OVERVIEW

No change.

5.2. TRAINING REQUIREMENTS

No change.

6. RESPONSIBLE PARTIES AND OPERATORS

6.1. RESPONSIBLE PARTIES

No change.

6.2. CONTRACTOR LIST

No change.

7. CONSTRUCTION SITE MONITORING PROGRAM (CSMP)

7.1. PURPOSE

A Construction Site Monitoring Program (CSMP) was developed for the project site and included in Section 7 the original SWPPP dated June, 2013. Since the Risk Level for the project remains at Risk Level 2, the overall inspection and monitoring requirements outlined in the original SWPPP remain valid for the overall project.

7.2. APPLICABILITY OF PERMIT REQUIREMENTS

No change. As summarized under Section 2.3 of this SWPPP Amendment, the Project remains at Risk Level 2. Risk Level 2 sites have the following monitoring requirements in accordance with the General Permit:

Visual Monitoring/Inspections

- Visual monitoring for non-storm water discharges (quarterly)
- Baseline pre-rain event inspection (within 48 hours of qualifying rain events)
- BMP inspections (weekly and every 24 hours during extended storm events)
- Post-rain event inspection (within 2 business days after qualifying rain events)

Sampling & Analysis

- Effluent sampling for turbidity and pH (minimum 3 samples per day per discharge point per qualifying rain event)
- Contained rain water (at time of discharge)
- Non-visible pollutants, spills and/or BMP failures (within first 2 hours of discharge from site)
- Other (as required by dewatering permits, RWQCB or TMDLs)

7.3. NUMERIC ACTION LEVELS, EFFLUENT LIMITATIONS, AND DISCHARGE PROHIBITIONS

No change.

7.4. SAFETY

No change.

7.5. VISUAL MONITORING (INSPECTIONS)

No change.

7.6. WATER QUALITY SAMPLING AND ANALYSIS

No change.

7.7. WATERSHED MONITORING OPTION

No change.

7.8. QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

No change.

7.9. REPORTING REQUIREMENTS AND RECORDS RETENTION

No change.

7.10. ACTIVE TREATMENT SYSTEMS (ATS) REQUIREMENTS

No change.

ATTACHMENTS

Attachment 1	SWPPP Exhibits for Construction (to be included in Appendix B)
Attachment 2	Revised Risk Level Assessment (to be included in Appendix C3)
Attachment 3	SWPPP Amendment Log (to be included in Appendix E)
Attachment 4	BMP Implementation Schedule (to be included in Appendix H)

APPENDIX B
EXHIBITS

CABRILLO PARK DRIVE

FIRST STREET

LOW-FLOWS DIVERSION TO MWS

LOW-FLOWS DIVERSION TO MWS

TREATED FLOWS PUMPED TO STREET

EXISTING SIDEWALK TO REMAIN

PUBLIC OPEN SPACE

RETAIL SPACE

CONFERENCE ROOM

LEASING OFFICE

COURTYARD

TRASH

EXISTING PARKING STRUCTURE

EXISTING PARKING STRUCTURE

EXISTING OCFD STORM DRAIN EASEMENT

VICINITY MAP

(NOT TO SCALE)

LEGEND

- PROPERTY LINE
- EXISTING STORM DRAIN TO REMAIN
- EXISTING STORM DRAIN TO BE DEMOLISHED
- PROPOSED ON-SITE STORM DRAIN
- PROPOSED OFF-SITE STORM DRAIN
- PROPOSED COMMON AREA LANDSCAPING
- PROPOSED BUILDING
- PROPOSED PRIVATE STREETS
- PROPOSED TRASH ROOM
- PROPOSED POOL / FOUNTAIN (DRAINS TO SEWER)
- EXISTING PARKING STRUCTURE TO REMAIN
- MODULAR WETLAND UNIT (BIO-7)
- ROOF DOWNSPOUT FILTERS (TRT-2)
- DIRECTION OF FLOW

60' 0' 30' 60'

SCALE: 1" = 60'

FUSCOE ENGINEERING
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Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

Exhibit Date: 5/2/14

SWPPP EXHIBIT
SITE PLAN
1901 E. 1ST STREET
SANTA ANA, CA

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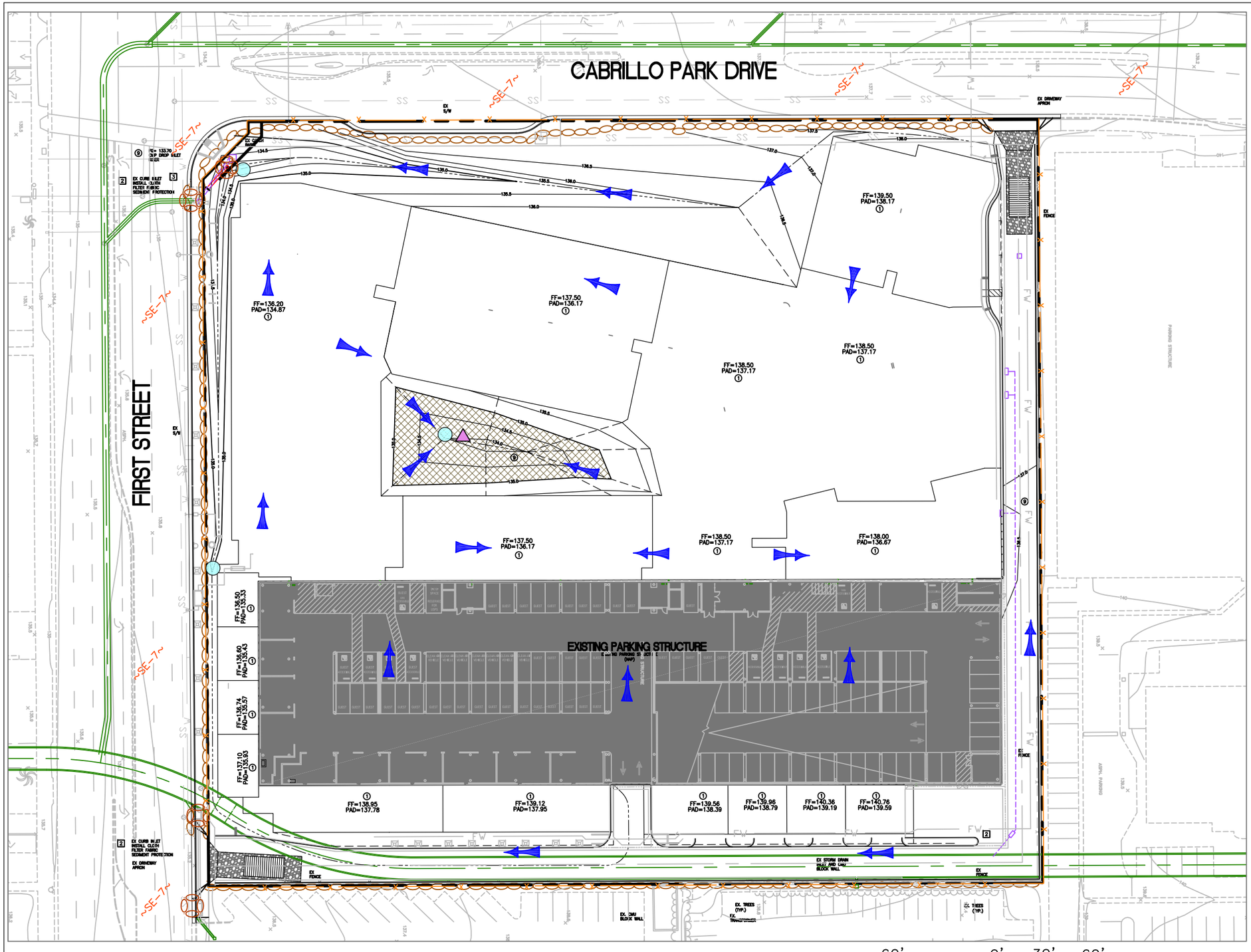

60' 0' 30' 60'

SCALE: 1" = 60'

LEGEND

- PROPERTY LINE
- PERIMETER FENCE / WIND EROSION CONTROL (WE-1)
- EXISTING STORM DRAIN TO REMAIN
- EXISTING STORM DRAIN TO BE DEMOLISHED
- EXISTING PARKING STRUCTURE TO REMAIN
- ~SE-7~ (SE-7)STREET SWEEPING (SE-7)
- DIRECTION OF FLOW
- STABILIZED CONSTRUCTION ENTRANCE / EXIT (TC-1) WITH SHAKER PLATE (INGRESS / EGRESS)
- CHECK DAMS (SE-4)
- GRAVEL BAG BERM (SE-6)
- STORM DRAIN INLET PROTECTION (SE-10)
- ON-SITE SAMPLING LOCATION
- TEMPORARY DEWATERING OPERATIONS (NS-2) SEE DEWATERING NOTES ON THIS PAGE.
- TEMPORARY SEDIMENT TRAP (SE-3) SEE BMP DETAILS SHEET FOR SIZING REQ.

Notice to Contractor/QSP:

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Stabilized construction entrance, material delivery and storage area, waste collecting area, and equipment area shall be designated by site supervisor or QSP and included on the SWPPP / Erosion Control Plan. As site conditions change, the SWPPP / Erosion Control Plan shall be updated to reflect current conditions. Revisions shall be initialed and dated.

Sampling Locations:

The contractor/supervisor or Qualified SWPPP Practitioner (QSP) shall verify sampling locations at all discharge points in the field. Sampling locations shall be representative of current site conditions, disturbed areas and construction phasing. Any updates to the sampling locations (e.g., as a result of construction phasing) shall be noted on this map and/or SWPPP Exhibits.

Dewatering Operations BMP:

Dewatering will occur to remove excess water within any utility or other excavation sites that has been ponded for greater than 72 hours. Discharges must only consist of clean storm water. Any ponded water (greater than 72 hours) may be pumped from the excavation area to a baffle tank system, or weir tank, to remove trash, settleable solids, as well as some metals, and oil and grease, if necessary, prior to discharging off-site. Periodic cleaning is required based on inspections or reduced flow, and oil & grease removal must be done by a licensed waste disposal company.

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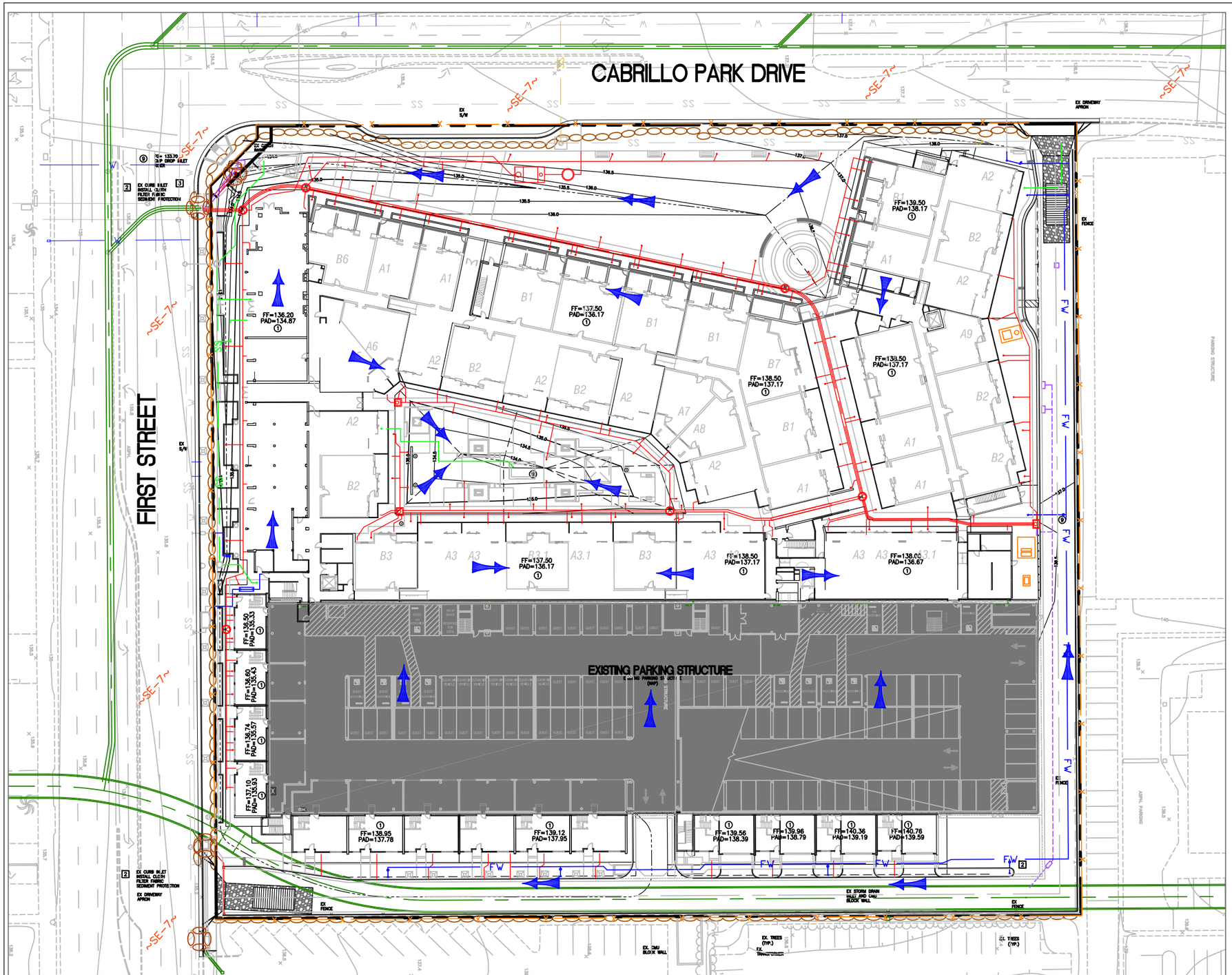
Exhibit Date: 5/2/14

SWPPP EXHIBIT
ROUGH GRADING PHASE
1901 E. 1ST STREET
SANTA ANA, CA



LEGEND

- PROPERTY LINE
- PERIMETER FENCE / WIND EROSION CONTROL (WE-1)
- EXISTING STORM DRAIN TO REMAIN
- EXISTING STORM DRAIN TO BE DEMOLISHED
- PROPOSED UTILITIES - VARIOUS
- EXISTING PARKING STRUCTURE TO REMAIN
- ~SE-7~ (SE-7)STREET SWEEPING (SE-7)
- DIRECTION OF FLOW
- STABILIZED CONSTRUCTION ENTRANCE / EXIT (TC-1) WITH SHAKER PLATE (INGRESS / EGRESS)
- GRAVEL BAG BERM (SE-6)
- STORM DRAIN INLET PROTECTION (SE-10)

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Soil Stabilization BMPs:

Any inactive pads, excavated areas or other disturbed areas that will remain inactive for longer than 10 days shall be stabilized with hydroseed, hydraulic mulch, plastic sheeting (i.e. visqueen anchored with gravel/sandbags) or equivalent erosion control BMP. Temporary soil stabilization measures shall be maintained until permanent stabilization can be established.

60’ 0’ 30’ 60’

SCALE: 1” = 60’

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Exhibit Date: 5/2/14

SWPPP EXHIBIT
UTILITY PHASE
1901 E. 1ST STREET
SANTA ANA, CA

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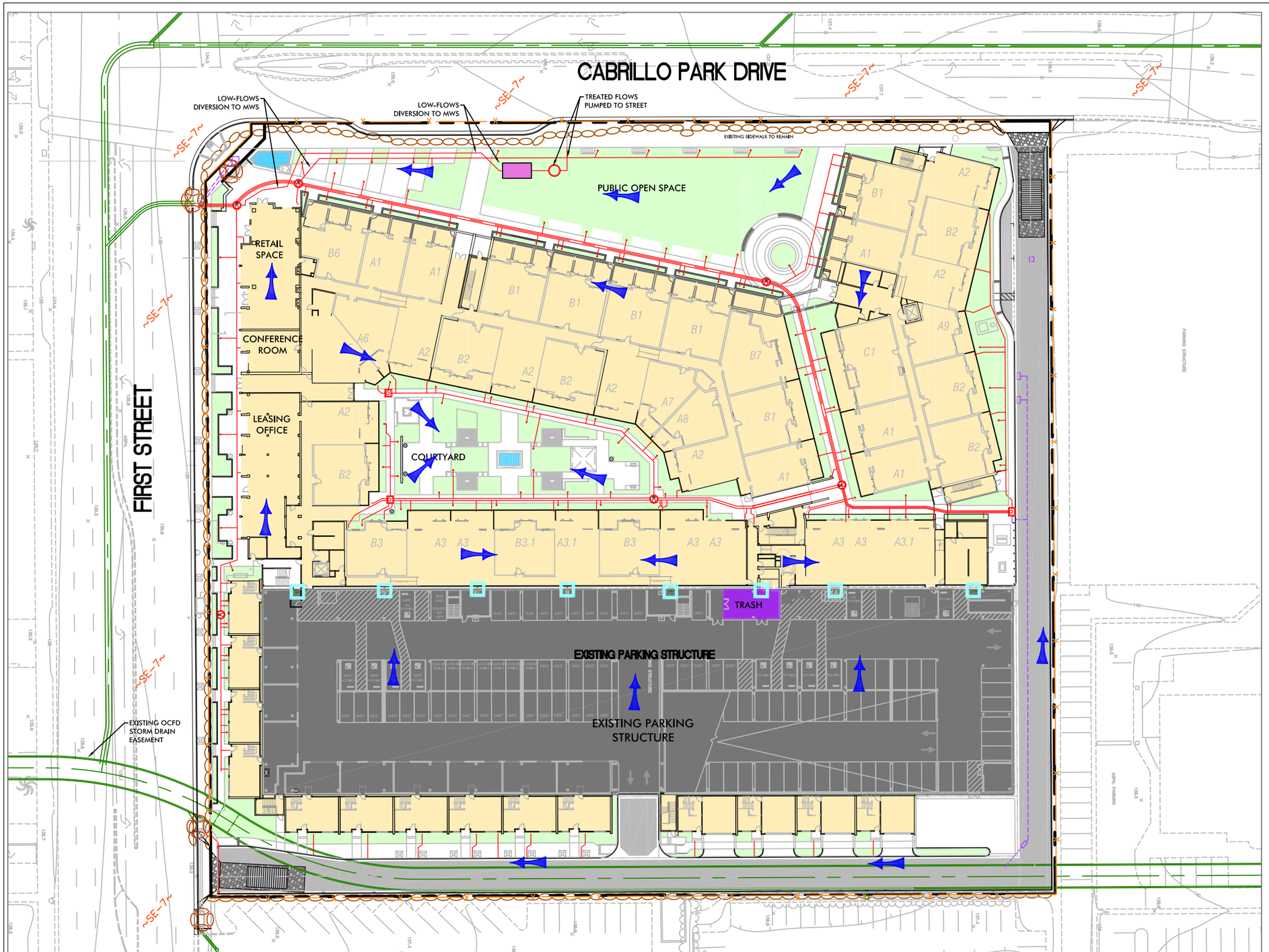

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Notice to Contractor/QSP:

It is the contractor/supervisor/Qualified SWPPP Practitioner (QSP's) responsibility to keep this SWPPP map current. BMPs should be added, moved or removed based on site conditions. Hand-marked alterations with initials and date are an acceptable form of alteration. The contractor may be asked at any time to produce this SWPPP map. Failure to keep this map current could result in a Notice of Violation and/or fine.

Stabilized construction entrance, material delivery and storage area, waste collecting area, and equipment area shall be designated by site supervisor or QSP and included on the SWPPP / Erosion Control Plan. As site conditions change, the SWPPP / Erosion Control Plan shall be updated to reflect current conditions. Revisions shall be initialed and dated.

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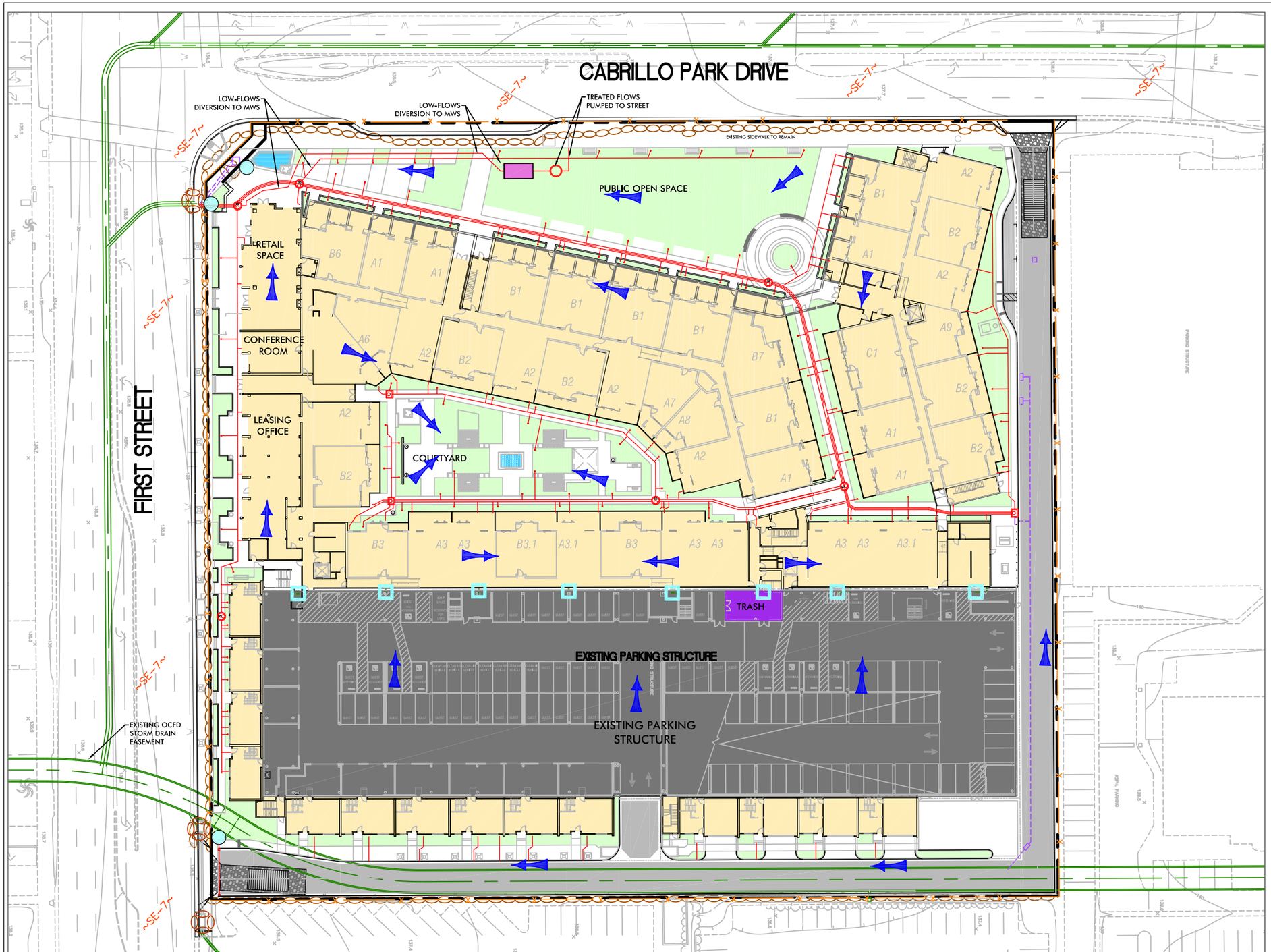
60' 0' 30' 60'

SCALE: 1" = 60'

Exhibit Date: 5/2/14

SWPPP EXHIBIT
VERTICAL CONSTRUCTION & FINAL STABILIZATION PHASES
1901 E. 1ST STREET
SANTA ANA, CA

\\FUSCOE.CORP\IRV\DATA1\PROJECTS\1112\02\WATER\GRAPHICS\SWPPP\111202XH_1901-SWPPP.DWG (05-02-14 1:58:22PM) Plotted by: Lynn Kubasek



LEGEND

- PROPERTY LINE
- EXISTING STORM DRAIN TO REMAIN
- EXISTING STORM DRAIN TO BE DEMOLISHED
- PROPOSED ON-SITE STORM DRAIN
- PROPOSED OFF-SITE STORM DRAIN
- PROPOSED COMMON AREA LANDSCAPING
- PROPOSED BUILDING
- PROPOSED PRIVATE STREETS
- PROPOSED TRASH ROOM
- PROPOSED POOL / FOUNTAIN (DRAINS TO SEWER)
- EXISTING PARKING STRUCTURE TO REMAIN
- MODULAR WETLAND UNIT (BIO-7)
- ROOF DOWNSPOUT FILTERS (TRT-2)
- DIRECTION OF FLOW
- ~SE-7~ (SE-7)STREET SWEEPING (SE-7)
- STABILIZED CONSTRUCTION ENTRANCE / EXIT (TC-1) WITH SHAKER PLATE (INGRESS / EGRESS)
- GRAVEL BAG BERM (SE-6)
- STORM DRAIN INLET PROTECTION (SE-10)
- ON-SITE SAMPLING LOCATION

Sampling Locations:

The contractor/supervisor or Qualified SWPPP Practitioner (QSP) shall verify sampling locations at all discharge points in the field. Sampling locations shall be representative of current site conditions, disturbed areas and construction phasing. Any updates to the sampling locations (e.g., as a result of construction phasing) shall be noted on this map and/or SWPPP Exhibits.

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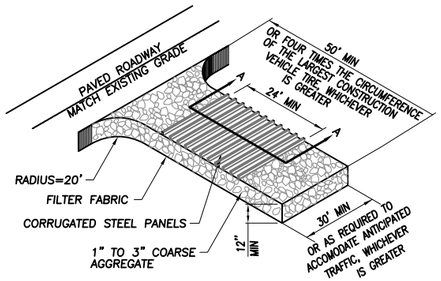
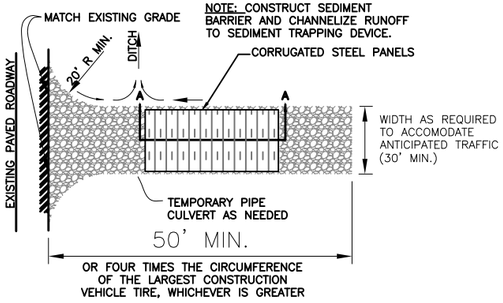
SWPPP EXHIBIT SAMPLING LOCATIONS

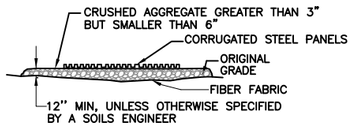
1901 E. 1ST STREET
SANTA ANA, CA

Exhibit Date: 5/2/14

\\FUSCOE.CORP\IRV\DATA1\PROJECTS\1112\02\WATER\GRAPHICS\SWPPP\111202XH_1901-SWPPP.DWG (05-02-14 1:52:03PM) Plotted by: Lynn Kubasek





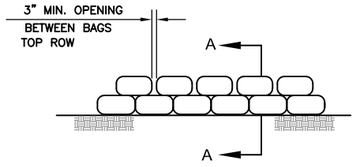


SECTION A-A
NTS

STABILIZED CONSTRUCTION ENTRANCE/ EXIT DETAIL (TC-1)

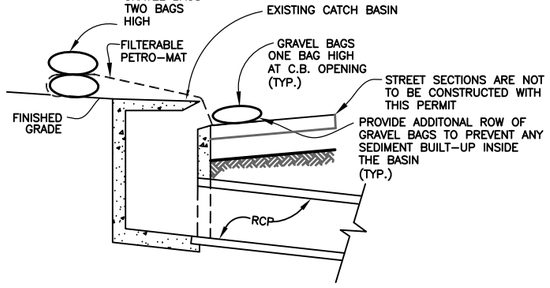
NOT TO SCALE

SECTION A-A



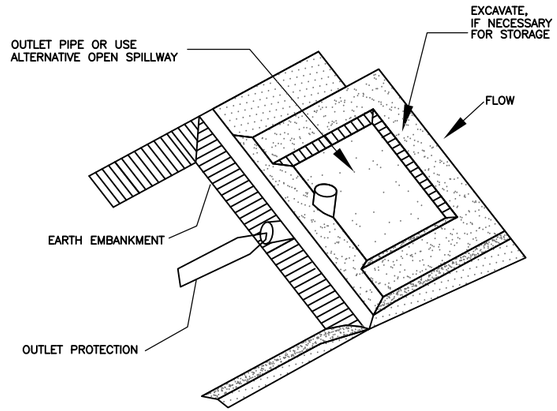
GRAVEL BAG BERM DETAILS (SE-6)

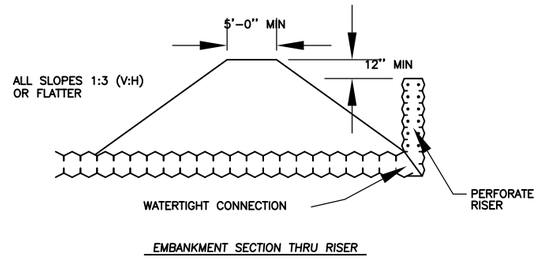
NOT TO SCALE



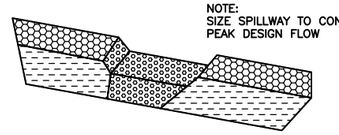
TYPICAL CURB INLET PROTECTION

NOT TO SCALE





EMBANKMENT SECTION THRU RISER

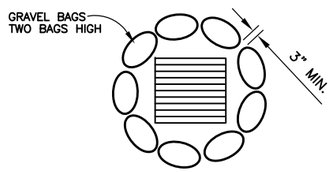


TYPICAL OPEN SPILLWAY

NOTES:
1. TEMPORARY SEDIMENT TRAPS SHALL ONLY BE USED FOR SMALL DRAINAGE AREAS (<5 ACRES). IF CONTRIBUTING DRAINAGE AREA IS GREATER THAN 5 ACRES, SUBDIVIDE INTO SMALLER CATCHMENT AREAS OR USE SEDIMENT BASINS (SE-2).
2. TRAP SHOULD BE SITUATED ACCORDING TO THE FOLLOWING CRITERIA: (1) BY EXCAVATING A SUITABLE AREA OR WHERE A LOW EMBANKMENT CAN BE CONSTRUCTED ACROSS A SWALE, (2) WHERE FAILURE WOULD NOT CAUSE LOSS OF LIFE OR PROPERTY DAMAGE, AND (3) TO PROVIDE ACCESS FOR MAINTENANCE, INCLUDING SEDIMENT REMOVAL AND SEDIMENT STOCKPILING IN A PROTECTED AREA.
3. AT A MINIMUM, SEDIMENT TRAP SHOULD BE SIZED TO ACCOMMODATE A SETTLING ZONE VOLUME OF 67 CUBIC YARDS PER ACRE OF CONTRIBUTING DRAINAGE AREA, AND A SEDIMENT STORAGE ZONE VOLUME OF 33 CUBIC YARDS PER ACRE OF CONTRIBUTING DRAINAGE AREA.
4. OUTLET PIPE OR OPEN SPILLWAY MUST BE DESIGNED TO CONVEY ANTICIPATED PEAK FLOWS, AND BE STABILIZED WITH VEGETATION OR ROCK TO PROTECT OUTLET AGAINST EROSION.
5. WHEN A RISER IS USED, AT LEAST THE TOP TWO-THIRDS OF THE RISER SHOULD BE PERFORATED WITH 0.5 IN DIAMETER HOLES SPACED 8 IN VERTICALLY AND 10-12 IN HORIZONTALLY. WHERE AN EARTH OR STONE OUTLET IS USED, THE OUTLET CREST ELEVATION SHOULD BE AT LEAST 1 FT BELOW THE TOP OF EMBANKMENT. WHERE CRUSHED STONE IS USED, STONE SHOULD MEET AASHTO M43 SIZE NO. 2 OR 24, OR EQUIVALENT MSHA NO. 2.
6. FENCING SHOULD BE PROVIDED TO PREVENT UNAUTHORIZED ENTRY.
7. SEDIMENT THAT ACCUMULATES IN TRAP SHOULD BE REMOVED AFTER EACH RAIN EVENT, AND WHEN ACCUMULATION REACHES ONE-THIRD OF TRAP CAPACITY. SEDIMENT REMOVED DURING MAINTENANCE MAY BE INCORPORATED INTO EARTHWORK ON-SITE OR PROPERLY DISPOSED OFF-SITE.
8. CORRECTIVE MEASURES SHOULD BE TAKEN IF TRAP DOES NOT DEWATER COMPLETELY IN 96 HOURS OR LESS TO PREVENT VECTOR PRODUCTION. ANY DEWATERING SHALL BE IN ACCORDANCE WITH BMP NS-2.

TYPICAL SEDIMENT TRAP (SE-3)

NOT TO SCALE



TYPICAL GRATE INLET PROTECTION

NOT TO SCALE

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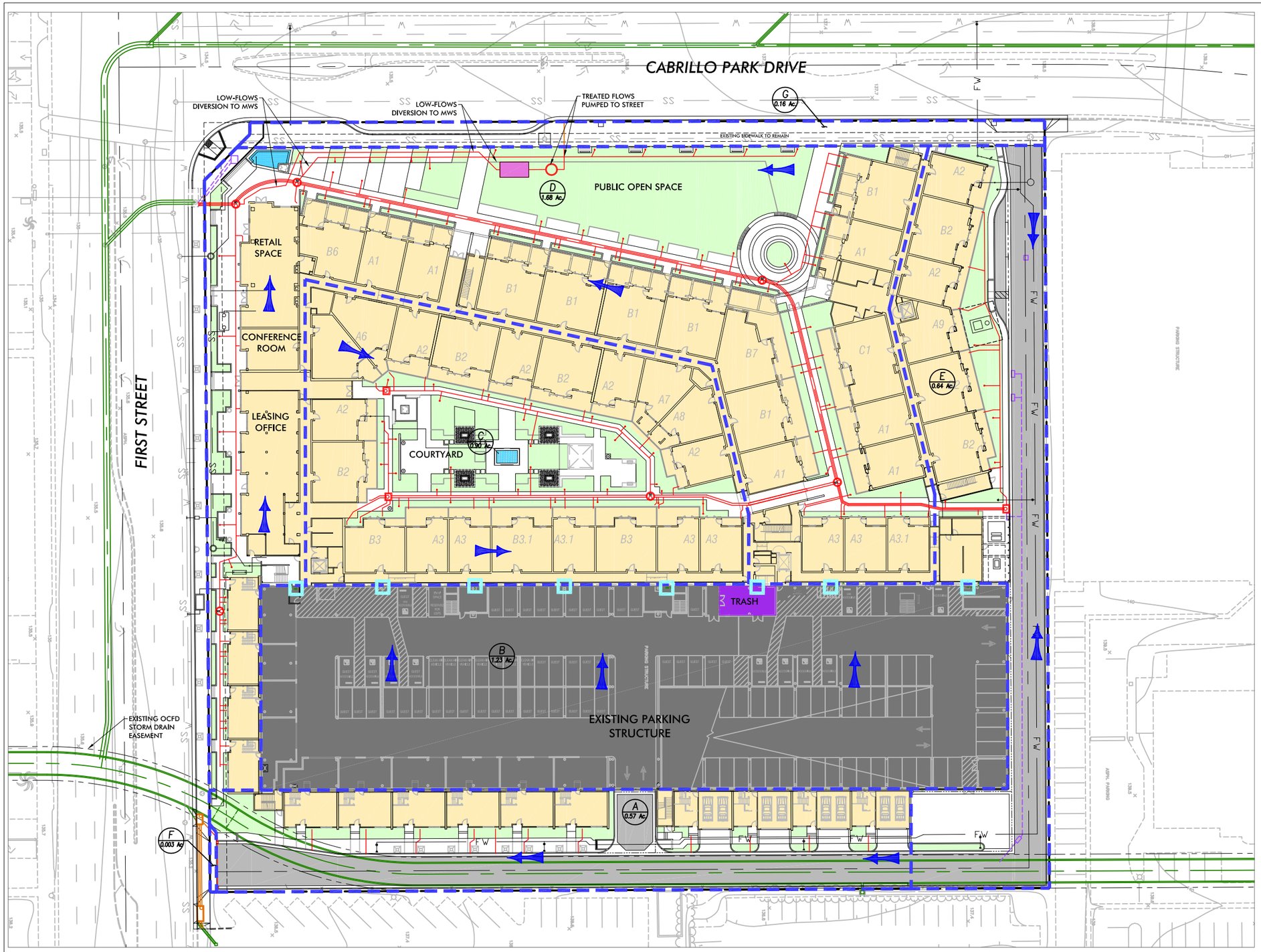
Not to Scale

Exhibit Date: 5/2/14

SWPPP EXHIBIT
BMP DETAILS
1901 E. 1ST STREET
SANTA ANA, CA



LEGEND

- PROPERTY LINE
- EXISTING STORM DRAIN TO REMAIN
- EXISTING STORM DRAIN TO BE DEMOLISHED
- PROPOSED ON-SITE STORM DRAIN
- PROPOSED OFF-SITE STORM DRAIN
- BMP DRAINAGE AREA BOUNDARY
- PROPOSED COMMON AREA LANDSCAPING
- PROPOSED BUILDING
- STREET SWEEPING PRIVATE STREETS
- PROPOSED TRASH ROOM
- PROPOSED POOL / FOUNTAIN (DRAINS TO SEWER)
- EXISTING PARKING STRUCTURE TO REMAIN
- MODULAR WETLAND UNIT (BIO-7)
- ROOF DOWNSPOUT FILTERS (TRT-2)
- DIRECTION OF FLOW

60’ 0’ 30’ 60’

SCALE: 1” = 60’

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Scale: 1" = 60'

Exhibit Date: 3/31/2014

WATER QUALITY MANAGEMENT PLAN
1901 E. 1ST STREET SANTA ANA, CA

P:\PROJECTS\1112\02\WATER\GRAPHICS\WQMP\111202XH_1901-FINALWQMP.DWG (03-31-14 2:24:29PM) Plotted by: April McMillian

Dry Season Requirements
(May 1 through September 30)

Dry Season Requirements	*SPECIFIED BMPs BMP Detail(s)/ Sheet Number*
A. Wind erosion BMPs (dust control) shall be implemented.	**WE-1**
B. Sediment control BMPs shall be installed and maintained at all operational storm drain inlets internal to the project.	**SE-10**
C. BMPs to control off-site sediment tracking shall be implemented and maintained.	**TC-1, TC-2, TC-3**
D. Appropriate waste management and materials pollution control BMPs shall be implemented to prevent the contamination of stormwater by wastes and construction materials.	**WM-1, WM-2, WM-3, WM-4 WM-5, WM-6, WM-8, WM-9**
E. Appropriate non-stormwater BMPs shall be implemented to prevent the contamination of stormwater from construction activities.	**NS-1, NS-3, NS-6, NS-8 NS-9, NS-10**
F. Deployment of permanent erosion control BMPs (physical or vegetation) shall commence as soon as practical on slopes that are completed for any portion of the site. Standby BMP materials shall not be relied upon to prevent erosion of slopes that have been completed.	

NOTE 1: There shall be a "weather triggered" action plan and the ability to deploy standby sediment control BMPs as needed to completely protect the exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a forecasted 50% chance of rain).

NOTE 2: Sufficient materials needed to install standby sediment control BMPs (at the site perimeter, site slopes and operational inlets within the site) necessary to prevent sediment discharges from exposed portions of the site shall be stored on site. Areas that have already been protected from erosion using physical stabilization or established vegetation stabilization BMPs as described in item F above are not considered "exposed" for purposes of this requirement.

Wet Season Requirements
(October 1 through April 30)

Wet Season Requirements IN ADDITION TO THE DRY SEASON REQUIREMENTS:	*SPECIFIED BMPs BMP Detail(s)/ Sheet Number*
A. Sediment control BMPs shall be implemented at the site perimeter, at all operational storm drain inlets and at all non-active slopes, to provide sufficient protection for storms likely to occur during the rainy season.	**SE-5, SE-6, SE-7, SE-8 SE-9, SE-10**
B. Adequate physical or vegetation erosion control BMPs (temporary or permanent) shall be installed and established for all completed slopes prior to the start of the rainy season. These BMPs must be maintained throughout the rainy season. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP may indicate that the BMP, as installed, was not adequate for the circumstances in which it was used. Repairs or replacements must result in a more robust BMP, or additional BMPs should be installed to provide adequate protection.	**EC-1, EC-5, EC-8**
C. The amount of exposed soil allowed at one time shall not exceed that which can be adequately protected by deploying the referenced standby erosion control and sediment control BMPs prior to a predicted rainstorm.	**EC-5, SE-6, SE-7, SE-10**
D. A disturbed area that is not completed but that is not being actively graded (non-active area) shall be fully protected from erosion with the referenced temporary and/or permanent BMPs (erosion and sediment control). The ability to deploy standby BMP materials is not sufficient for these areas. Erosion and sediment control BMPs must actually be deployed. This includes all building pads, unfinished roads and slopes.	**EC-5, SE-6, SE-10**
E. Sufficient materials needed to install referenced standby erosion and sediment control BMPs necessary to completely protect the exposed portions of the site from erosion and to prevent sediment discharges shall be stored on site. Areas that have already been protected from erosion using permanent physical stabilization or established vegetation stabilization BMPs are not considered "exposed" for purposes of this requirement.	**SE-5, SE-6, SE-7, SE-8 EC-5**

NOTE: For Risk Level 2 and 3 sites, there shall be a "Rain Event Action Plan" and the ability to deploy standby erosion and sediment control BMPs as needed to completely protect the exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a forecasted 50% chance of rain).

BMP TABLE:

SYMBOL		DESCRIPTION
ENTIRE SITE	WE-1	WIND EROSION CONTROLS
	TC-2	STABILIZED CONSTRUCTION ENTRANCE
	SE-6	GRAVEL BAG BARRIER
	SE-10	STORM DRAIN INLET PROTECTION
	EC-9	TEMPORARY DRAINS AND SWALES

BMP DETAILS CAN BE OBTAINED IN THE SWPPP PREPARED FOR THIS PROJECT BY FUSCOE ENGINEERING OR http://www.ocwatersheds.com/StormWater/documents_bmp_construction.asp

NOTES TO CONTRACTOR:

STABILIZED CONSTRUCTION ENTRANCE AND RECYCLING STORAGE AREA SHALL BE DESIGNATED BY SITE SUPERVISOR AND INCLUDED ON THE SWPPP / EROSION CONTROL PLAN. AS SITE CONDITIONS CHANGE, THE SWPPP / EROSION CONTROL PLAN SHALL BE UPDATED TO REFLECT CURRENT CONDITIONS.

IT IS THE CONTRACTOR/SUPERVISOR'S RESPONSIBILITY TO KEEP THE SWPPP MAP CURRENT. BMPs SHOULD BE ADDED, MOVED OR REMOVED BASED ON SITE CONDITIONS. HAND-MARKED ALTERATIONS WITH INITIALS AND DATE ARE AN ACCEPTABLE FORM OF ALTERATION. THE CONTRACTOR MAY BE ASKED AT ANY TIME TO PRODUCE THE SWPPP MAP. FAILURE TO KEEP THE MAP CURRENT COULD RESULT IN A NOTICE OF VIOLATION AND/OR FINE.

POLLUTION PREVENTION NOTES

In order to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) program for construction, construction contractors shall install and maintain appropriate Best Managment Practices (BMPs), as shown in the Erosion and Sediment Control Plan, on all construction projects. BMPs shall be installed in accordance with industry recommended standards, and/or in accordance with any General Construction Permit issued by the state for the project to prevent any discharges from the project site or into any storm drain facilities. All sediments, construction materials, debris and wastes, and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, wind, or vehicle tracking. Under direction of the Engineer of Record, erosion and/or sediment control devices shall be modified as needed as the project progresses to ensure effectiveness.

GRADING PERMIT PLAN CHECK NO. 50100900
PC-P0102301
DP NO. 2013-017

CONSTRUCTION COMPLETED:

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPV'D	INSTALLED

REFERENCES

BENCHMARK NO.: O.C.S. VERT. CTL. PT. "SA-335-06" NAVD88/2010 ADJ ELEV. 132.783
MONUMENT TYPE: ORANGE COUNTY SURVEYOR'S 4" ALUMINUM DISK
2001-FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPD "1E-106-83", SET IN THE SOUTHERLY END
DESCRIBED BY OCS 2006 - FOUND 4" OCS ALUMINUM BENCHMARK DISK STAMPED "SA-335-06", SET IN THE
NORTHWEST CORNER OF A 4.0 FT. BY 4.5 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE
NORTHEAST PORTION OF THE INTERESECTION OF ELK ST. AND FIRST ST. 45 FT. NORTH OF THE CENTERLINE OF
FIRST STREET AND 50 FT. EAST OF THE CENTERLINE OF ELK ST., LEVEL WITH THE SIDEWALK.

PREPARED BY:
FUSCOE ENGINEERING
16795 Von Karman, Suite 100
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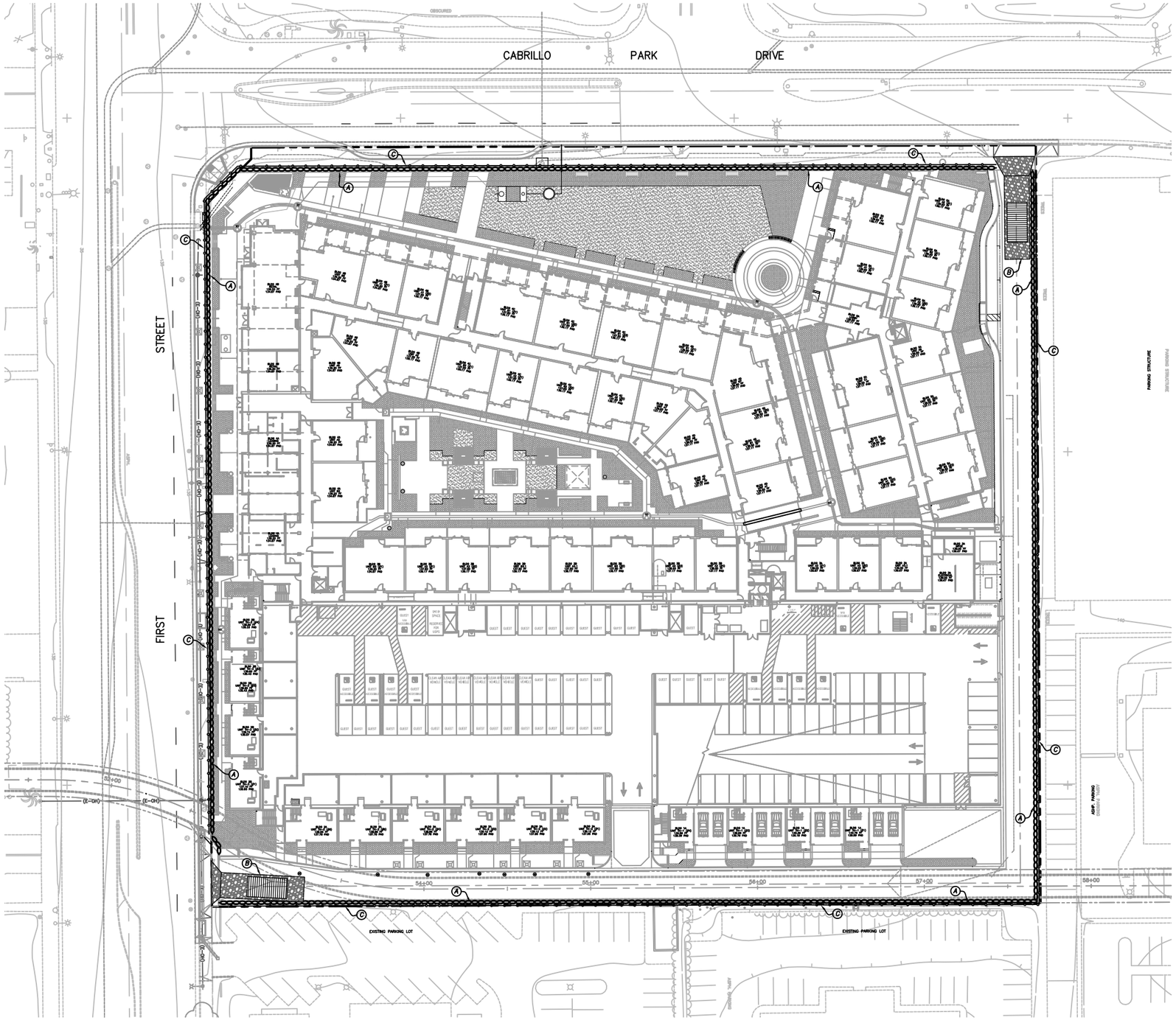
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

REGISTERED PROFESSIONAL ENGINEER DINO CAPANNELLI NO. 043836 Exp. 08/30/15 CIVIL STATE OF CALIFORNIA

PREPARED UNDER THE SUPERVISION OF: DINO CAPANNELLI RCE NO.: 043836 — DATE 04/02/14
DESIGNED: DC/FL DRAWN: FL CHECKED: DC — 04/02/14
RECOMMENDED: —
RECOMMENDED FOR CONSTRUCTION: —
ACTING CITY ENGINEER RCE NO.: _____

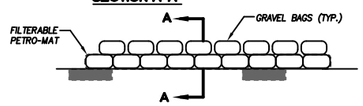
1ST STREET AND CABRILLO PARK DRIVE APARTMENTS
1901 EAST 1ST STREET, SANTA ANA, CA 92705
PRECISE GRADING PLAN
EROSION CONTROL NOTES
PUBLIC WORKS AGENCY
CITY OF SANTA ANA

SHEET 11 OF 11



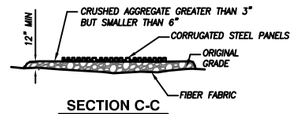
2 GRAVEL BAGS HIGH MIN.

SECTION A-A

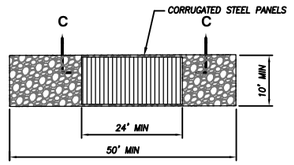


GRAVEL BAG BERM DETAIL — A/10

NOT TO SCALE



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE/ EXIT DETAIL — B/10

NOT TO SCALE

EROSION CONTROL NOTES:

GRAVEL BAGS

1. **GENERAL:** GRAVEL BAG SHALL INCLUDE PROVIDING ALL LABOR, MATERIALS, AND EQUIPMENT TO FABRICATE AND INSTALL GRAVEL BAGS AS REQUIRED TO FACILITATE THE CONTROL OF EROSION.
2. **LOCATION:** GRAVEL BAGS SHALL BE PLACED PER PLAN, AND IN LOCATIONS SPECIFIED BY THE CITY, AND IN LOCATIONS DEEMED NECESSARY BY THE CONTRACTOR.
3. **FABRICATION:** GRAVEL BAGS SHALL BE FABRICATED USING FACTORY SEWN OR SEALED BAGS OF WOVEN POLYPROPYLENE, TREATED TO RESIST DEGRADATION BY ULTRAVIOLET LIGHT AND HAVING SUFFICIENT RESISTANCE TO TEARING TO ALLOW RELOCATION OF BAGS WITHIN SIX MONTHS OF INITIAL PLACEMENT WITH A LOSS OF NOT MORE THAN FIVE PERCENT OF THE BAGS.

   THE BAGS SHALL BE FILLED WITH SUBROUNDED TO ROUNDED GRAVEL LESS THAN 3/4-INCH IN DIAMETER, WITH LESS THAN FIVE PERCENT OF MATERIAL PASSING A NO. 30 SIEVE. THE FILLED BAGS SHALL HAVE THE OPEN ENDS SECURELY FASTENED PRIOR TO DELIVERY TO THE SITE.
4. **INSTALLATION:** GRAVEL BAGS SHALL BE INSTALLED IN A MANNER TO ENTRAP SILT AND MUD, AND TO DIVERT THE FLOW OF WATER. NOTWITHSTANDING THE OTHER REQUIREMENTS OF THIS SPECIFICATION, FAILURE OF THE BAGS TO PERFORM THIS FUNCTION SHALL BE REASON TO REJECT THEIR INSTALLATION.

   GRAVEL BAGS SHALL BE INSTALLED WITH THE WIDEST FACE AGAINST THE GROUND SURFACE OR THE UNDERLYING COURSE OF BAGS, AND PRESSED IN PLACE TO CONFORM TO THE UNDERLYING SURFACE. THE BAGS SHALL BE PLACED WITH THE TIED ENDS IN THE "UPHILL" OR "UPSTREAM" DIRECTION, BEGINNING AT THE LOWEST OR MOST DOWNSTREAM BAG, TIED ENDS WILL BE TUCKED UNDER BAG. SUBSEQUENT BAGS WITHIN ONE COURSE OF BAGS SHALL BE PLACED SO AS TO REST UPON THE TIED END OF THE PREVIOUSLY PLACED BAG, WITH NOT LESS THAN 10 PERCENT OF THE BAG IN CONTACT WITH THE PREVIOUS BAG, AND NOT MORE THAN 20 PERCENT IN CONTACT.

   SUBSEQUENT COURSES OF BAGS SHALL BE PLACED AS DESCRIBED PREVIOUSLY, WITH THE MID-POINT OF THE BAGS STRADDLING THE JOINTS CONSTRUCTION OF A GRAVEL BAG BERM PERPENDICULAR TO THE DIRECTION OF FLOW SHALL INCORPORATE BAGS PLACED IN A "PYRAMID" CONFIGURATION, WITH ALL INDIVIDUAL BAGS ORIENTED PERPENDICULAR TO THE DIRECTION OF FLOW. THE BERM SHALL BE CONSTRUCTED WITH A SPECIFIED NUMBER OF ROWS AT THE BOTTOM (IN CONTACT WITH THE GROUND), WITH SUCCESSIVELY FEWER ROWS IN EACH OVERLYING COURSE. THE UPSTREAM AND DOWNSTREAM FACES OF THE BERM SHALL BE NO STEEPER THAN 1 1/2 FEET HORIZONTAL TO 1 VERTICAL.

   DAMAGE WHICH COULD FORESEEBLY BE PREVENTED BY PROPER GRAVEL BAG INSTALLATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
5. **COMPENSATION:** THE PERFORMANCE OF THE REQUIREMENTS OF THIS SECTION SHALL BE COMPENSATED AT THE CONTRACT UNIT PRICES FOR GRAVEL BAGS.

CONSTRUCTION NOTES

(A) INSTALL GRAVEL BAG BERM, 2 BAGS HIGH PER DETAIL A/42 (SE-6)

(B) CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE/EXIT PER DETAIL C/42 (TC-1)

(C) INSTALL CONSTRUCTION FENCE WITH WINDGUARD PROTECTION

30' 0' 15' 30'

SCALE: 1" = 30'

GRADING PERMIT PLAN CHECK NO.
50100900
PC-P0102301
DP NO. 2013-017

CONSTRUCTION COMPLETED:

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APP'D	INSTALLED

REFERENCES

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MONUMENT TYPE: ORANGE COUNTY SURVEYOR'S 4" ALUMINUM DISK

2001-FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPD "IE-106-83", SET IN THE SOUTHERLY END

DESCRIBED BY OCS 2006 - FOUND 4" OCS ALUMINUM BENCHMARK DISK STAMPED "SA-335-06", SET IN THE NORTHWEST CORNER OF A 4.0 FT. BY 4.5 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHEAST PORTION OF THE INTERESECTION OF ELK ST. AND FIRST ST. 45 FT. NORTH OF THE CENTERLINE OF FIRST STREET AND 50 FT. EAST OF THE CENTERLINE OF ELK ST., LEVEL WITH THE SIDEWALK.

PREPARED BY:

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REGISTERED PROFESSIONAL ENGINEER — DINO CAPANNELLI — NO. 043836 — Exp. 08/30/15 — CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE SUPERVISION OF:

DINO CAPANNELLI RCE NO.: 043836 — 04/02/14

DESIGNED: DC/FL DRAWN: FL CHECKED: DC — 04/02/14

RECOMMENDED: —

RECOMMENDED FOR CONSTRUCTION: —

ACTING CITY ENGINEER RCE NO.: ____

1ST STREET AND CABRILLO PARK DRIVE APARTMENTS

1901 EAST 1ST STREET, SANTA ANA, CA 92705

PRECISE GRADING PLAN

EROSION CONTROL PLAN

PUBLIC WORKS AGENCY
CITY OF SANTA ANA

SHEET 10 OF 11

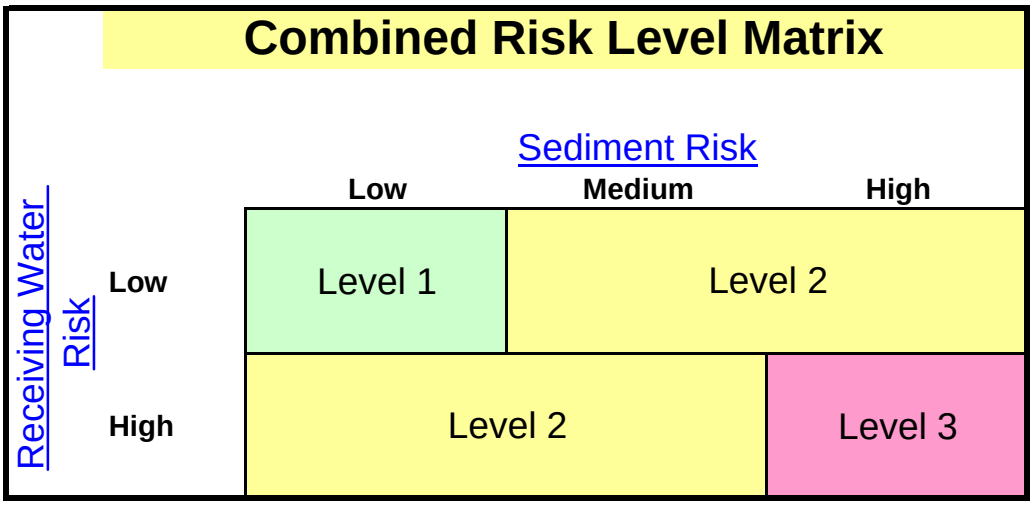
\\FUSCOE-CORP\WA\DATA\PROJECTS\111210201\ENG\GRADING\PGP\111210201EC.DWG (04-30-14 11:36:56AM) Plotted by: Lynn Kubasek

C3
RISK ASSESSMENT
(SEDIMENT AND RECEIVING WATER RISK DETERMINATION)

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		72.93
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.32
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		0.65
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		15.16944
16	**Site Sediment Risk Factor**		**Medium**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml	**Yes**	**High**
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses c SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp		

Combined Risk Level Matrix



Project Sediment Risk:	**Medium**
Project RW Risk:	**High**
Project Combined Risk:	**Level 2**

R-FACTOR CALCULATION SUMMARY

Project: 1901 Apartments, Santa Ana, CA

Date: May 1, 2014

Source: United States Environmental Protection Agency, Office of Water. Stormwater Phase II Final Rule Construction Rainfall Erosivity Waiver. EPA 833-F-00-014, Revised March 2012. Fact Sheet 3.1.

Construction Duration: June 1, 2013 to December 31, 2015 (2.58 years)

Figure 1 – Erosivity Index Zone Map

EI Distribution Zone: 25

Table 1 – Erosivity Index Table

EI percentage June 1, 2013 to December 31, 2013: 100% – 56.9% = 43.1%
EI percentage January 1, 2014 to December 31, 2014: 100% – 0.0% = 100.0%
EI percentage January 1, 2015 to December 31, 2015: 100% – 0.0% = 100.0%

Total EI percentage (2.58 year duration): 243.1%

Figure 4 – Isoerodent Map of California

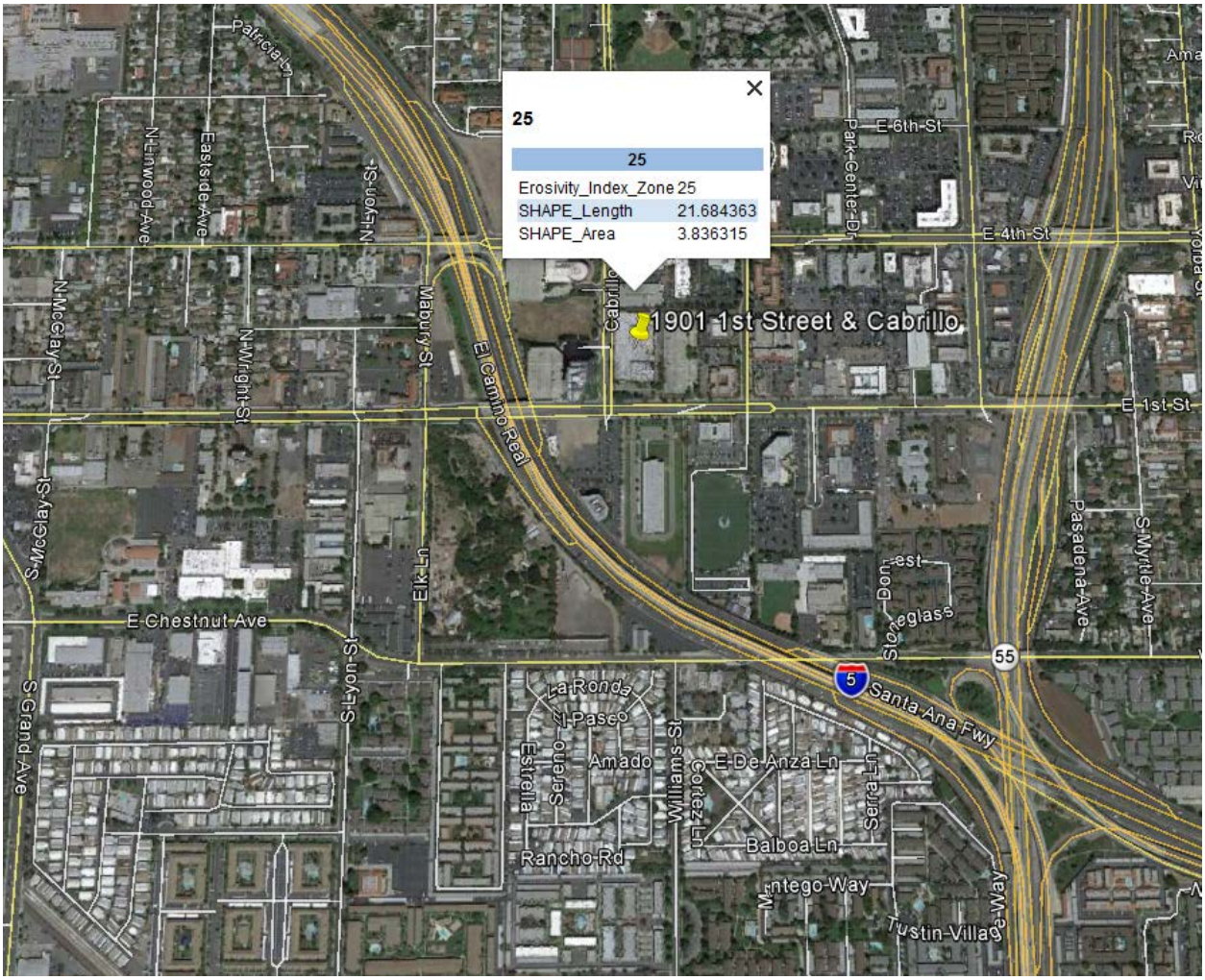
Interpolated annual erosion index for location: 30

R-Factor Calculation

30 x (243.1%) = 72.93

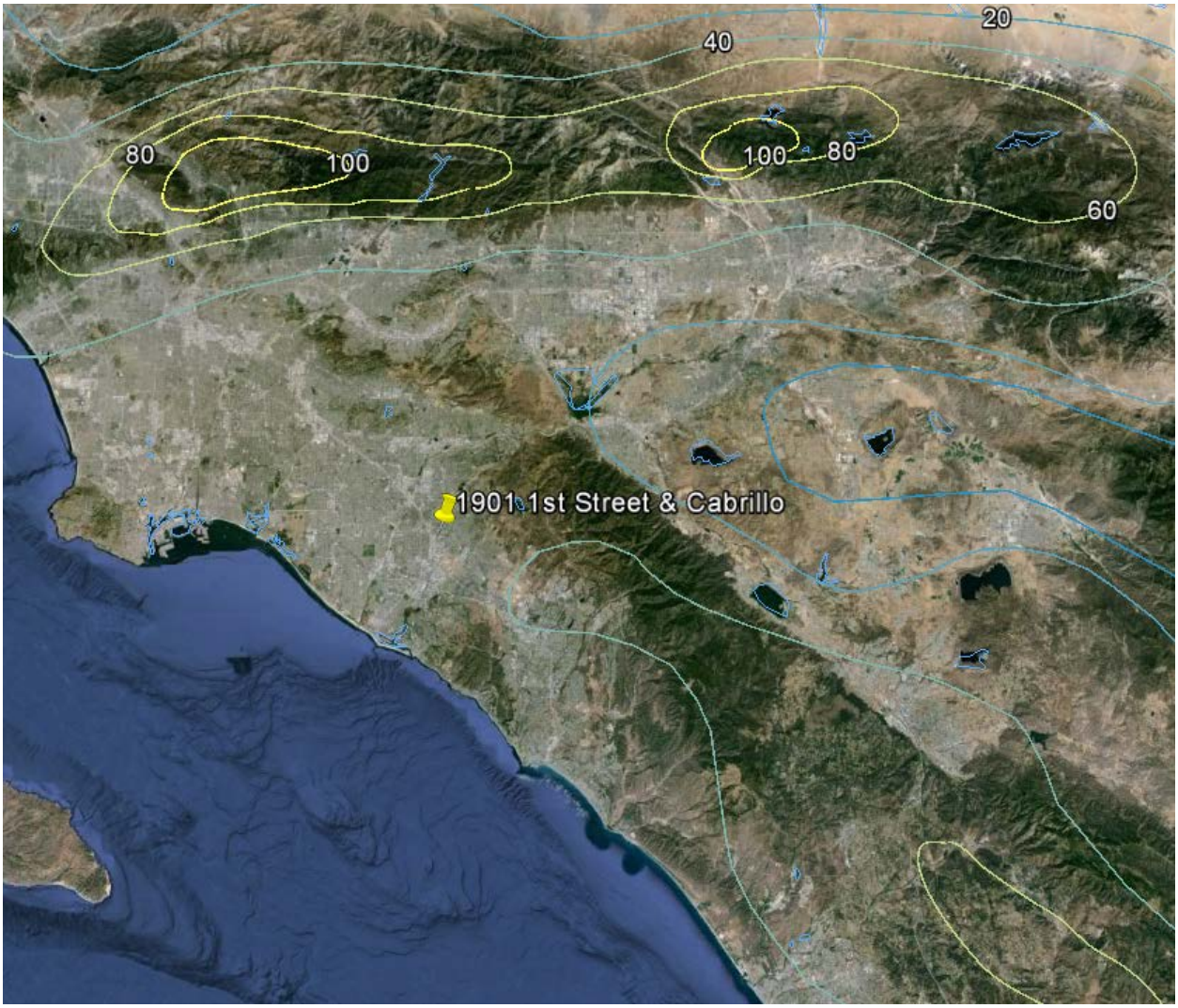
R-Factor for Project: **72.93**

EROSIVITY INDEX ZONE MAP



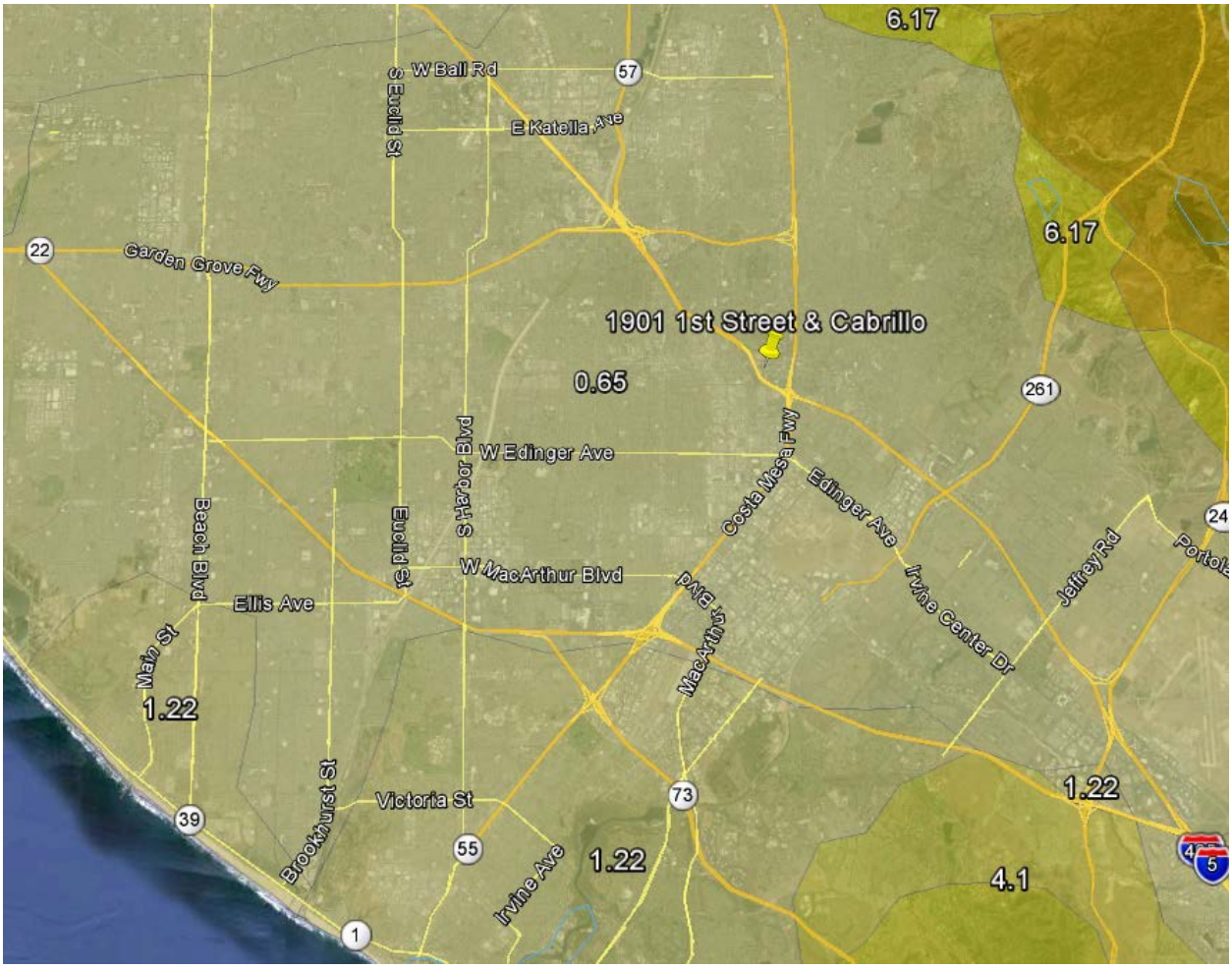
25

ANNUAL EROSION INDEX (ISOERODENT MAP)



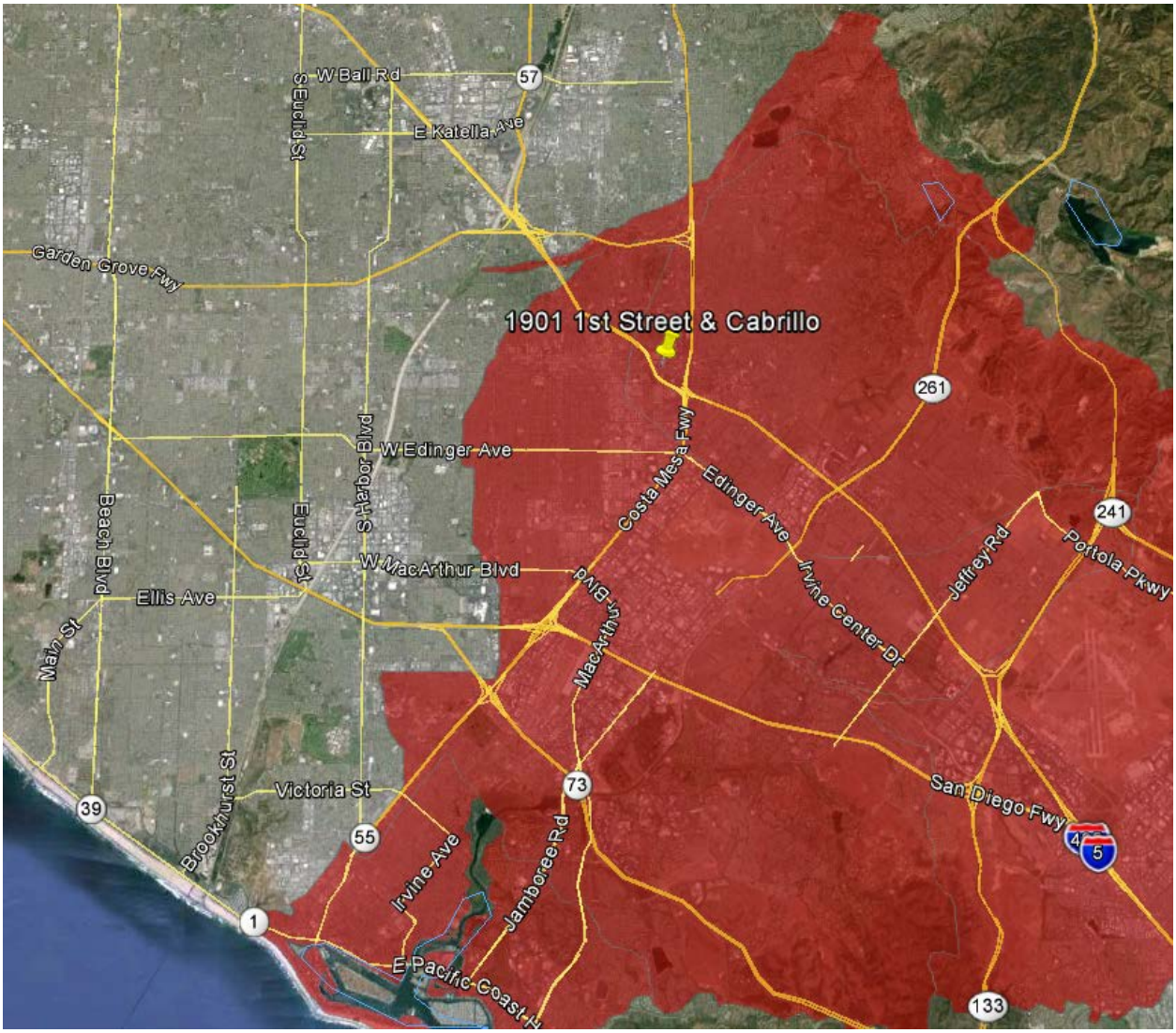
K-FACTOR (GIS MAP METHOD)

LS-FACTOR (GIS MAP METHOD)



0.65

RECEIVING WATER RISK (GIS MAP METHOD)



High

CONSTRUCTION GENERAL PERMIT
RISK ASSESSMENT R-FACTOR CALCULATION NOTIFICATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

State Water Resources Control Board Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ (CGP) requires that dischargers assessing Risk must calculate the Rainfall Erosivity Factor (R-Factor) in the Revised Universal Soil Loss Equation through the Environmental Protection Agency (EPA) Rainfall Erosivity Factor Calculator at: http://cfpub.epa.gov/npdes/stormwater/lew/lewcalculator.cfm

The week of February 13, 2012 the Rainfall Erosivity Factor Calculator became unavailable due to maintenance. EPA has approximated that maintenance may take at least 1 month to complete. Until that time, dischargers shall calculate their project R-factor using the Construction Erosivity Waiver Fact Sheet (Fact Sheet) provided by EPA at http://www.epa.gov/npdes/pubs/fact3-1.pdf (also attached). The Fact Sheet provides the instructions and references needed to calculate R-values for a one year period. Projects active for more than a one year period must calculate the R-factor for year 1, and multiply this value based on the estimated duration.

Please contact the Storm Water Help Desk if you have any questions. 1-866-563-3107 or stormwater@waterboards.ca.gov.

Examples:

1. ***Find the R value of a construction project in Sacramento, California with a duration of February 29, 2012 to September 1, 2014 (2.5 years).***

   Figure 1 - Erosivity Index Zone Map:
   The EI distribution zone is 23
   Table 1 – Erosivity Index Table:
   EI percentage February 29 to December 31: 100% – 25.7% = 74.3%
   EI percentage January 1 to February 29: 25.7% - 0.0% = 25.7%
   Total EI percentage for 1 year duration: 74.3% + 25.7% = 100%
   EI percentage February 29 to September 1 (0.5 year): 54.1% - 25.7% = 28.4%
   Figure 4 – Isoerodent Map of California:
   Interpolated annual erosion index for location: 35

R-Factor for 2 year construction: 35 x (100%) x 2 years = 70
R-Factor for 0.5 year construction: 35 x (28.4%) = 9.94
R-Factor for complete project duration (2.5 years) = 70 + 9.94 = 79.94

2. ***Find the R value of a construction project in San Diego, California with a duration of June 30, 2012 to November 1, 2013 (1.333 years).***

Figure 1 - Erosivity Index Zone Map:
The EI distribution zone is 25
Table 1 – Erosivity Index Table:
EI percentage June 30 to December 31: 100% – 57.2% = 42.8%
EI percentage January 1 to June 30: 57.2% - 0.0% = 57.2%
Total EI percentage for 1 year duration: 42.8% + 57.2% = 100%
EI percentage June 30 to November 1 (0.333 year): 69.4% - 57.2% = 12.2%
Figure 4 – Isoerodent Map of California:
Interpolated annual erosion index for location: 25

R-Factor for 1 year construction: 25 x (100%) = 25
R-Factor for 0.333 year construction: 25 x (12.2%) = 3.05
R-Factor for complete project duration (1.333 years) = 25 + 3.05 = 28.05

United States Environmental Protection Agency | Office of Water (4203) | EPA 833-F-00-014 Revised March 2012 Fact Sheet 3.1[1]

Stormwater Phase II Final Rule

Construction Rainfall Erosivity Waiver

The 1972 amendments to the Federal Water Pollution Control Act, later referred to as the Clean Water Act (CWA), prohibit the discharge of any pollutant to navigable waters of the United States unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Because construction site stormwwater runoff can contribute significantly to water quality problems, the Phase I Stormwater Rule imposed a requirement that all construction sites with a planned land disturbance of 5 acres or more obtain an NPDES permit and implement stormwater runoff control plans. Phase II extends the requirements of the stormwater program to sites of between 1 and 5 acres. The Rainfall erosivity waiver allows permitting authorities to waive those sites that do not have adverse water quality impacts.

What is Erosivity?

Erosivity is the term used to describe the potential for soil to wash off disturbed, devegetated earth during storms. The potential for erosion is in part determined by the soil type and geology of the site. For instance, dense, clay-like soils on a glacial plain will erode less readily when it rains than will sandy soils on the side of a hill. Another important factor is the amount and force of precipitation expected during the time the earth will be exposed. While it is impossible to predict the weather several months in advance of construction, for many areas of the country, there are definite optimal periods, such as a dry season when rain tends to fall less frequently and with less force. When feasible, this is the time to disturb the earth, so that the site can be stabilized by the time the seasonal wet weather returns. There are many other important factors to consider in determining erosivity, such as freeze/thaw cycles and snow pack.

How Is Site Erosivity Determined?

The Universal Soil Loss Equation (USLE) was developed by the U.S. Department of Agriculture (USDA) in the 1950s to help farmers conserve their valuable topsoil. The methodology for determining if a site qualifies for the erosivity waiver provided in this guide is based on the *USDA Handbook 703 - Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)*, dated January 1997. (Note that a more updated version of USLE, the Revised USLE, Version 2 (RUSLE2), is available and can be used as an alternative method for determining if a site qualifies for the erosivity waiver. Information about the RUSLE2 computer program is provided later in this fact sheet.)

Using a computer model supported by decades' worth of soil and rainfall data, USDA established estimates of annual erosivity values (R factors) for sites throughout the country. These R factors are used as surrogate measures of the impact that rainfall had on erosion from a particular site. They have been mapped using isoerodent contours, as shown in Figures 2 through 5.

USDA developed the Erosivity Index Table (EI Table, provided here in Table 1), to show how the annual erosivity factor is distributed throughout the year in two-week increments. Table 1 is based on 120 rainfall distribution zones for the continental U.S. Detailed instructions for calculating a project R factor are provided later in this fact sheet.

[1] This revised fact sheet corrects errors identified in calculating the R factor from the 2001 version, and includes updated information about the USLE.

The Stormwater Phase II rule allows permitting authorities to waive NPDES requirements for small construction sites if the value of the rainfall erosivity factor is less than 5 during the period of construction activity (see § 122.26(b)(15)(i)(A)). Note that the permitting authority has the option to not allow waivers for small construction activity.

If the R factor for the period of construction calculates to less than 5, and the permitting authority allows the use of the waiver, the site owner may apply for a waiver under the low rainfall erosivity provision of the applicable EPA or State NPDES regulations. When applying, owners are encouraged to consider other site-specific factors, such as proximity to water resources and the sensitivity of receiving waters to sedimentation impacts. The small construction operator must certify to the permitting authority that the construction activity will take place during a period when the rainfall erosivity factor is less than 5.

The start and end dates used for the construction activity will be the initial date of disturbance and the anticipated date when the site will have achieved final stabilization as defined by the permit, respectively. If the construction continues beyond this period, the operator will need to recalculate the Erosivity Index for the site based on this new ending date (but keeping the old start date) and either resubmit the certification form or apply for NPDES permit coverage.

What Other Factors Can Affect Waiver Availability and Eligibility?

EPA has established the R factor of less than 5 as the criteria for determining waiver eligibility. However, since the intent is to waive only those construction activities that will not adversely impact water quality, State and Tribal permitting authorities have considerable discretion in determining where, when, and how to offer it. They can establish an R factor threshold lower than 5, or they can suspend the waiver within an area where watersheds are known to be heavily impacted by, or sensitive to, sedimentation. They can also suspend the waiver during certain periods of the year. They may opt not to offer the waiver at all. NOTE: This waiver is not available to sites that will disturb more than 5 acres of land (large construction).

What if My Site Is Not Eligible?

If your site is not eligible for a waiver, you must submit a Notice of Intent, or whichever type of application is required, to obtain coverage under the applicable NPDES construction stormwater permit, and comply with its requirements. For information about EPA's Construction General Permit (CGP), see http://www.epa.gov/npdes/stormwater/cgp. State program information is available at http://cfpub.epa.gov/npdes/contacts.cfm?program_id=6&type=STATE.

Examples

1. Construction started and completed in one calendar year.

Find the R factor value of a construction site in Denver, Colorado. Assume the site will be disturbed from March 10 to May 10 of the same year.

The EI distribution zone is 84 (Figure 1). Referring to Table 1, the project period will span from March 1 (from Table 1, the closest date prior to the actual March 10 start date) to May 15 (from Table 1, the closest date after the actual May 10 end date). The difference in values between these two dates is 9.7% (9.9 - 0.2 = 9.7). Since the annual erosion index for this location is about 45 (interpolated from Figure 2), the R factor for the scheduled construction project is 9.7% of 45, or 4.4.

Because 4.4 is less than 5, the operator of this site would be able to seek a waiver under the low rainfall erosivity provision.

2. Construction spanning two calendar years.

Find the R factor value for a construction site in Pittsburgh, Pennsylvania. Assume the site will be disturbed from August 1 to April 15.

The EI distribution zone is 111 (Figure 1). Referring to Table 1, the project period will span from July 29 (from Table 1, the closest date prior to the actual August 1 start date) to April 15. The difference in values between July 29 and December 31 is 35% (100 - 65.0 = 35.0). The difference between January 1 and April 15 is 8%. The total percentage EI for this project is 43% (35 + 8 = 43). Since the annual erosion index for this location is 112 (interpolated from Figure 2), the R factor for the scheduled construction is 43% of 112, or 48.

Since 48 is greater than 5, the operator of this site would not be able to seek a waiver under the low rainfall erosivity provision.

How Do I Compute the R factor for My Project?

1. Estimate the construction start date. This is the day you expect to begin disturbing soils, including grubbing, stockpiling, excavating, and grading activities.
2. Estimate the day you expect to achieve final stabilization, as defined by your permitting authority's regulations or NPDES construction stormwater permit, over all previous disturbed areas. This is your construction end date.
3. Refer to Figure 1 to find your Erosivity Index (EI) Zone based on your geographic location.

4. Refer to Table 1, the Erosivity Index (EI) Table. Find the number of your EI Zone in the left column. Locate the EI values for the dates that correspond to the project start and end dates you identified in Steps 1 and 2. If your specific date is not on the table, either interpolate between dates to obtain your %EI value, or use the closest date prior to your proposed start date and the closest date after your proposed end date. Subtract the start value from the end value to find the % EI for your site. The maximum annual EI value for a project is 100%. NOTE: If your project lasts for one year or more, your EI value is 100%.
5. Refer to the appropriate Isoerodent Map (Figures 2 through 5). Interpolate the annual isoerodent value for your area. This is the annual R factor for your site.
6. Multiply the percent value obtained in Step 4 by the annual isoerodent value obtained in Step 5. This is the R factor for your scheduled project.

Can I Use a Personal Computer to Calculate the R factor?

The computer program used by USDA to evaluate erosion potential is called the Revised Universal Soil Loss Equation, or RUSLE. The current version of RUSLE (RUSLE2) is a Windows-based model that uses extensive databases that are geographically-linked. RUSLE2 can be used to calculate the R factor for a proposed construction site; however, RUSLE2 can require a large investment of time to set up. RUSLE2 can be downloaded free of charge from the Internet at http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm. Note that RUSLE2 is an upgrade of RUSLE, and contains more detailed data. Therefore, your calculated R factor may differ based on whether you calculate your R factor using the methods specified above, which utilizes data from *USDA Handbook 703 - Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)*, January 1997, or whether you calculate your R factor using the more updated RUSLE2. EPA notes that either method of calculation is acceptable for determining eligibility for the construction rainfall erosivity waiver.

Where Can I Get Help?

- A copy of "Chapter 2, Rainfall-Runoff Erosivity Factor (R)" from the *USDA Handbook 703 - Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)*, January 1997, is available on EPA's web site at http://www.epa.gov/npdes/pubs/ruslech2.pdf.
- Information about RUSLE2, and a download of the program, is available at http://fargo.nserl.purdue.edu/rusle2_dataweb/.
- Your local USDA Service Center may be able to provide assistance with calculating R factors and other conservation-related issues. To find the office nearest you, go to http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/contact/local.

For Additional Information

Reference Documents

Stormwater Phase II Final Rule Fact Sheet Series
- Internet: cfpub.epa.gov/npdes/stormwater/swfinal.cfm

Stormwater Phase II Final Rule (64 *FR* 68722)
- Internet: www.epa.gov/npdes/regulations/phase2.pdf
- Contact the U.S. EPA Water Resource Center (Phone: (202) 564-9545)

Agricultural Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE), Chapter 2, pp. 21-64, January 1997.
- Internet: www.epa.gov/npdes/pubs/ruslech2.pdf

Figure 1. Erosivity Index Zone Map

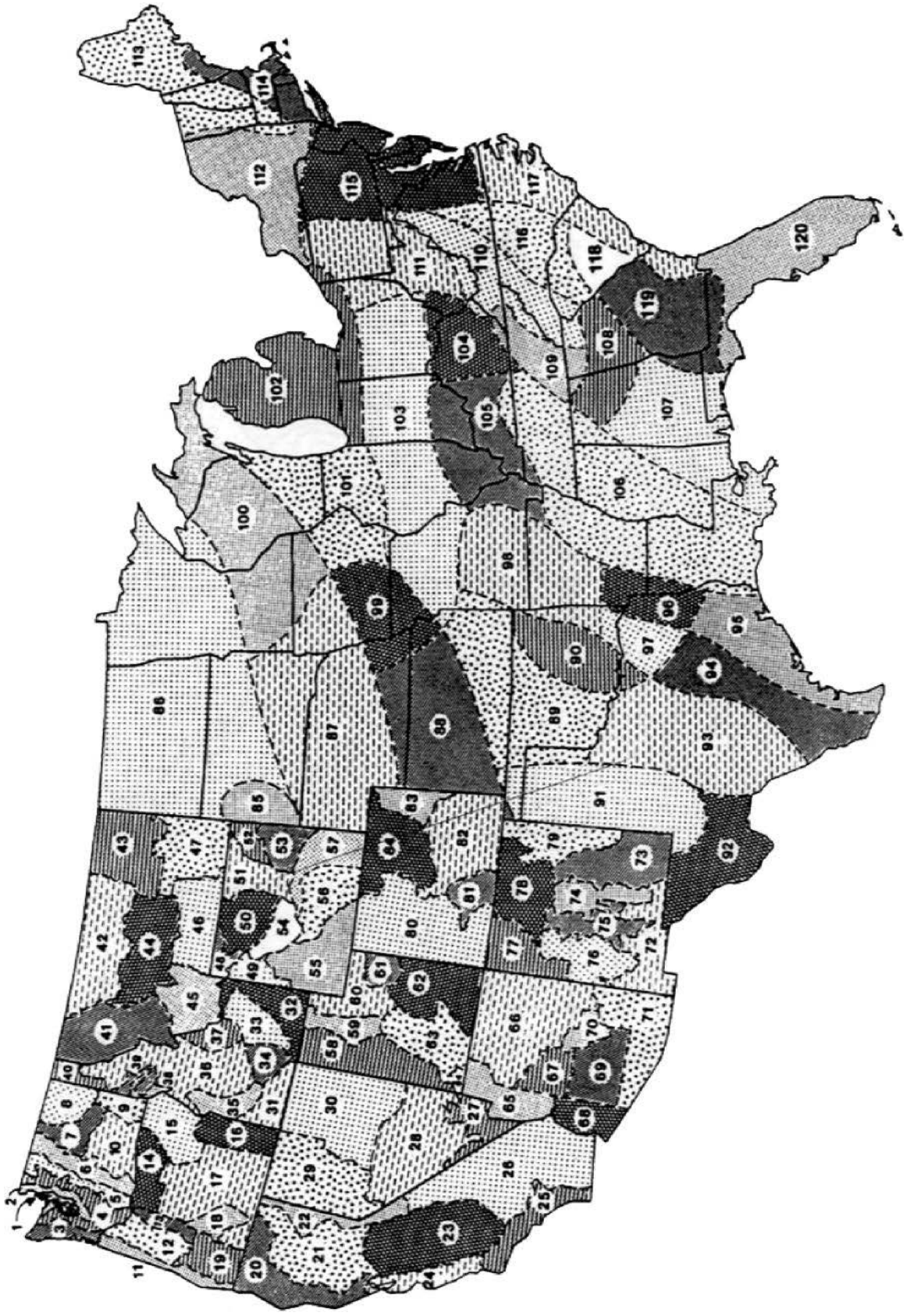
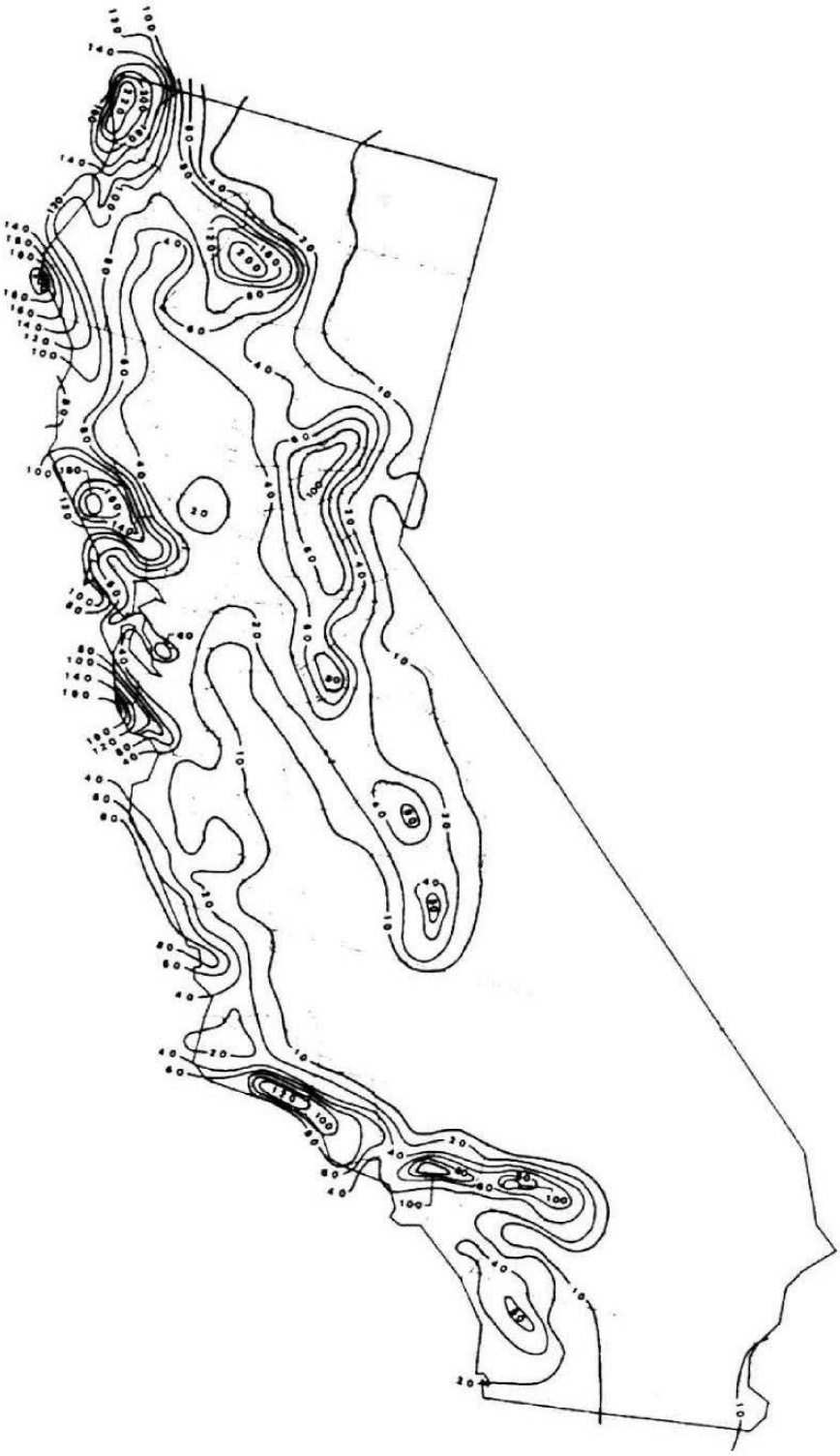


Figure 4. Isoerodent Map of California



Note: Units for all maps on this page are hundreds ft•tonf•in(ac•h•yr)$^{-1}$

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

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

Month	Jan	Jan	Jan	Feb	Mar	Mar	Mar	Apr	Apr	May	May	Jun	Jun	Jul	Jul	Aug	Aug	Sept	Sept	Oct	Oct	Nov	Nov	Dec	Dec
Day	1	16	31	15	1	16	31	15	30	15	30	14	29	14	29	13	28	12	27	12	27	11	26	11	31
EI Zone																									
1	0	4.3	8.3	12.8	17.3	21.6	25.1	28	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53	56	60.8	66.8	71	75.7	82	89.1	95.2	100
2	0	4.3	8.3	12.8	17.3	21.6	25.1	28.0	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53.0	56.0	60.8	66.8	71.0	75.7	82.0	89.1	95.2	100
3	0	7.4	13.8	20.9	26.5	31.8	35.3	38.5	40.2	41.6	42.5	43.6	44.5	45.1	45.7	46.4	47.7	49.4	52.8	57.0	64.5	73.1	83.3	92.3	100
4	0	3.9	7.9	12.6	17.4	21.6	25.2	28.7	31.9	35.1	38.2	42.0	44.9	46.7	48.2	50.1	53.1	56.6	62.2	67.9	75.2	83.5	90.5	96.0	100
5	0	2.3	3.6	4.7	6.0	7.7	10.7	13.9	17.8	21.2	24.5	28.1	31.1	33.1	35.3	38.2	43.2	48.7	57.3	67.8	77.9	86.0	91.3	96.9	100
6	0	0.0	0.0	0.5	2.0	4.1	8.1	12.6	17.6	21.6	25.5	29.6	34.5	40.0	45.7	50.7	55.6	60.2	66.5	75.5	85.6	95.9	99.5	99.9	100
7	0	0.0	0.0	0.0	0.0	1.2	4.9	8.5	13.9	19.0	26.0	35.4	43.9	48.8	53.9	64.5	73.4	77.5	80.4	84.8	89.9	96.6	99.2	99.7	100
8	0	0.0	0.0	0.0	0.0	0.9	3.6	7.8	15.0	20.2	27.4	38.1	49.8	57.9	65.0	75.6	82.7	86.8	89.4	93.4	96.3	99.1	100.0	100.0	100
9	0	0.8	3.1	4.7	7.4	11.7	17.8	22.5	27.0	31.4	36.0	41.6	46.4	50.1	53.4	57.4	61.7	64.9	69.7	79.0	89.6	97.4	100.0	100.0	100
10	0	0.3	0.5	0.9	2.0	4.3	9.2	13.1	18.0	22.7	29.2	39.5	46.3	48.8	51.1	57.2	64.4	67.7	71.1	77.2	85.1	92.5	96.5	99.0	100
11	0	5.4	11.3	18.8	26.3	33.2	37.4	40.7	42.5	44.3	45.4	46.5	47.1	47.4	47.8	48.3	49.4	50.7	53.6	57.5	65.5	76.2	87.4	94.8	100
12	0	3.5	7.8	14.0	21.1	27.4	31.5	35.0	37.3	39.8	41.9	44.3	45.6	46.3	46.8	47.9	50.0	52.9	57.9	62.3	69.3	81.3	91.5	96.7	100
13	0	0.0	0.0	1.8	7.2	11.9	16.7	19.7	24.0	31.2	42.4	55.0	60.0	60.8	61.2	62.6	65.3	67.6	71.6	76.1	83.1	93.3	98.2	99.6	100
14	0	0.7	1.8	3.3	6.9	16.5	26.6	29.9	32.0	35.4	40.2	45.1	51.9	61.1	67.5	70.7	72.8	75.4	78.6	81.9	86.4	93.6	97.7	99.3	100
15	0	0.0	0.0	0.5	2.0	4.4	8.7	12.0	16.6	21.4	29.7	44.5	56.0	60.8	63.9	69.1	74.5	79.1	83.1	87.0	90.9	96.6	99.1	99.8	100
16	0	0.0	0.0	0.5	2.0	5.5	12.3	16.2	20.9	26.4	35.2	48.1	58.1	63.1	66.5	71.9	77.0	81.6	85.1	88.4	91.5	96.3	98.7	99.6	100
17	0	0.0	0.0	0.7	2.8	6.1	10.7	12.9	16.1	21.9	32.8	45.9	55.5	60.3	64.0	71.2	77.2	80.3	83.1	87.7	92.6	97.2	99.1	99.8	100
18	0	0.0	0.0	0.6	2.5	6.2	12.4	16.4	20.2	23.9	29.3	37.7	45.6	49.8	53.3	58.4	64.3	69.0	75.0	86.6	93.9	96.6	98.0	100.0	100
19	0	1.0	2.6	7.4	16.4	23.5	28.0	31.0	33.5	37.0	41.7	48.1	51.1	52.0	52.5	53.6	55.7	57.6	61.1	65.8	74.7	88.0	95.8	98.7	100
20	0	9.8	18.5	25.4	30.2	35.6	38.9	41.5	42.9	44.0	45.2	48.2	50.8	51.7	52.5	54.6	57.4	58.5	60.1	63.2	69.6	76.7	85.4	92.4	100
21	0	7.5	13.6	18.1	21.1	24.4	27.0	29.4	31.7	34.6	37.3	39.6	41.6	43.4	45.4	48.1	51.3	53.3	56.6	62.4	72.4	81.3	88.9	94.7	100
22	0	1.2	1.6	1.6	1.6	1.6	1.6	2.2	3.9	4.6	6.4	14.2	32.8	47.2	58.8	69.1	76.0	82.0	87.1	96.7	99.9	99.9	99.9	99.9	100
23	0	7.9	15.0	20.9	25.7	31.1	35.7	40.2	43.2	46.2	47.7	48.8	49.4	49.9	50.7	51.8	54.1	57.7	62.8	65.9	70.1	77.3	86.8	93.5	100
24	0	12.2	23.6	33.0	39.7	47.1	51.7	55.9	57.7	58.6	58.9	59.1	59.1	59.2	59.2	59.3	59.5	60.0	61.4	63.0	66.5	71.8	81.3	89.6	100
25	0	9.8	20.8	30.2	37.6	45.8	50.6	54.4	56.0	56.8	57.1	57.1	57.2	57.6	58.5	59.8	62.2	65.3	67.5	68.2	69.4	74.8	86.6	93.0	100
26	0	2.0	5.4	9.8	15.6	21.5	24.7	26.6	27.4	28.0	28.7	29.8	32.5	36.6	44.9	55.4	65.7	72.6	77.8	84.4	89.5	93.9	96.5	98.4	100
27	0	0.0	0.0	1.0	4.0	5.9	8.0	11.1	13.0	14.0	14.6	15.3	17.0	23.2	39.1	60.0	76.3	86.1	89.7	90.4	90.9	93.1	96.6	99.1	100
28	0	0.0	0.0	0.0	0.2	0.5	1.5	3.3	7.2	11.9	17.7	21.4	27.0	37.1	51.4	62.3	70.6	78.8	84.6	90.6	94.4	97.9	99.3	100.0	100
29	0	0.6	0.7	0.7	0.7	1.5	3.9	6.0	10.5	17.9	28.8	36.6	43.8	51.5	59.3	68.0	74.8	80.3	84.3	88.8	92.7	98.0	99.8	99.9	100
30	0	0.0	0.0	0.0	0.0	0.2	0.8	2.8	7.9	14.2	24.7	35.6	45.4	52.2	58.7	68.5	77.6	84.5	88.9	93.7	96.2	97.6	98.3	99.6	100
31	0	0.0	0.0	0.0	0.0	0.2	1.0	3.5	9.9	15.7	26.4	47.2	61.4	65.9	69.0	77.2	86.0	91.6	94.8	98.7	100.0	100.0	100.0	100.0	100
32	0	0.1	0.1	0.1	0.1	0.6	2.2	4.3	9.0	14.2	23.3	34.6	46.3	54.2	61.7	72.9	82.5	89.6	93.7	98.2	99.7	99.9	99.9	99.9	100
33	0	0.0	0.0	0.0	0.0	0.6	2.3	4.2	8.8	16.1	30.0	46.9	57.9	62.8	66.2	72.1	79.1	85.9	91.1	97.0	98.9	98.9	98.9	98.9	100
34	0	0.0	0.0	0.0	0.0	1.8	7.3	10.7	15.5	22.0	29.9	35.9	42.0	48.5	56.9	67.0	76.9	85.8	91.2	95.7	97.8	99.6	100.0	100.0	100
35	0	0.0	0.0	0.0	0.0	2.5	10.2	15.9	22.2	27.9	34.7	43.9	51.9	56.9	61.3	67.3	73.9	80.1	85.1	89.6	93.2	98.2	99.8	99.8	100

APPENDIX E

SWPPP AMENDMENT LOG & AMENDMENTS

SWPPP AMENDMENTS

This SWPPP shall be amended:

- Whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm system, (MS4); or
- If any conditions of the Permits is violated or the general objective of reducing or eliminating pollutants in storm water discharges has not been achieved. If the RWQCB determines that a permit violation has occurred, the SWPPP shall be amended and implemented within 14 calendar days after notification by the RWQCB;
- Annually, prior to the defined rainy season, when required by the project's Special Provisions; and
- When deemed necessary by the Engineer of Record, Qualified SWPPP Practitioner (QSP), or the Qualified SWPPP Developer (QSD).

The following item will be included in each amendment:

- Who requested the amendment
- The location of the proposed change
- The reason for the change
- The original BMP proposed, if any
- The new BMP proposed
- QSD Certification of the Amendment

Amendment No.	Date	Description	Preparer
#1	05/05/2014	Details for Construction Phase	Fuscoe Engineering, Inc.

Amendment No.	Date	Description	Preparer

APPENDIX H

CONSTRUCTION ACTIVITY SCHEDULE & BMP IMPLEMENTATION SCHEDULE

APPENDIX H

CONSTRUCTION ACTIVITY SCHEDULE & BMP IMPLEMENTATION SCHEDULE

BMP IMPLEMENTATION SCHEDULE
GRADING & LAND DEVELOPMENT PHASE

Project Name: 1901 E First Street Apartments

Activities Associated with Phase: (check all that apply)		
☒ Demolition	☐ Surveying	☐ Rock Crushing
☐ Excavation	☐ Finish Grade	☐ Blasting
☒ Rough Grade	☐ Soil Amendment(s):	☐ Soils Testing
☒ Erosion & Sediment Control	☒ Equip. Maintenance/Fueling	☐ Other:
☒ Clearing/Vegetation Removal	☒ Material Delivery & Storage	

BMP Deployment: (check all that apply)

Erosion Control BMPs:

✓ EC-1 Scheduling	✓ EC-7 Geotextiles & Mats	☐ EC-13 Reserved
✓ EC-2 Protect Existing Vegetation	☐ EC-8 Wood Mulching	☐ EC-14 Compost Blankets
✓ EC-3 Hydraulic Mulch*	✓ EC-9 Earth Dikes & Drainage Swales	☐ EC-15 Soil Preparation/ Roughening
✓ EC-4 Hydroseeding*	☐ EC-10 Velocity Dissipation	☐ EC-16 Non-Vegetative Stabilization
✓ EC-5 Soil Binders*	☐ EC-11 Slope Drains	
✓ EC-6 Straw Mulch*	☐ EC-12 Streambank Stabilization	

Sediment Control BMPs:

✓ SE-1 Silt Fence	✓ SE-6 Gravel Bag Berm	☐ SE-11 ATS
☐ SE-2 Sediment Basin	✓ SE-7 Street Sweeping/Vacuuming	☐ SE-12 Temporary Silt Dike
☐ SE-3 Sediment Trap	☐ SE-8 Sandbag Barrier	☐ SE-13 Compost Socks & Berms
☐ SE-4 Check Dam	☐ SE-9 Straw Bale Barrier	☐ SE-14 Biofilter Bags
✓ SE-5 Fiber Rolls	✓ SE-10 Storm Drain Inlet Protection	

Tracking Control & Wind Erosion Control BMPs:

✓ TC-1 Stabilized Entrance/Exit	✓ TC-2 Stabilized Roadway	☐ TC-3 Entrance/Outlet Tire Wash
✓ WE-1 Wind Erosion Control		

Non-Storm Water Management BMPs:

✓ NS-1 Water Conservation	☐ NS-7 Potable Water/Irrigation	☐ NS-12 Concrete Curing
✓ NS-2 Dewatering Operations	✓ NS-8 Vehicle & Equip. Cleaning	☐ NS-13 Concrete Finishing
☐ NS-3 Paving & Grinding	✓ NS-9 Vehicle & Equip. Fueling	☐ NS-14 Material Use Over Water
☐ NS-4 Temp. Stream Crossing	✓ NS-10 Vehicle & Equip. Maint.	☐ NS-15 Demo Adj. to Water
☐ NS-5 Clear Water Diversion	☐ NS-11 Pile Driving Operations	☐ NS-16 Temporary Batch Plants
✓ NS-6 Illicit Connection/Discharge		

Materials & Waste Management BMPs:

✓ WM-1 Material Delivery/Storage	✓ WM-5 Solid Waste Management	✓ WM-8 Concrete Waste Mgmt.
✓ WM-2 Material Use	✓ WM-6 Hazardous Waste Mgmt.	✓ WM-9 Sanitary/Septic Waste
✓ WM-3 Stockpile Management	☐ WM-7 Contaminated Soil Management	✓ WM-10 Liquid Waste Management
✓ WM-4 Spill Prevention & Control		

Note: Refer to the SWPPP Exhibits/Erosion Control Plans for BMP locations by construction phase. Not all minimum requirements may be applicable to every project.

* The Contractor shall select one of the five measures or a combination thereof to stabilize inactive areas (areas of construction activity that have been disturbed but are not currently being worked on and are not scheduled to be re-disturbed for at least 14 days)

✓ Minimum BMP

BMP IMPLEMENTATION SCHEDULE
STREETS & UTILITIES

Project Name: 1901 E First Street Apartments

Activities Associated with Phase: (check all that apply)		
☒ Finish Grade	☒ Curb/Gutter Concrete Pour	☒ Material Delivery & Storage
☒ Utility Install: Water/Sewer/Gas	☐ Masonry/Retaining Walls	☒ Equip. Maintenance/Fueling
☒ Storm Drain Installation	☒ Paving Operations	☐ Other:

BMP Deployment: (check all that apply)

Erosion Control BMPs:

✓ EC-1 Scheduling	✓ EC-7 Geotextiles & Mats	☐ EC-13 Reserved
✓ EC-2 Protect Existing Vegetation	☐ EC-8 Wood Mulching	☐ EC-14 Compost Blankets
✓ EC-3 Hydraulic Mulch	✓ EC-9 Earth Dikes & Drainage Swales	☐ EC-15 Soil Preparation/ Roughening
☐ EC-4 Hydroseeding	☐ EC-10 Velocity Dissipation	☐ EC-16 Non-Vegetative Stabilization
☐ EC-5 Soil Binders	☐ EC-11 Slope Drains	
☐ EC-6 Straw Mulch	☐ EC-12 Streambank Stabilization	

Sediment Control BMPs:

✓ SE-1 Silt Fence	✓ SE-6 Gravel Bag Berm	☐ SE-11 ATS
☐ SE-2 Sediment Basin	✓ SE-7 Street Sweeping & Vacuuming	☐ SE-12 Temporary Silt Dike
✓ SE-3 Sediment Trap	✓ SE-8 Sandbag Barrier	☐ SE-13 Compost Socks & Berms
✓ SE-4 Check Dam	☐ SE-9 Straw Bale Barrier	☐ SE-14 Biofilter Bags
✓ SE-5 Fiber Rolls	✓ SE-10 Storm Drain Inlet Protection	

Tracking Control & Wind Erosion Control BMPs:

✓ TC-1 Stabilized Entrance/Exit	✓ TC-2 Stabilized Roadway	☐ TC-3 Entrance/Outlet Tire Wash
✓ WE-1 Wind Erosion Control		

Non-Storm Water Management BMPs:

✓ NS-1 Water Conservation	✓ NS-7 Potable Water/Irrigation	✓ NS-12 Concrete Curing
✓ NS-2 Dewatering Operations	✓ NS-8 Vehicle & Equip. Cleaning	✓ NS-13 Concrete Finishing
✓ NS-3 Paving & Grinding	✓ NS-9 Vehicle & Equip. Fueling	☐ NS-14 Material Use Over Water
☐ NS-4 Temp. Stream Crossing	✓ NS-10 Vehicle & Equip. Maint.	☐ NS-15 Demo. Adj. to Water
☐ NS-5 Clear Water Diversion	☐ NS-11 Pile Driving Operations	☐ NS-16 Temporary Batch Plants
✓ NS-6 Illicit Connection/Discharge		

Materials & Waste Management BMPs:

✓ WM-1 Material Delivery/Storage	✓ WM-5 Solid Waste Management	✓ WM-8 Concrete Waste Mgmt.
✓ WM-2 Material Use	✓ WM-6 Hazardous Waste Mgmt.	✓ WM-9 Sanitary/Septic Waste
✓ WM-3 Stockpile Management	✓ WM-7 Contaminated Soil Management	✓ WM-10 Liquid Waste Management
✓ WM-4 Spill Prevention & Control		

Note: Refer to the SWPPP Exhibits/Erosion Control Plans for BMP locations by construction phase. Not all minimum requirements may be applicable to every project.

✓ Minimum BMP

BMP IMPLEMENTATION SCHEDULE
VERTICAL CONSTRUCTION

Project Name: 1901 E First Street Apartments

Activities Associated with Phase: (check all that apply)		
☒ Framing	☒ Electrical	☒ Painting
☒ Masonry	☒ Plumbing	☒ Stucco
☒ Drywall/Interior Walls	☒ HVAC	☒ Tile
☒ Exterior Siding	☒ nsulation	☒ Landscaping & Irrigation
☒ Flooring	☒ Roofing	☒ Equip. Maintenance/Fueling
☒ Carpentry	☒ Concrete Forms/Foundations	☐ Other:

BMP Deployment: (check all that apply)

Erosion Control BMPs:

✓ EC-1 Scheduling	✓ EC-7 Geotextiles & Mats	☐ EC-13 Reserved
✓ EC-2 Protect Existing Vegetation	☐ EC-8 Wood Mulching	☐ EC-14 Compost Blankets
✓ EC-3 Hydraulic Mulch	✓ EC-9 Earth Dikes & Drainage Swales	☐ EC-15 Soil Preparation/ Roughening
☐ EC-4 Hydroseeding	☐ EC-10 Velocity Dissipation	☐ EC-16 Non-Vegetative Stabilization
☐ EC-5 Soil Binders	☐ EC-11 Slope Drains	
☐ EC-6 Straw Mulch	☐ EC-12 Streambank Stabilization	

Sediment Control BMPs:

☐ SE-1 Silt Fence	✓ SE-6 Gravel Bag Berm	☐ SE-11 ATS
☐ SE-2 Sediment Basin	✓ SE-7 Street Sweeping & Vacuuming	☐ SE-12 Temporary Silt Dike
✓ SE-3 Sediment Trap	☒ SE-8 Sandbag Barrier	☐ SE-13 Compost Socks & Berms
✓ SE-4 Check Dam	☐ SE-9 Straw Bale Barrier	☐ SE-14 Biofilter Bags
✓ SE-5 Fiber Rolls	✓ SE-10 Storm Drain Inlet Protection	

Tracking Control & Wind Erosion Control BMPs:

✓ TC-1 Stabilized Entrance/Exit	✓ TC-2 Stabilized Roadway	☐ TC-3 Entrance/Outlet Tire Wash
✓ WE-1 Wind Erosion Control		

Non-Storm Water Management BMPs:

✓ NS-1 Water Conservation	✓ NS-7 Potable Water/Irrigation	✓ NS-12 Concrete Curing
☐ NS-2 Dewatering Operations	✓ NS-8 Vehicle & Equip. Cleaning	✓ NS-13 Concrete Finishing
☐ NS-3 Paving & Grinding	✓ NS-9 Vehicle & Equip. Fueling	☐ NS-14 Material Use Over Water
☐ NS-4 Temp. Stream Crossing	✓ NS-10 Vehicle & Equip. Maint.	☐ NS-15 Demo Adj. to Water
☐ NS-5 Clear Water Diversion	☐ NS-11 Pile Driving Operations	☐ NS-16 Temporary Batch Plants
✓ NS-6 Illicit Connection/Discharge		

Materials & Waste Management BMPs:

✓ WM-1 Material Delivery/Storage	✓ WM-5 Solid Waste Management	✓ WM-8 Concrete Waste Mgmt.
✓ WM-2 Material Use	✓ WM-6 Hazardous Waste Mgmt.	✓ WM-9 Sanitary/Septic Waste
✓ WM-3 Stockpile Management	✓ WM-7 Contaminated Soil Management	✓ WM-10 Liquid Waste Management
✓ WM-4 Spill Prevention & Control		

Note: Refer to the SWPPP Exhibits/Erosion Control Plans for BMP locations by construction phase. Not all minimum requirements may be applicable to every project.

✓ Minimum BMP

BMP IMPLEMENTATION SCHEDULE
FINAL LANDSCAPING & SITE STABILIZATION

Project Name: 1901 E First Street Apartments

Activities Associated with Phase: (check all that apply)		
☒ Stabilization	☒ Drainage Inlet Stencils	☒ Storage Yard/Material Removal
☒ andscape Installation	☒ Irrigation System Testing	☒ Erosion & Sediment Control BMP Removal
☒ Vegetation Establishment	☒ Inlet Filtration	
☒ Permanent Water Quality Features		☐ Other:

BMP Deployment: (check all that apply)

Erosion Control BMPs:

✓ EC-1 Scheduling	✓ EC-7 Geotextiles & Mats	☐ EC-13 Reserved
✓ EC-2 Protect Existing Vegetation	✓ EC-8 Wood Mulching	☐ EC-14 Compost Blankets
☐ EC-3 Hydraulic Mulch	☐ EC-9 Earth Dikes & Drainage Swales	☐ EC-15 Soil Preparation/ Roughening
✓ EC-4 Hydroseeding	☐ EC-10 Velocity Dissipation	☐ EC-16 Non-Vegetative Stabilization
☐ EC-5 Soil Binders	☐ EC-11 Slope Drains	
☐ EC-6 Straw Mulch	☐ EC-12 Streambank Stabilization	

Sediment Control BMPs:

☐ SE-1 Silt Fence	✓ SE-6 Gravel Bag Berm	☐ SE-11 ATS
☐ SE-2 Sediment Basin	✓ SE-7 Street Sweeping & Vacuuming	☐ SE-12 Temporary Silt Dike
☐ SE-3 Sediment Trap	☐ SE-8 Sandbag Barrier	☐ SE-13 Compost Socks & Berms
☐ SE-4 Check Dam	☐ SE-9 Straw Bale Barrier	☐ SE-14 Biofilter Bags
☐ SE-5 Fiber Rolls	✓ SE-10 Storm Drain Inlet Protection	

Tracking Control & Wind Erosion Control BMPs:

✓ TC-1 Stabilized Entrance/Exit	✓ TC-2 Stabilized Roadway	☐ TC-3 Entrance/Outlet Tire Wash
✓ WE-1 Wind Erosion Control		

Non-Storm Water Management BMPs:

✓ NS-1 Water Conservation	✓ NS-7 Potable Water/Irrigation	✓ NS-12 Concrete Curing
☐ NS-2 Dewatering Operations	✓ NS-8 Vehicle & Equip. Cleaning	✓ NS-13 Concrete Finishing
✓ NS-3 Paving & Grinding	✓ NS-9 Vehicle & Equip. Fueling	☐ NS-14 Material Use Over Water
☐ NS-4 Temp. Stream Crossing	✓ NS-10 Vehicle & Equip. Maint.	☐ NS-15 Demo. Adj. to Water
☐ NS-5 Clear Water Diversion	☐ NS-11 Pile Driving Operations	☐ NS-16 Temporary Batch Plants
✓ NS-6 Illicit Connection/Discharge		

Materials & Waste Management BMPs:

✓ WM-1 Material Delivery/Storage	✓ WM-5 Solid Waste Management	✓ WM-8 Concrete Waste Mgmt.
✓ WM-2 Material Use	✓ WM-6 Hazardous Waste Mgmt.	✓ WM-9 Sanitary/Septic Waste
✓ WM-3 Stockpile Management	☐ WM-7 Contaminated Soil Management	✓ WM-10 Liquid Waste Management
✓ WM-4 Spill Prevention & Control		

Note: Refer to the SWPPP Exhibits/Erosion Control Plans for BMP locations by construction phase. Not all minimum requirements may be applicable to every project.

✓ Minimum BMP

BMP IMPLEMENTATION SCHEDULE
INACTIVE SITE

Project Name: 1901 E First Street Apartments

Activities Associated with Phase: (check all that apply)	
☒ Routine Site Inspection	☒ Street Sweeping
☒ Erosion/Sediment Control Device Installation	☒ Trash Removal
☒ Erosion/Sediment Control Device Maintenance	☐ Other:

BMP Deployment: (check all that apply)

Erosion Control BMPs:

✓ EC-1 Scheduling	✓ EC-7 Geotextiles & Mats	☐ EC-13 Reserved
✓ EC-2 Protect Existing Vegetation	☐ EC-8 Wood Mulching	☐ EC-14 Compost Blankets
✓ EC-3 Hydraulic Mulch*	☐ EC-9 Earth Dikes & Drainage Swales	☐ EC-15 Soil Preparation/ Roughening
✓ EC-4 Hydroseeding*	☐ EC-10 Velocity Dissipation	☐ EC-16 Non-Vegetative Stabilization
✓ EC-5 Soil Binders*	☐ EC-11 Slope Drains	
✓ EC-6 Straw Mulch*	☐ EC-12 Streambank Stabilization	

Sediment Control BMPs:

✓ SE-1 Silt Fence	✓ SE-6 Gravel Bag Berm	☐ SE-11 ATS
☐ SE-2 Sediment Basin	✓ SE-7 Street Sweeping & Vacuuming	☐ SE-12 Temporary Silt Dike
✓ SE-3 Sediment Trap	☐ SE-8 Sandbag Barrier	☐ SE-13 Compost Socks & Berms
✓ SE-4 Check Dam	☐ SE-9 Straw Bale Barrier	☐ SE-14 Biofilter Bags
✓ SE-5 Fiber Rolls	✓ SE-10 Storm Drain Inlet Protection	

Tracking Control & Wind Erosion Control BMPs:

✓ TC-1 Stabilized Entrance/Exit	✓ TC-2 Stabilized Roadway	☐ TC-3 Entrance/Outlet Tire Wash
✓ WE-1 Wind Erosion Control		

Non-Storm Water Management BMPs:

✓ NS-1 Water Conservation	✓ NS-7 Potable Water/Irrigation	☐ NS-12 Concrete Curing
☐ NS-2 Dewatering Operations	☐ NS-8 Vehicle & Equip. Cleaning	☐ NS-13 Concrete Finishing
☐ NS-3 Paving & Grinding	☐ NS-9 Vehicle & Equip. Fueling	☐ NS-14 Material Use Over Water
☐ NS-4 Temp. Stream Crossing	☐ NS-10 Vehicle & Equip. Maint.	☐ NS-15 Demo. Adj. to Water
☐ NS-5 Clear Water Diversion	☐ NS-11 Pile Driving Operations	☐ NS-16 Temporary Batch Plants
✓ NS-6 Illicit Connection/Discharge		

Materials & Waste Management BMPs:

✓ WM-1 Material Delivery/Storage	☐ WM-5 Solid Waste Management	☐ WM-8 Concrete Waste Mgmt.
✓ WM-2 Material Use	☐ WM-6 Hazardous Waste Mgmt.	☐ WM-9 Sanitary/Septic Waste
✓ WM-3 Stockpile Management	☐ WM-7 Contaminated Soil Management	☐ WM-10 Liquid Waste Management
✓ WM-4 Spill Prevention & Control		

Note: Refer to the SWPPP Exhibits/Erosion Control Plans for BMP locations by construction phase. Not all minimum requirements may be applicable to every project.

✓ Minimum BMP

* The Contractor shall select one of the five measures or a combination thereof to stabilize inactive areas (areas of construction activity that have been disturbed but are not currently being worked on and are not scheduled to be re-disturbed for at least 14 days)